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HAWAII

January 05-08, 2023 | Honolulu, Hawaii, USA, and Online

The 8th IAFOR International Conference on Education in Hawaii

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An Analysis of Competency's Connotations for Travel Agent Managers in Taiwan

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Official Conference Proceedings

Abstract

In order to meet the demands of the shifting operational environment and the demand for human resource training in the travel industry, this study aimed to pinpoint the professional competency's connotations that travel agent managers should have. The purpose of this study was to examine the job duties, tasks, and knowledge (K), skills (S), and attitudes (A) necessary for travel agent manager to carry out their duties. Focus group interviews with 6 experts with more than 30 years of experience in the travel industry were conducted as part of the study. The study concluded that travel agent managers should have 7 job responsibilities, including travel operations coordination, business operations, talent training, marketing activities, customer service, product development, and risk management. There are 26 major tasks, and to implement them, the competency's connotation required includes 46 kinds of related knowledge, 46 skills and 11 attitudes. The competency's connotations provide useful benchmarks for the training or professional advancement of travel agent managers.

Keywords: Competency's Connotations, Competency Analysis, Occupational Competency Standard (OCS), Travel Agent Manager

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Introduction

The travel industry plays an important role in the development of tourism. As of April 2021, there were 3,938 travel agencies in Taiwan (Tourism Bureau, 2021), and competition was fierce. Regardless of the type of travel agency, whether it is consolidated, Class-A or Class-B, at least one travel agent manager is required to apply for the establishment of a travel agency (Tourism Bureau, 2021).

In the travel industry, whether it is a large operator with a large establishment or a small operator with a lean staff, to be innovative in terms of business management (Verreynnea, Williamsb, Ritchiea, Gronuma & Bettsc, 2019), expertise and communication coordination, the needs of new skills or services such as social media marketing, cross-media internet marketing (Chaiyoung C. & Krit J, 2015; Pencarelli, T., 2020), corporate, brand, product, online store promotion, raising awareness of the green travel environment (Tom Baum, 2015; World Travel and Tourism Council, 2018) are all facing the challenges of keeping abreast of today's trends.

In addition to managing the travel agency's outbound, inbound, and domestic travel services, the travel agent manager must also coordinate with the government's political, economic, tourism policies (Tourism Bureau, 2021), and under pressure from competition of the industry, the Internet, and marketing channels. According to the study of Ottenbacher & Gnoth (2005), service innovation can improve the quality of a product or service, drive indirect benefits, increase corporate reputation, enhance corporate image, attract potential customers, and strengthen customer loyalty. Travel agent managers are the souls of the travel industry and play a key role. Due to the severity of the Covid-19 pandemic that hit the world in early 2020, the opening of borders is linked to the pandemic, so it is important to upgrade from national tourism and prepare for the opening of borders in advance; in particular, travel agencies should strengthen their ability to be desired by consumers (Chang, 2021).

Since talents play an important role in the process of industrial development, central industry competent authority must set the competency benchmarks for industrial talents, issue certificates of competency identification, and promote international mutual recognition based on the needs of industrial development in accordance with the Industry Innovation Act (IIA). According to Chang (2013), the establishment of competency standards can serve as standards for education and training to follow and can help companies become learning organizations to enhance organizational competitiveness and individual professional knowledge.

To enhance the competency of travel agent managers and the cultivation of talents, the purposes of this study are as follows:
1. Investigate the essential components of job duties that travel agent managers must exhibit.
2. Examine the essential components of the duties that travel agent managers must carry out.
3. Explore the knowledge (K), skills (S), and attitudes (A) required for the professional competency of a travel agent manager.

Literature Review

In order to examine two parts, this study compiles pertinent literature and analyzes it. First, the qualifications of travel agent managers and related regulations. Second, the job duties and tasks of past travel agent managers. Third, the analysis of the professional competency of past travel agent managers. The following is a brief description of the above.

Qualifications and related regulations of travel agent manager in Taiwan

According to Article 15 of the Travel Industry Regulations stipulated in Article 66(3) of the Taiwan Development and Tourism Regulations, travel industry professionals must fulfill one of the following qualifications and complete a certification process to be certified by the Taiwan Tourism Bureau of the Ministry of Transportation and Communications (Tourism Bureau, 2021). According to the tourism industry management rules, a photocopy of the manager's roster and manager's certificate of completion must be presented to the Tourism Bureau of the Ministry of Transportation and Communications. According to Article 7 of the Travel Industry Management Rules, for a travel manager to establish a branch office, the branch manager roster and manager's certificate of completion must be presented to the Tourism Bureau of the Ministry of Transportation and Communications. The travel agent manager must be full-time personnel and must not concurrently be in charge of another travel operator.

Duties and tasks of travel agent managers

Based on the literature study on the competency benchmarks of "Tourism Operations Supervisor" and "Tourism Business Development Manager" announced by the Workplace Development Agency, Ministry of Labor (2021) in the "Integrated Competency and Application Platform," (iCAP, https://icap.wda.gov.tw/ap/faq.php) the job descriptions and major tasks of travel agent managers are known, and the results are as follows:

Description of duties and responsibilities

Complete and pass the Travel Agent Manager Training Program; adjust and develop products and businesses; enhance quality traveler services; achieve operational coordination and sustainable management in the travel industry.

Major tasks

1. Develop tourism products and expand business in coordination with dynamic market target management and business analysis for operational development.
2. Identify problems and phenomena in the course of travel industry operations and services, compile them, and establish marketing strategies and risk management.
3. Improve the shortcomings of the travel industry, make immediate adjustments, enhance the management and product business strategies for quality services for travelers, and make recommendations and implement them.

Through the above compilation, the professional competencies of travel agent managers are initially established, covering 6 competencies required for travel agent managers, including the ability to analyze market operations, business development, product development,

conflict and risk management, marketing strategy execution, and customer relationship management (Chang & Chen, 2018).

Professional Competencies

Occupational Competency Standard (OCS) refers to the combination of competencies that should be possessed to accomplish the tasks of a specific occupation or job category developed by the central industry competent authority or the relevant legally entrusted unit, as stated in Article 18 of the Industry Innovation Act. They include the main tasks, corresponding behavioral indicators, work output, knowledge, skills, attitudes, and other competency's connotations of the specific occupation or job category. The "occupational competency standard" is the "talent specification" set by the government. They fall under the category of professional competency when it comes to the classification of competency.

Spencer & Spencer (1993) considered "competency" as the underlying characteristic of a person. In the general management ability model, the important competencies that managers should possess are, in order, influence, achievement orientation, the spirit of teamwork, analytical thinking, and proactivity. The important competencies that salespeople should possess are influence, achievement orientation, proactivity, interpersonal EQ, customer service orientation, and relationship building. According to CareerOneStop (2013), competency refers to the ability to apply the knowledge, skills, and abilities related to carrying out the job. It specifically refers to the particular duty competencies that are directly related to the job and objectives and are required to successfully complete the job goals. Professional competency refers to the abilities required for different jobs, and can be subdivided into functional competency, role competency and job competency.

Through the results of the above-mentioned literature, the development of the analysis of the connotation of the professional competency of travel agent managers is an important basis for the research of human resource cultivation.

Method

The study employed focus group interviews. In order to ensure the accuracy and credibility of the content, a total of 6 travel agent managers, experts, and scholars were invited to conduct focus group interviews to confirm the competencies of travel agent managers. The list of experts and their qualifications is shown in Table 1.

The outlines of the expert interviews are as follows:
1. What are the main job responsibilities of a travel agent manager?
2. What are the main tasks of being a travel agent manager?
3. What knowledge, skills and attitudes do you think travel agent managers need to possess?

Table 1. List of experts interviewed in the focus group.

Expert Code	Title and Experience	Length of Service
A	Chairman of a Travel Agency	35 years
B	General Manager of a Travel Agency	30 years
C	Chairman of a Travel Agency	30 years
D	General Manager of a Travel Agency	30 years
E	General Manager of a Travel Agency	30 years
F	General Manager of a Travel Agency	31 years

Results and Discussion

The competency's connotations of travel agent managers

Based on the 6 experts in the focus group interview, the study was conducted with reference to the interview outline and iCAP OCS (https://icap.wda.gov.tw/Resources/resources_ Datum_List.aspx), and the results were as follows:

7 Job responsibilities of a travel agent manager
- T1. Travel industry operation coordination and business development
- T2. Business establishment and management
- T3. Recruitment, selection and training
- T4. Marketing campaign coordination
- T5. Quality customer service enhancement
- T6. Tourism product development
- T7. Risk control and crisis management

Based on the above 7 job responsibilities, 26 tasks were developed, as shown in Table 2.

Table 2. Tasks performed by travel agent managers initiated from their job responsibilities

Job Responsibilities	Task Description
T1. Travel industry operation coordination and business development	T1.1 Establish a company's operating policy T1.2 Plan business development of the company's activities T1.3 Conduct related operation activities in accordance with relevant regulations T1.4 Tracking Effects and Changes
T2. Business Creation and Management	T2.1 Establish business development relationship in the market T2.2 Establish business target partnerships T2.3 Integration of industrial resources T2.4 Conduct business communication and negotiation T2.5 Promote and maintain business relationships
T3. Recruitment, selection, and training	T3.1 Assess competencies and recruitment needs T3.2 Establish staff recruitment system T3.3 Select suitable employees and get them settled. T3.4 Plan and organize training programs
T4. Marketing campaign coordination	T4.1 Plan and organize marketing activities T4.2 Perform the roles of public relations T4.3 Review and make a self-criticism about marketing activities
T5. Quality customer service enhancement	T5.1 Develop quality customer service T5.2 Execute and manage quality service T5.3 Continue to improve customer service
T6. Tourism product development	T6.1 Master the market and product positioning T6.2 Analyze issues related to product development T6.3 Make judgments about sales price and profitability results T6.4 Monitor and assess product success
T7. Risk Control and Crisis Management	T7.1 Anticipate and identify risk scenarios T7.2 Establish crisis management mechanism T7.3 Carry out crisis management

Based on the above 26 tasks, the competency's connotations of the knowledge, skills and attitudes required of a travel agent manager are shown in Tables 3 to 10.

According to the competency analysis, the travel agency manager has seven main responsibilities. Each responsibility has a relative task, and the tasks are described in Table 2, with a total of 26 tasks. The knowledge, skills and attitudes required by the travel agent manager to perform these tasks are presented in Tables 3 to 10. They have the knowledge, skills and attitudes to successfully complete these tasks and responsibilities in order to become a competent travel agency manager.

Most of the travel agencies in Taiwan are small companies with 3-8 employees. The personality and service attitude of the manager of the travel agency is very important. For example: crisis management, flexibility, time management and self-growth. According to the functional analysis of six experts, the results show that travel agency managers need to have agreeable relationship, proactive approach and other work attitudes.

Table 3. KS competency's connotations corresponding to the tasks of coordinating and developing the operation of the travel industry initiated from
T1 travel industry operation coordination and business development

Task Description	Corresponding Competency's Connotations regarding Knowledge (K)	Corresponding Competency's Connotations regarding Skills (S)
T1.1 Establish a company's operating policy	K01 Global Environmental Issues (climate change, energy supply and demand, water resources, waste treatment, carbon emissions, etc.) K02 Corporate Business Policy and Strategy	S01 Read and interpret regulatory requirements and related documents for the establishment of the travel industry
T1.2 Plan business development of the company's activities	K03 Environmental and social impacts of tourism activities K04 Sustainability considerations for tourism operations (environmentally or culturally special areas and related minimum impact practices)	S02 Communicate with colleagues and stakeholders to consult on environmental and social responsibility issues, and to make visitors be responsible for environmental protection
T1.3 Conduct related operation activities in accordance with relevant regulations	K05 Legal regulations and land management requirements (such as tourism regulations, taxation, finance, etc.)	S03 Problem-solving skills to identify and respond to sustainability-related issues in a timely manner and minimize their impact
T1.4 Tracking Effects and Changes	K06 Collection of information to track environmental and social impacts (observation, measurement results and recording of specific data)	S04 Critical thinking skills to assess potential environmental and social impacts and to provide appropriate responses when holding events S05 Interpret tourism policy trends, market statistics, market preferences, and have reading and writing skills for tourism industry-related information

Table 4. The KS competency's connotations corresponding to the tasks established and managed that are initiated from the T2 business creation and management

Task Description	Corresponding Competency's Connotations regarding Knowledge (K)	Corresponding Competency's Connotations regarding Skills (S)
T2.1 Establish business development relationship in the market	K07 The relationship of the industry structure of the business context in related industries with each other K08 Sources of the suppliers of business context in related industries K09 Distribution and marketing network of business context in related industries K10 Digital marketing for business context in related industries	S06 Evaluate critical thinking skills that affect professional relationships and business negotiation
T2.2 Establish business target partnerships	K11 Negotiation principles, stages of the negotiation process, various techniques that can be applied	S07 Proactively seek to build innovative development skills for business opportunities
T2.3 Integration of industrial resources	K12 The nature of agreements and contracts for travel-related industries and the key elements of cooperation	S08 Calculation skills to evaluate business data and cost structures
T2.4 Conduct business communication and negotiation	K13 Contract terms and obligations, agreement modalities, exclusivity clauses, dispute resolution clauses, contract termination and other key elements	S09 Read and interpret potentially complex agreements, and conditions S10 Develop or participate in the development of formal commercial contracts
T2.5 Promote and maintain business relationships	K14 Legal regulations that affect negotiations and contracts in related industries, such as the Consumer Protection Act, the Part of Obligations of the Civil Code, and travel services contract	S11 Planning of events that contribute to professional relationships and initial event planning and organization skills S12 Participate in the negotiation process and have problem-solving skills to respond to the challenges involved

Table 5. KS competency's connotations corresponding to the tasks initiated from
T3 talent recruiting, selection and training

Task Description	Corresponding Competency's Connotations regarding Knowledge (K)	Corresponding Competency's Connotations regarding Skills (S)
T3.1 Assess competencies and recruitment needs	K15 Recruitment and selection criteria	S13 Communication skills for conducting interviews S14 Assess staffing needs and develop planning and organizational skills for appropriate recruitment
T3.2 Establish staff recruitment system	K16 Effective recruitment advertisements features	S15 Computational skills for calculating the cost of recruitment advertisements and salary levels S16 Problem-solving skills to determine the lack of job applications and choose to re-advertise or change the recruitment method
T3.3 Select suitable employees and get them settled.	K17 Relationship between job descriptions and selection criteria, how selection criteria are formulated K18 Ways of linking interview questions to selection criteria	S17 Critical thinking skills to assess the abilities, knowledge and experience of job seekers and their suitability for the current organizational culture S18 The team skills of discussing staffing needs with team members and selecting new members who can complement existing members
T3.4 Plan and organize training programs	K19 Roles and responsibilities of recruitment and training related personnel K20 Employment review procedures and human resources policy in its entirety	S19 Write and integrate various documents, including the content of training programs

Table 6. KS competency's connotations corresponding to the tasks initiated from
T4 marketing campaign coordination

Task Description	Corresponding Competency's Connotations regarding Knowledge (K)	Corresponding Competency's Connotations regarding Skills (S)
T4.1 Plan and organize marketing activities	K21 The content and structure of the marketing plan K22 Marketing management process and the four P's: product, place, price and promotion and co-marketing, cross-border marketing, etc.	S20 Analyze market trends and marketing plans
T4.2 Perform the roles of public relations	K23 Business context of business alliances in tourism-related industries, including industry structure and relationships	S21 Develop detailed action plans for marketing campaigns S22 Media release and marketing report promotion S23 Analysis and application skills related to digital technology network marketing
T4.3 Review and make a self-criticism about marketing activities	K24 Industry and market knowledge appropriate to the department and organization, including e-commerce options and distribution channel marketing strategies K25 Features, advantages, and practical applications of commonly used marketing campaigns, including advertising, experiences, and social network media K26 Legal issues affecting products and marketing, including personal data protection, specific issues arising from the use of new technologies K27 Ethical considerations for marketing campaigns: including appropriate use of images and text, grading regulations, etc. K28 Sustainability considerations for marketing campaigns, such as reducing waste of printed materials	S24 Analysis and application performance related to digital technology and network marketing S25 Planning and organizational skills to coordinate diverse and unanticipated operational details

Table 7. The KS competency's connotations corresponding to the tasks initiated from T5 quality customer service enhancement

Task Description	Corresponding Competency's Connotations regarding Knowledge (K)	Corresponding Competency's Connotations regarding Skills (S)
T5.1 Develop quality customer service	K29 Principles of quality customer service K30 Roles and Responsibilities of management, supervisors, and operational staff responsible for quality service	S26 Able to communicate with colleagues to discuss the key needs of traveler services S27 Be able to explain the company's key policies and procedures for providing quality service
T5.2 Execute and manage quality service	K31 Implementation methods for providing quality service, including overseeing policies and procedures for traveler service, staff involvement in the development of practical traveler service practices, and assessing feedback from staff and travelers	S28 Discuss and explain the results of customer service checks and the content of documents that will affect related industry trends S29 Research customer service requirements, edit all-around concierge-friendly policies and procedures
T5.3 Continue to improve customer service	K32 Monitoring, measurement and evaluation methods: e.g. customer satisfaction business performance K33 Objectives, elements, and details of traveler service-related regulations	S30 Survey and statistical skills to assess traveler satisfaction S31 Planning and organizational skills to establish plans and periodically evaluate traveler service systems S32 Problem-solving skills to understand systemic customer service issues in order to adjust policies and procedures and improve service quality S33 Make self-criticism about frequently asked traveler service questions S34 Teamwork skills to engage employees in practical traveler service practices and proactively solicit their feedback and opinions

Table 8. KS competency's connotations corresponding to the tasks initiated from
T6 tourism products development

Task Description	Corresponding Competency's Connotations regarding Knowledge (K)	Corresponding Competency's Connotations regarding Skills (S)
T6.1 Master the market and product positioning	K34 Market trend studies K35 Products and services among competitors	S35 Assess market segmentation and positioning S36 Proactivity in identifying or actively seeking opportunities for innovative products
T6.2 Analyze issues related to product development	K36 Develop products and modes of services, including brand management and product packaging design K37 Launched destination features and target markets	S37 Planning and organizational skills at all levels of executing the coordination of product development
T6.3 Make judgments about sales price and profitability results	K38 In order to determine the appropriate selling price, it is necessary to consider the financial operating costs, the profitability rate and achieving a high yield for the tourism industry. K39 Procedures and appropriate rates for industry commissions and markup in the tourism industry	S38 Calculation skills for completing complex budget costing S39 The calculation skills for different commissions and markup structures S40 Evaluate the profitability of multiple product options
T6.4 Monitor and assess the success of products	K40 Tourism product planning and design developing features and content	S41 Oversee and assess problem-solving skills for product development

Table 9. KS competency's connotations corresponding to the tasks initiated from
T7 risk control and crisis management

Task Description	Corresponding Competency's Connotations regarding Knowledge (K)	Corresponding Competency's Connotations regarding Skills (S)
T7.1 Anticipate and identify risk scenarios	K41 Risk management principles and guidelines	S42 Communication and reading and writing skills for consultation and negotiation, risk management and stakeholder engagement
T7.2 Establish crisis management mechanism	K42 Risk management strategies K43 Risk management policies and procedures K44 The overall operation of the organization	S43 Implement the crisis management action plan organized and established by the Travel Quality Assurance Association and the Travel Agent Association S44 Organizational and management skills for planning and implementing risk management processes
T7.3 Carry out crisis management	K45 Things that affect actions required by the travel industry, including terms and conditions, refund requests, cancellation fees, liability for travelers' insurance and management obligations, etc. K46 Insurance category content and insurance companies	S45 Problem-solving and innovation skills for seeking viable ways to manage identified risks S46 Assist in insurance claims communication and negotiation

Table 10. The competency's connotation, A, that a travel agent manager should have

Attitude (A)

A01 Agreeable relationship
A02 Proactive approach
A03 Integrity and honesty
A04 Self-management
A05 Stress tolerance
A06 Team awareness
A07 Responding to unknown conditions
A08 Self-confidence
A09 Discrete and attentive
A10 Flexibility
A11 Curious and open

Conclusions and Limitations

This study proposes the analysis of the competency's connotations of travel agent managers, which can provide a regular rolling review of the immediate competencies that travel agent managers should possess; it can also provide schools and travel associations with ways to handle the application of training units in the future development. As suggested by the experts, in response to the changing market environment, the introduction of technology into tourism, and the rise of innovative services, travel agent managers need to pay special attention to enhancing their professional competencies in the application of digital mobile technology and tools, such as internet technology, social media, and the ability to use innovative technology, in order to actively transform digitally. This study is limited to the analysis of the competency's connotations of travel agent managers in Taiwan. It is suggested that future comparative studies with travel agent managers in other countries can be conducted.

In this study, we analyzed the competency's connotations of travel agency managers through document analysis and six experienced experts, and the final results identified 7 major responsibilities, 26 tasks, 46 knowledge, 46 skills and 11 attitudes. The results of the study were compiled from the opinions of these 6 experienced (over 30 years of experience) experts. Therefore, it is possible that the results of the functional analysis would have been different had other experts been involved. This is the greatest limitation of this study. As travel agency managers in Taiwan have multiple responsibilities and tasks, we expect that future tourism bureaus will take the functional items developed in this study seriously. It is hoped that these functional items will be used as a source for future training for travel agency managers or on-the-job training for current managers.

Acknowledgements

References

CareerOneStop. (2013). *Technical assistance guide for development and using competency models? One Solution for a demand-driven workforce system.* Retrieve July, 2013, http://www.careeronestop.org/competencymodel/tag.htm#_Toc116101019

Chaiyoung C.& Krit J. (2015). Guideline for Developing Competencies of Travel Agent Manager: A Comparative Study of Thailand and Laos. *International Business Research, 8*(2), 142-154.

Chang, Jen-Chia. (2013). Training and Development for Industry, Chuan Hwa Book, 84-90.

Chang, Jen-Chia., & Chen Shan-Pei. (2018). Explorations in Professional Competency of Travel Industry Professionals in Taiwan. *International Journal of Management and Applied Science, 4*(7), 4-9. http://www.iraj.in/journal/ journal file/journal pdf/14-484-15380393314-9.pdf

Chang Xicong (2021). Interview with Chang Xicong, Director of Tourism of the Ministry of Communications, Travel vouchers and group subsidies to inject new vitality Travel agencies should strengthen their ability to be needed by consumers. Travel Trend News, *1213-1216*, 12.

Ottenbacher, M., & Gnoth, J. (2005). How to Develop Successful Hospitality Innovation. *Cornel lHotel & Restaurant Administration Quarterly*, *46*(2), 205-222.

Pencarelli, T. (2020). The digital revolution in the travel and tourism industry. *Information Technology and Tourism, 22*(3), 455-476. doi:10.1007/s40558-019-00160-3

Spencer, L. M., & Spencer, S. M. (1993). *Competence at Work: Models for Superior Performance*, New York: John Wiley & Sons, Inc.

Tom Baum. (2015). Human resources in tourism: Still waiting for change? - A 2015 Reprise. *Tourism Management*, *50*, 204-212.

Tourism Bureau, Ministry of Transportation and Communications, R.O.C. Taiwan (2021). Executive Information System, January, 2021, http://admin.taiwan.net.tw/

Verreynnea, M. L., Williamsb, A. M., Ritchiea, B. W., Gronuma, S., & Bettsc, K. S. (2019). Innovation diversity and uncertainty in small and medium sized tourism firms. *Tourism Management*, *72*, 257-269.

Workforce Development Agency, Ministry of Labor (2021). iCAP integrated competency and application platform. January 2021.http://icap.wda.gov.tw/

World Travel and Tourism Council. (2018). *Travel & Tourism Economic Impact World.* https://www.wttc.org/-/media/files/reports/economic-impact-research/regions-2018/world2018.pdf

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Initiatives on Performing Lesson Study in Egypt–Japan Schools (EJS) –Towards Realizing New Professional Development Scheme

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

In an unprecedented step towards developing the quality of education after decades of neglection, the government of Egypt established Egypt-Japan Schools (EJS) under the Egypt-Japan Education Partnership (EJEP), in 2018 (Mostafa and Hambara, 2018; Mostafa, 2021). So far, 51 schools have been established all over the country. These schools embrace the new curriculum "Education 2.0" designed by the government of Egypt that aims at developing the 21st century skills in children while implementing the special activities, referred to as 'Tokkatsu', which symbolizes schools in Japan. *Tokkatsu* is a holistic educational curriculum model that focuses on nurturing agency and collaboration in children to be effective members of their society. Teachers in EJS are faced with many challenges within the new curriculum and the *tokkatsu* concept and its application. Therefore, Lesson Study has been introduced for the first time in Egypt in EJS after its launch in 2018. The purpose of the Lesson Study is to cultivate teachers' capacity and ability in a sustainable professional way in order to able to implement the new curriculum and the new concept of *tokkatsu*. However, as an unprecedented initiative, Lesson Study is still immature and unorganized in EJS. This research studies the current situation of the Lesson Study and the reasons behind this situation in four EJSs with whom the researcher is collaborating. Furthermore, the researcher will explore some possible systematic structures of a sustainable Lesson Study cycle based on the situation of each school.

Keywords: Lesson Study, Tokkatsu, Sustainable Professional Development, Evaluation

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Introduction

Background and Literature Review

After decades of low-quality education due to several internal and external factors, the government of Egypt has taken a fundamental step toward educational reform and initiated a new system of education called "Education 2.0". "Education 2.0" aims to realize the 21st century skills in children by transforming the teaching method from teacher-centered transmission mode to student-centered mode, which focuses on nurturing students' agency and creating an attractive and stimulating learning environment for the students. In accordance with that move, Egypt-Japan Education Partnership (EJEP) was established between Egypt and Japan in 2016, and under this partnership, Egypt-Japanese Schools (EJS) were built. So far, fifty-one schools are distributed throughout Egypt. These new schools embrace the new curriculum "Education 2.0" while implementing the Japanese special activities, referred to as *tokkatsu*, which symbolizes schools in Japan (Mostafa & Hambara 2018; Mostafa 2019, 2020, 2021a, 2021b, 2021c, 2021d). Figure 1 illustrates the changes that occurred to the new curriculum.

Old System		New System
knowledge assuring	→	skills assuring
broad curricula	→	deep curricula
feeding education	→	learner-centered education,
separate education subjects	→	multi-discipline axes
theoretical education	→	fun education linked to the learner's life
hard (paper) education materials	→	hard & digital education materials
exams philosophy	→	evaluation philosophy

Figure 1. *The Changes that Occurred to the New System of Education*
Source: Special Activities [tokkatsu] Guidebook 2018

The new curriculum also adopts the internationally approved twelve skills that should be nurtured in the students to develop their life skills, values, tendency, and citizenship to prepare them to face life and the continuously changing society (JICA, Center for Curriculum and Instructional Materials Development, 2018). Table 1 shows the targeted skills in Education 2.0.

Education dimensions	Targeted skills in light of education dimensions (14 skills)			
Learn to be	Resilience	Communication	Accountability	Self-management
Learn to live	Participation	Sympathy	Respect diversity	
Learn to work	Cooperation	Negotiation	Productivity	Decision making
Learn to know	Critical thinking	Creativity	Problem solving	

Table 1. *Targeted Skills in Education 2.0*
Source: Special Activities [tokkatsu] Guidebook 2018

Tokkatsu has drawn the world's interest as a holistic educational curriculum model that raises the well-being of children by focusing on nurturing students' agency and collaboration to be effective members of their society (Tsuneyoshi, Sugita, Kusanagi, & Takahashi, 2020). However, this concept is new to the system in Egypt and the teachers are not familiar with it. As a result, the teachers are faced with many challenges and *tokkatsu* is not well-applied. Raising independent and collaborative children requires skilled teachers who are capable of absorbing, understanding, and adapting to the new concept. To do this, Lesson Study was introduced for the first time in Egypt in EJS after its launch in 2018. The purpose of the Lesson Study is to cultivate teachers' capacity and ability in a sustainable professional way in order to be able to implement the new curriculum and the new concept of *tokkatsu*. However, as an unprecedented initiative, Lesson Study is still immature and unorganized in EJS. Teachers are faced with many challenges and Lesson Study does not seem to be achieving its goals.

Lesson Study started in Japan one hundred and forty years ago in the early stages of the Meiji era as a collaborative learning approach between teachers in schools. Its aim is to create and organize sustainable collaborative communities between teachers to support children's learning. Cultivating communities of practice and shaping teachers' capacities is not a solo job. Different aspects and different opinions are essential to follow and understand children's learning through collaborative inquiry (Kimura & Kishino, 2019). Collaborative learning or collaborative inquiry is a process where educators look into questions and ambiguities that arise during their practices and utilize their experience and repertory to find solutions to their challenges together (Fullan, Quinn, and McEachen, 2018, p.120).

This research studies the situation of Lesson Study and its development over the past four years in four EJSs and explores the reasons behind this situation. The research will also shed light on the effect of Lesson Study on the aimed continuous professional development of teachers in EJS.

Target and Methodology

Since 2018, the University of Fukui has been entrusted with the EJEP Teachers' Training Program which is held under the EJEP partnership and aims to develop the teachers' capacity and ability and raise their knowledge on *tokkatsu*. This research started in May 2021. The target is four EJSs where some previous trainees belonged. The schools were chosen based on negotiations with the EJS Project Management Unit (PMU) with certain criteria to guarantee the facilitation of the research. The schools were chosen from different regions to

maintain credibility, fairness, and precision. From each school, the principal or the vice principal and a teacher were assigned core members of the school. The process of acknowledgment from the Ministry of Education in Egypt took almost eight months; therefore, we started our collaboration practically in March 2022. Most of the core members are ex-trainees who have observed many Lesson Study classes in Japan and have gained some beneficial experience and information on the purpose and the method of implementing it. In addition to the core members, other teachers from each school who are interested and willing to cooperate with us were also welcome to join and participate at their own pace (the researcher will hereby call all the participants 'collaborators').

Since the target schools are located in Egypt, frequent communication is held online. The collaborators record the preliminary sessions of the Lesson Study, the Lesson Study classes, and the discussion sessions and share them with me. If time allows, the researcher sometimes observes the classes and the sessions live. Then, we all sit together and discuss, via Zoom, the school situation, the practice of the Lesson Study, the evaluation sheet, and how to improve teachers' professionalism through Lesson Study.

Study

Lesson study was introduced in EJS with the launch of these schools as a professional development approach for teachers to increase their knowledge on *tokkatsu* and develop their skills and professionalism that are needed to implement it. However, this was the first attempt of Lesson Study in Egypt. There were no previous examples, no manual, no guidebook, and no training when it started which brought up many issues. Teachers rejected the idea and considered it an additional unnecessary burden. They saw it as a means of comparison and evaluation rather than a professional development approach.

As a result, the practice of Lesson Study became quite different from one school to another. Some schools managed to do Lesson Study in one way or another regardless of the difficulties they face, some schools would do it only very few times, and some schools would neglect the practice or do it unwillingly. Lesson Study deviated from its purpose and created an unfavorable atmosphere at schools (based on the data gathered during the meetings and interviews with the collaborators). After four years of its introduction, the meaning and the value of Lesson Study are still unknown to the teachers, and there is a gap between schools in the process and the frequency of implementing the Lesson Study.

In the following part, the researcher will trace the progress of Lesson Study since it was introduced up till now, look into the related issues, and discuss how Lesson Study as a professional development approach should be.

The Situation of Lesson Study in the Early Stages

When Lesson Study was first introduced in EJS, the aim was unclear and its implementation was unorganized (it is still unorganized, though some schools are managing to organize it in their own ways). In a culture that does not adopt collaboration in teaching, and where competition and comparisons are dominant between teachers, Lesson Study was nothing but a criticism of the teacher's practice. When a teacher does a Lesson Study, the main focus is always on the teacher. All the observers do not even bother to recognize the positive side of the teacher's performance, and they target only the weak points and the faults. In the post-lesson discussion, they critically raise these negative points and compare their practices to the

ones they observed to prove themselves better, which would sometimes lead to a fight and deviate from the original goal. The class teacher feels hurt when criticized since it is their class and they believe they know the content better than anyone else.

Another issue is that Lesson Study has become a burden since it is very time-consuming. Teachers spent a long time before the lesson in the preparation process and after the lesson in the post-lesson discussion which exhaust the teachers and put them under unbearable pressure. Moreover, the evaluation process is very strict and is focused only on the teacher's performance in the form of a checklist and does not consider the students' learning. As a result, the Lesson Study lost its essential goal which is improving the quality of the learning for the students by raising the teachers' professionalism through collaborative learning and turned into a big burden on the teachers. It also affected the normal flow of the lessons and worsened the relationships between the teachers since they considered it a contest with winners and losers.

The following Figure 2 is the evaluation checklist form that was used at the very beginning (since it is written in Arabic, it may be unreadable to many readers. However, it shows what the evaluation sheet looks like). The form consists of seventeen items that evaluate the teacher's performance from one (being the lowest) to four (being the highest). Each observer marks a tick on the number adequate to the teacher's performance from his/her viewpoint. In the end, the total number is calculated and it represents the evaluation level of the teacher. Some of the items listed in the evaluation sheet are: 'brilliantly following teaching methods', 'time management, 'interacts with the students during the activities', 'uses the textbook and other guiding aids', etc.

Figure 2. *Observation Sheet of Lesson Study*

The Situation of Lesson Study after Three and a Half Years

1. A Proposal from The Ministry of Education

After more than three years of experimentation and trial and error, the Ministry of Education reconsidered the situation of Lesson Study in EJS based on the issues raised and suggested a new cycle for Lesson Study that consists of (Plan, Perform, Reflect (Feedback), Improve) (based on sheets provided from the Ministry of Education to EJSs). It is expected that the repetition of this cycle will contribute to the development of the lessons and the collaboration between teachers. Only the cycle was introduced, but the know-how of the Lesson Study and its frequency were not proposed. As a result, each school organizes the Lesson Study based on its situation. Some schools do Lesson Studies once a week, while others do them once or twice a month.

2. The Lesson Study Cycle in EJS

The schedule of the Lesson Study classes is decided by the principal of each school based on the timetable and is distributed among the teachers. The principal also decides the frequency of the Lesson Study and who will participate in each lesson. Of course, other teachers are welcome to participate as well if their schedule permits; however, the teachers whose names are listed in a certain lesson are obliged to participate in and observe that lesson to ensure that all teachers do and participate in a Lesson Study.

The cycle consists mainly of three stages (Plan, Perform, Reflect (Feedback)). In the planning stage, the teacher and the previously-decided participants plan the lesson collaboratively and create a lesson plan. In the performing stage, the teacher delivers the class as planned. In the reflection stage, the teacher and the participants (the principal sometimes participates as well) reflect on the class by confirming whether the class was performed as planned and the goals were achieved. They also provide feedback and comments to the teacher for future improvement.

3. Performing a Lesson Study

3.1. Remarkable Progress in Teachers' Collaboration

Compared to how things started, teachers now collaborate more. Critical opinions and comments are less and are replaced by constructive feedback that aims to the development of teachers' capacity and ability. In the reflection session, the participants start by thanking the teacher for opening his/her class for observation, then they discuss the good points, what they learned from the lesson and the teacher's practice, and what left a great impression on them, and they appreciate the teacher's strong points. Then, they give some advice to the teacher for future development and improvement. If the teacher has a certain issue or a problem, they try to find solutions together. Figure 3 shows the new observation and feedback form.

Figure 3. *New Observation Sheet of Lesson Study*

The new form provides more space for the observers to share their opinions and feedback in a more non-evaluative form. It is divided into five parts: comments on the students, comments on the teacher, positive points, areas to improve, and questions. This means that the observers now will have to focus on both the teachers and the students. The reflection did start to include the students as well. However, unfortunately, most of the comments address the superficial attitude of the students and do not dig deeply into what students learn and how they learn, how they develop their thinking, how they engage in the activity, what kind of conversation takes place between the students, etc. For example, students are (not) actively participating, students (do not) follow the rules, students (do not) communicate well with the teacher, etc. Therefore, the teacher is still the center of the observation. Kimura and Kishino (2019) argue that when the focus is always on the teacher and the teaching methods, the ultimate goal will always be searching for methods that make the children learn well to achieve the teacher's targets (Kimura & Kishino, 2019, p.12).

3.2. The Lesson Should be Delivered as Planned

The researcher observed many lessons during the investigation process. It became clear that the teacher always fears how he/she will be evaluated by the observers; therefore, they only care about performing the lesson as planned. As previously mentioned in section 2, during the planning stage, the teacher and the observers plan the lesson together in detail and they even decide on the scenario and the flow of the lesson. Kimura and Kishino (2019) state that in order to create an engaging environment for the students that enables them to face their learning and problems autonomously and inquire into them to deepen their understanding, the teacher should follow the students' learning through the class and grasp their inquiry process and flow of thinking, study the design of the class, and explore different approaches to redesign their class in a way that enables the children to deepen their thinking and learning (Kimura & Kishino, 2019, p.13). However, in the case of EJS, the conversation between the teacher and the students, the content of the activity, the method and its duration, the aiding tools that will be used, etc. are all decided in advance in detail with no space to change. As a result, the teacher becomes situated in a very rigid frame, and they lose their freedom and agency to lead their class. This is by turn reflected on the students as well. They lose their freedom to think and their agency to engage. They become bound by the teacher's instructions; they only follow but they cannot lead their activity nor create new methods to engage. The teacher only cares about how they are observed, the strategies they use, the time management, following the plan, and all the points that are related to their evaluation. This puts the teacher under great stress and makes students' learning very superficial.

Some Examples of the Comments Raised during Reflection Sessions

Comments on the Students: actively engaged, sharing their opinions, listening to the teacher, behaving well, concentrating, sitting in a good shape.

Comments on the Teacher: interacting well with the students, listening well to the students, encouraging all students to participate, well-prepared, able to deliver the information, covering the lesson well, audible, use the whiteboard effectively, uses many strategies.

Areas to Improve: using the whiteboard, making the board more visible, work on engaging all the students.

It is obvious that the comments on the students are all related to their appearance and attitude in class, and they do not address their learning process or the development of their understanding and skills. On the other hand, the comments on the teacher are still teacher-centered in a superficial way that hinders their professionalism and freedom.

Conclusion and Areas to Improve

In EJS, Lesson Study is a tool to evaluate teachers' performance rather than to improve the quality of education for students and create an engaging environment for them. The feedback the teachers get addresses only the performance and appearance and do not address any academic issues which makes it a stressful evaluation process rather than a tool for sustainable professional development.

The researcher created a questionnaire to measure the teachers' perception of the Lesson Study and its goals. Based on the data gathered from the questionnaire, the researcher will

address the issues raised by the teachers and collaborate with the four schools to establish an organized system for effective Lesson Study, based on the situation in each school. A Lesson Study that aims to cultivate and develop teachers' abilities and professionalism and not to evaluate their performance.

Acknowledgment

Reference

Fullan, M., Quinn, J., McEachen, J. (2018). Deep Learning　Engage the World Change the World (The Japanese Version). Meiseki Shoten.

JICA, Center for Curriculum and Instructional Materials Development. (2018). دليل الأنشطة الخاصة [التوكاتسو]. [*Special Activities "Tokkatsu" Guidebook*]. Egypt's Ministry of Education.

Kimura, Y., Kishino, M. (2019). *授業研究実践を変え、理論を革新する。[Lesson Study Practice Change and Theory Innovation]*. Shinyosha.

Mostafa, Y., Hambara, Y. (2018). エジプトの教員養成・教員研修の現状と課題−サウジアラビアとの比較から− [The Current Situation and Problems in Teacher Training and Development in Egypt – A Comparison with Saudi Arabia -]. *Studies in and on Teacher Education, 11*, 29-35.

Mostafa, Y. (2019). エジプト・日本教育パートナーシップ（EJEP）研修１バッチ目での学びを跡付け、省察する。[Reflection on the First Batch of Egypt-Japan Education Partnership (EJEP) Training Program]. *Studies in and on Teacher Education, 12*, 73-77.

Mostafa, Y. (2020). エジプト・日本教育パートナーシップ（EJEP）研修の展開を考察する−自身の実践の発展を意味づける−。[A Study on the Development of Egypt-Japan Education Partnership (EJEP) Training Program – Assessing the Development of my own Practice]. *Studies in and on Teacher Education, 13*, 313-324.

Mostafa, Y. (2021a). Educational Reform Movement in Egypt towards 2030 Vision: Learning from History to Incorporate New Education. *Journal of School Improvement and Leadership, 3*, 115-125.

Mostafa, Y. (2021b). The Role of Administrators in Facilitating the Implementation of Tokkatsu in EJS: Learning from EJEP Trainees' Practices towards Egypt Vision 2030. *The IAFOR International Conference on Education - Hawaii 2021Official Conference Proceedings, 6,* 221-233.

Mostafa, Y. (2021c). エジプト日本型学校（EJS）の教員の研修後の取り組みを調査し考察する−EJEP 研修の意味と価値を探る−。[Investigating and Studying the Initiatives of the EJS Teachers After the EJEP Training Program – Looking into the Meaning and the Value of the Training]. *Studies in and on Teacher Education, 14*, 129-139.

Mostafa, Y. (2021d). The Implementation of Tokkatsu as a New Co-Inquiry Approach in Egypt-Japan Schools -. *European Journal of Teaching and Education, 3*(3), 15-24.

Tsuneyoshi, R., Sugita, H., Kusanagi, K. N., Takahashi, F. (2020). *Tokkatsu The Japanese Educational Model of Holistic Education*. World Scientific.

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Research on the Sustainable Development of Traditional Crafts Under the Perspective of Service Design

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Abstract

Nowadays, along with time and technological advancements, the development of intelligent industry and industrialization is gradually replacing traditional crafts, which leads to the gradual shrinkage or even disappearance of traditional crafts. However, traditional crafts' unique cultural values and individual creativity are irreplaceable. As a result, it is critical to investigate the direction of traditional crafts' long-term growth. To better adapt to the changing times, this paper proposes to use service design thinking to build a sustainable development path for traditional crafts. This paper presents the use of service design thinking to create a sustainable development path for traditional crafts based on inheritance, committed to innovation, explores new modes of traditional craft development, and highlights the modern value of traditional crafts. It gives craftsmen a sense of cultural belonging and identity, thus ensuring and promoting the continuity of craft development. It is significant for the long-term survival of traditional crafts.

Keywords: Traditional Craft, Service Design, Sustainability, Value Innovation

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Introduction

A new service-oriented economy has challenged the traditional product development model. Still, it has also pointed the way to a new era of innovation, influencing and reconfiguring people's values and experience perceptions. This ubiquitous service model is a systematic combination and layout of the physical and non-physical elements of the service components. Thus, generating new service values and leading to deal innovation, shifting the traditional product competition to service competition, and gradually transforming the product production economy into a service-based economy.

A. Bottlenecks in the development of traditional crafts

The arrival of the new economic era has caused considerable changes in people's lifestyles and ways of thinking. To a certain extent, the understanding and use of crafts have also changed. As a result, many traditional crafts are gradually being eliminated or even disappearing from public view. Their unique cultural value and individual creativity are irreplaceable as crafts that carry culture. Therefore, it is vital to study the long-term direction of traditional skills. Before doing so, we need to understand the difficulties faced by conventional crafts to target and crack them. The following are some of the main dilemmas traditional crafts face.

1) The technical production of crafts is a problem for the transmission of skills

The technical production of crafts is crucial to passing on craft culture. Some craftspeople today need help with how to balance tradition and innovation. For example, the technical production heritage of traditional crafts is one-way in nature. Also, traditional craftspeople usually teach apprentices on a one-to-one basis and pass on relevant production techniques, which leads to the one-way and narrow nature of the technical production heritage of traditional crafts. At the same time, some old-fashioned production techniques have been solidified in the transmission process. It is challenging to innovate them to meet current needs, which leads to a need for more sustainable innovation in crafts.

2) Low literacy of craftspeople

In the past, most craftspeople chose crafts because they did not have the opportunity to receive higher education or were engaged in producing specific skills on a family basis, which usually did not require a high educational background. Conversely, this has resulted in craft practitioners only being able to engage in low-end cultural creations, making it difficult for them to innovate in the design and production of cultural connotations from a higher cultural perspective.

3) Crafts lack deep-seated cultural connotations

Currently, the market is flooded with "low-end" handicraft products, reflecting the creators' lack of understanding of the deeper cultural connotations behind crafts and how to promote their sustainable development through innovation. Often the only way to promote sustainable development is to imitate the designs of other crafts or to design skills on the surface of the culture. Therefore, the sustainable development of traditional crafts needs to understand the deeper cultural connotations. Secondly, the production of crafts needs to be combined with the needs of the service era, using service design to promote the development of crafts in the

direction of healthy and sustainable innovation from the professional perspective of service and design.

B. Service Design

Currently, the market is flooded with "low-end" handicraft products, reflecting the creators' lack of understanding of the deeper cultural connotations behind crafts and how to promote their sustainable development through innovation. Often the only way to promote sustainable development is to imitate the designs of other crafts or to design skills on the surface of the culture. Therefore, the sustainable development of traditional crafts needs to understand the deeper cultural connotations. Secondly, the production of crafts needs to be combined with the needs of the service era, using service design to promote the development of crafts in the direction of healthy and sustainable innovation from the professional perspective of service and design.

1) The concept of service design

The concept of service design is often understood differently by designers and experts from different fields. For example, in 2008, the Copenhagen School of Interaction Design in Denmark described service design as a discipline that aims to design comprehensive, systematic user processes and pointed to systemic nature as a characteristic of service design. Professor Maag defines service design as designing processes in complex systems and creating shared value with stakeholders. According to Stephen Moritz[3], author of Service Design - A Practical Pathway to an Evolutionary Field, service design is essentially expressed in creative experience design, which primarily serves as a bridge. And with the help of new ways of connecting different organizations to make a practical design easy to use. The academic term service design has yet to be universally defined. As Mark Stickdorn, co-author of 'This is service design thinking,' says: "If you ask different people what service design is, you'll get different answers."

The Dictionary of Design, published under the auspices of the International Design Research Association, defines service design as "the design of services from the standpoint of the user" [4-5]. Service design was viewed as a systemic design thinking approach within the design field that coordinates numerous stakeholders to create innovative and systematic planning by constructing service providers and related touch points to improve the service experience and user experience from the user's perspective.

2) Service and product relationships

2.1) Integration of products and services

In the era of the service economy, new values and meanings are integrated into products. Only by integrating services into products can new values be generated and systematic service products under the requirements of the new economy be realized.

2.2) The difference between tangible products and intangible services

Generally speaking, products are visible and concrete substances, while services are primarily abstract and invisible immaterial substances. Services are usually created by both the product provider and the customer. This 'abstract, invisible immaterial' service differs from a product

in that a product is a material entity that can be seen, touched, and felt by the consumer; a service, on the other hand, is invisible, intangible, and present in the process of using a product.

Secondly, according to scholars such as Russell, there are four unique features of services, such as Intangibility, Inseparability, Heterogeneity, and Non-persistent. Table 1 below shows the difference between a product and a service.

The difference between a product and a service	
product	service
Physical, tangible, touchable, figurative	Immaterial, intangible, invisible, abstract
Material entities generated through production	It is not necessary to be able to obtain it using production
Ability to store	Not necessarily storable
There is a segregation relationship between production and goods consumption.	There is an inseparable relationship between production and consumption.
There is a different relationship between the production process and the consumer buying it.	Services are created during the user's use of a specific product and represent an interactive, inseparable relationship between the service and the customer.

Table 1. The difference between a product and a service

2.3) Focus of investigation in service design

User-centredness is the central thinking of service design[6]. The entire design process should focus on the user, designed to achieve the user's behavioral needs. Therefore, the essential thing in service design is analyzing the user's needs. Also, emphasize the understanding of the user's context, and require a holistic and systematic grasp of the interaction with the user through the establishment of a series of service "links" to discover the user's pain points in the use process and to explore the opportunities. From there, crafts can be developed with this in mind.

2.4) Methods and tools for service design

Service design aims to understand users better and match their experience needs to serve them better. Service design can only use traditional design methods and research tools if it is different. Instead, it needs to use knowledge from various fields. Service design has developed some of its forms and tools through creating, refining, and updating service design content by scholars from different areas. For example, brainstorming, user journey mapping, user experience flow mapping, user profiling, service blueprinting, service context mapping, service system mapping, and stakeholder mapping are standard methods in service design. Nonetheless, due to the complexity and uniqueness of the study object, alternative methodologies and tools should be used in practical applications for other design objects.

1) Brainstorming method: This method is applied to solving problems in service design. Specifically, the participants present ideas and suggestions for improvement around a specific issue. The participants can be managers from the company, stakeholders, or service designers.

2) The User Journey Map is a tool for visualizing the interaction process of users and products from the user's point of view, and its essential components include user roles, timelines, touchpoints, user expectations, and actual user experiences. The user's experience in a given environment is recorded in a different chronological order. In this process, the critical 'touchpoints' generated by the user's contact with the service form a systematic service flow. They map the user journey. Thus helping designers identify the user's pain and satisfaction points throughout the trip and providing design opportunities and ideas to solve the problem.

3) Service Blueprint, a tool for describing service systems and processes in detail, is a common and accurate way of describing service design based on user behavior. That is because it focuses not only on the front-end user interaction behavior but also on the back-end service behavior and support processes. It documents user behavior and puts the focus on the internal coordination process.

4) User experience flow chart: this method essentially means analyzing the specific process of a user doing something and the user experience and feelings after each procedure. The first part is a flow chart of user behavior, and this method is mainly based on interview analysis. The second part is the user emotion change diagram. This diagram explicitly describes the user's experience and feelings during the interaction of the touch points in each process, giving the designer a more intuitive feel. The third part analyzes opportunity points (or pain points). The designer analyses the local area and uncovers problems in the service process, thus creating opportunities for innovation.

5) User profiling is an indispensable tool in service design. It is a tool to describe users' needs and is generally used in the early stages of design. In particular, the research team will first look into many users for the study and analysis. Then, they will divide the users into different types based on their behavior and views by matching their names, photos, behavior traits, and scene descriptions. The research is then divided into user groups, and finally, user personas and profiles are created for each user group. Although these user personas are fictitious, they are based on studying real user motivations and behavior. This simple and intuitive approach to user research not only helps designers gain better insight into users and make design decisions, but this type of approach can also help stakeholders in projects better tailor their approach to innovation.

6) Service context diagrams: A tool for describing the user's environment and behavioral flow in detail from a global perspective, similar to a storyboard or comic strip, for a specific service context. This approach is essential for studying of services that contain a context for user experience use. It can be used at any stage of the service design process and can be used as a tool to evaluate, understand, and analyze the entire service system.

7) Stakeholder mapping: is a way of translating the interrelationships between these different interest groups into visual diagrams that are analyzed to obtain conclusions from the stakeholder perspective, facilitating further extraction of specific needs and pain points for service design.

C. The concept of sustainability in service design

The critical principle of service design is 'user-focused research,' so sustainability in the context of service design lies in the fact that the entry point for sustainable innovation and

development is not a particular group of people. But the broader environment in which humans live requires design innovation through integrating multiple resources. It is a numerous service platform for both designers and traditional craft artisans, as well as for enterprises and governments. By building a tangible and intangible service platform, sustainable innovation development based on crafts is achieved, driving the inheritance of traditional crafts, the realization of value innovation, and the promotion of cultural soft power.

D. Methodology for sustainable research on crafts from a service design perspectives

1) Stakeholder Analysis

Linking up the stakeholders in the whole service process, such as users, platform service providers, non-genetic inheritors, and the government, to promote sustainable innovation of crafts can be better.

2) Building a blueprint for user group services

Different user groups have other characteristics, resulting in differences in user behavior, and these differences will lead to further contact points and experience effects in the service design process. Therefore, user group service blueprints should be constructed about the characteristics of different user groups.

3) In-depth research into the lifestyles of craft users

Presently, the need for in-depth research into the lifestyles of craft users is limiting the development of traditional crafts. To innovate the sustainable long-term growth of traditional skills requires research into customer needs and current lifestyles and establishing a user research system. While meeting the users' needs, the product's service experience should be innovated, contributing to crafts' sustainable and long-term development.

4) Constructing a more profound innovation of the traditional craft service model

One of the advantages of service design is that it can produce new service models. Traditional crafts were mainly made and then sold, but this past model of craft development no longer meets the requirements of today's service design economy.

Therefore, there is a need for in-depth service innovation, which should be combined with current lifestyles to improve and perfect. For example, DIY crafts are a popular form of craft experience. This craft service model provides a platform for children who want to learn crafts and offers courses that allow craftspeople to earn training fees and expand the dissemination of related crafts. This in-depth and innovative service model provides craftsmen with a diverse and sustainable long-term development approach.

5) Building brand communication for crafts

Brand communication mainly refers to some original designs to promote the unique design style and brand cultural connotation of the relevant products through their product design and brand design. Therefore, handicraft brand culture can be constructed, relevant handicraft brands can be established to achieve a good brand culture, corporate culture, and craft

culture, and ultimately drive the sustainable long-term development of handicraft service design through handicraft brand communication.

6) Behavioral and psychological experience service design

Physical behavior and psychological feelings are the two levels of examination of users under the perspective of service design, both of which are based on the use of product functions. Therefore, regarding user experience, crafts that trigger users' spiritual resonance through the productive output of cultural content should focus on users' behavioral and psychological experiences regarding service design. So that they conform to the product experience objectives of usability, ease of use, and emotionality.

Figure 1. Physical behavior and psychological feelings under
the perspective of service design

7) Visual service design

In addition to having a basic functional service design, crafts must also consider a visual service design. That is because the visual effect of a craft product is closely related to its specific information content. The visual aspect of a craft product with a service process is primarily a platform for interaction between the user and the service provider. Simple visual graphics can make serving users more fluid and easy to communicate, which is also an effective way to drive the sustainable development of crafts through visual design.

8) Communication and feedback service design

Through feedback and communication, end outcomes and service efficacy may be confirmed. The benefit of handicraft products needs to meet the needs of multiple levels. Firstly, it is necessary to design the service process and content to meet the service needs of the target group. Secondly, it is also essential for the service content to fulfill the social responsibility of crafts to spread culture and promote traditional crafts. On the other hand, dissemination, and feedback can encourage service improvement and refinement, avoiding detachment from user needs, thus effectively ensuring and enhancing the innovative value of the service content.

Therefore, crafts under service design thinking need to consider dissemination and feedback design to adapt to users' service needs. Crafts achieve cultural and technological impact through communication channels, combined with feedback results from user experiences to validate the relevant service outcomes. This service design can better validate the effectiveness of the service experience of crafts.

Figure 2. Crafts under service design thinking need to consider dissemination and feedback design to adapt to users' service needs

9) Sustainable service design for value co-creation

Service design for crafts is a two-way interaction, and its value creation requires the joint participation of handicraft makers, users, and relevant stakeholders. It is necessary to use service design methods such as service blueprints to build a craft service system to guide users and crafts to communicate with each other and improve the value of the experience. And on that basis, to co-create the value of the experience. To foster the growth of this innovation's value in a way that is both beneficial and long-lasting.

10) Systematic service design that combines multiple touchpoints

The service experience of crafts is a combination of multiple levels and multiple touchpoints, which leads users to form different service experiences at different levels and between different touchpoints. The touchpoints provide a way for these otherwise intangible service interactions to become more evident and meaningful. Ultimately, a systematic service design for crafts can be formed through the combination of multiple touchpoints, thus driving the sustainable long-term development of crafts.

Conclusion

In the service economy, products and services have become one. Service design has outstanding advantages in solving complex problems and coordinating long-term development, so it has become a systemic design theory at the forefront of the current socio-economic form. Traditional crafts are an essential material carrier of culture. As times change, changes in people's aesthetic and consumption habits have led to related problems in the development of crafts. Traditional crafts have also been exploring new design ideas and methods. In the context of the recent economic era of service design, service design thinking, techniques, and tools need to be used to help crafts develop better in the long run. This paper summarizes the key points that hinder the development of traditional crafts and introduces service design thinking into the innovative and sustainable development of crafts, thus exploring a new path for handicraft development and promoting handicraft heritage and sustainable development.

Acknowledgements

References

Daniel B. The Coming of Post-industrial Society[M]. Basic Books, 1976.

Ding Wen-tao, LI Yun-chuan. Enlightenment of Service Design to the Innovation of Dai Crafts Design[J]. Sichuan Drama, 2017(2): 109-112.

Holmlid S, Evenson S. Bringing Service Design to Service Sciences[C]. Management and Engineering,Palisades:Service Science-Research and Innovations in the Service Economy, 2008.

Stefan Moritz. Service Design Practical access to an evolving field[M]. 2009.

Tu Xin-li, LIU Bo, LIN Wei-wei.Survey of Big Data[J].Application Research of Computers, 2014, 31(6):112—116.

Xin Xiang-yang,　WANG Xi.Focus on Medical Health Design [J].Creation and Design 2014(6):6—7.

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Embodied Cognition: A Strength for Adolescents' Academic Achievement and Well-Being in the Classroom?

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

Background**:** Positive effects of embodied cognition and physical activity on executive functions, well-being and learning outcomes, have been found in toddlers and elementary school children. So far, embodied cognition in adolescents has not received much research attention. The aim of this study was to examine whether embodied cognition within a classroom context positively affects executive functioning, academic well-being and learning outcomes in adolescents.

Methods: A 5-week pilot study was performed in 4th grade secondary school with 16 students performing cognitive and motor exercises using a SenseBall© while learning and 26 other 4th graders attending class without the embodied cognition training. Pre- and post-tests were administered in both groups to determine students' executive functions and well-being. The intervention's impact was assessed on learning outcomes for Biology, French and Geography.

Results and conclusion: Embodied cognitive training showed positive but limited effects in terms of adolescents' working memory, satisfaction, social relationships, pedagogical climate and learning outcomes for French and Geography. Hence, this study may potentially contribute to insights within cognitive processes intertwined with learning processes in adolescents.

Keywords: Embodied Cognition, Executive Functioning, Academic Well-Being, Learning Outcomes, Adolescence

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Introduction

Physical Activity and Cognition

The connection between physical activity, well-being and cognition has already attracted many scientists' attention (Gomez-Pinilla & Hillman, 2013. Kempermann, 2008. Colcombe et al., 2004. Praag, 2008. Cotman et al., 2007). Physical activity may enhance well-being and has the capacity to reduce mental health related disorders (Gomez-Pinilla & Hillman, 2013). Furthermore, correlations between physical activity and cognitive abilities were first confirmed in experimental animal studies. Physical activity in rodents triggers a cascade of neurological changes in the hippocampus - a brain structure that plays a crucial role in memory processing – causing enhanced memory functioning (Gomez-Pinilla & Hillman, 2013). Physical activity in the early years of life affects learning capacity (Kempermann, 2008). Human studies show that being physical active increases task-related activity of cortical brain regions important for task completion (Colcombe et al., 2004). Physical activity increases neurogenesis and enhances the central nervous system's metabolism which plays a crucial role in maintaining the structural and functional plasticity of the brain, and is associated with learning and memory (Praag, 2008. Cotman, et al., 2007). Research in 4-to-18-year-old children find a correlation between physical activity and cognitive performance in language tests, math tests, memory and reading (Gomez-Pinilla & Hillman, 2013).

Embodied Cognition

Placing cognition in a sensorimotor context (consisting of sensory input, perceptual processing and muscle control) is called embodied cognition (Koziol et al., 2012). Briefly, embodied cognition is the interplay between body and brain, and within an educational context, it can be executed as a study method in which both senses and limbs are stimulated to improve cognitive abilities (Wilson, 2002). In conjunction herewith, physical activity has the potential to alter synaptic transmission in such a way that thinking, decision making, and behaviour are adjusted in brain structures involved in executive functions (Kopp, 2012). Executive functions are a subset of goal-oriented processes in our brain that allow someone to consciously direct their behaviour (Miyake et al., 2000). These functions are predominantly regulated in the prefrontal cortex. According to researchers, three core executive functions can be distinguished: (1) inhibitory control - the ability to control your own behaviour, emotions but also attention, (2) working memory - the temporarily retention of relevant information and its mental processing, and (3) cognitive flexibility – the ability to flexibly adapt to new demands, rules or priorities that arise with changing perspectives (Diamond, 2013). It is clear that cognitive processes are related to physical activity, yielding an inseparable interaction between the brain, the body, and the world (Mcclelland et al., 2014. Foglia & Wilson, 2013. Price et al., 2009. Wilson, 2002).

Educational research in toddlers show a significant improvement of recalling course content after a six-week embodied cognition intervention during science classes (Mavilidi et al., 2017). Another study by Mavilidi et al. (2018) show that toddlers who implement embodied cognition perform better in terms of executive functions (Mavilidi et al., 2018). As a result of physical activity, cerebral blood flow and oxygen supply to specific brain regions (responsible for learning and memory) rises (Hillman, et al., 2008). Research by Toumpaniari et al. (2015) show increased enthusiasm when a new foreign language is learned through embodied cognition (e.g., gestures or task-related physical activities) in comparison to toddlers who did not learn through embodied cognition. This positive attitude can induce

better performances in learning activities (Toumpaniari et al., 2015). A study from McClelland et al. (2014) found that physical activity in a classroom context - i.e. embodied cognition - with primary school children leads to an improvement in learning outcomes for the courses English and math after a 12-week-intervention (Mcclelland et al., 2014). Other researchers argue that physical activity with seven-year-old children can result in about a 25% significant increase in learning outcomes of math after nine months while the control group only shows a significant increase of 17% (Have et al., 2018). Mullender-Wijnsma et al. (2019) performed a two-year embodied cognition intervention study in eight-year-old children and found better learning results in math and language courses (Mullender-Wijnsma et al., 2019).

However, only a few studies have been executed on embodied cognition in secondary education. One study demonstrates that students who combine cognitive (learning) tasks with the use of a bicycle desk have increased motivation and enhanced mental resilience compared to students who did not execute this type of embodied cognition (Pilcher & Baker, 2016). Similar results are found in high school students that studied the cranial nerves (e.g., the hypoglossal nerve) through embodied cognition (mimicking cranial nerves, e.g. sticking out the tongue because of the nerve functions in the tongue muscles) (Dickson & Stephens, 2015). Hence, more in-depth research is necessary to investigate whether this motivation could have a significant effect on overall well-being.

Purpose of the Present Study

Previous research has shown a strong relationship between embodied cognition and the improvement of executive functions, academic motivation and learning results, especially in preschool and primary school children (Mavilidi et al., 2017. Mavilidi et al., 2018. Toumpaniari et al., 2015. Mcclelland et al., 2014. Have et al., 2018. Mullender-Wijnsma et al., 2019). Studies on the effects in adolescents are less well covered in academic research. Hence, the aim of the current pilot study was to examine whether embodied cognition positively affects executive functioning, learning outcomes and overall well-being in adolescents through the implementation of an embodied cognitive training (ECT). Current study can provide us with more insight into cognitive processes intertwined with embodied learning in secondary school adolescents.

Methods

Participants

Participants were students from a public secondary school in Maaseik in the Flemish part of Belgium. The intervention group consisted of 16 students (of whom eight boys) in their 4th-year (study area language and sciences, aged 15 till 17 years, M = 15.56 years, SD = 0.63). The control group consisted of 26 students (of whom 11 boys), also in their 4th-year (study area economics and human sciences, aged 15 till 17 years, M = 15.33 years, SD = 0.48). Selection of the students took place through the age of the pupils (adolescence = target group), and the willingness of teachers (and corresponding courses) to participate. Dutch was the first language of all students and they had normal (or corrected to normal) vision and hearing. None of the students had an officially diagnosed developmental disorder or psychiatric disorder. Since all participants were still minors, both students and parents signed an informed consent, guaranteeing anonymity and safety during the whole intervention period. Students were also informed that they could stop their participation at any time for

any reason. This study was approved by the Medical Ethics Committee of Hasselt University (Belgium).

For the executive functioning and academic well-being tests, only 13 and 15 students were included for the control and intervention groups respectively due to Covid-19 quarantine. For learning outcomes, 26 and 16 students were included in the control and intervention groups respectively. Group characteristics are given in table 1.

	Executive Functions and Academic Well-being Tests		Learning Outcomes	
	Control Group (n = 13)	Intervention Group (n = 15)	Control Group (n = 26)	Intervention Group (n = 16)
Sex: Number of Boys (%)	4 (30.77)	11 (73.33)	8 (30.77)	11 (68.75)
Mean Age (Years)±SD	15.08±0.29	15.47±0.52	15.33±0.48	15.56±0.63
Mean BMI (kg/m²)±SD	21.31±2.40	21.10±2.79	21.46±2.31	21.94±2.99
Mean Received Training Number±SD	0	8±0.74	0	8±0.73

Note. SD = standard deviation, n = number of students.

Table 1: Student's Characteristics.

Procedure

Students had a practice session with a SenseBall© before the start of the intervention. The intervention period lasted for five weeks in which students performed five long (50 minutes) and four short (10 minutes) ECT sessions based on the participated teachers and accompanying courses. During these sessions, course content for French, Biology, and Geography was rehearsed rhythmically by using the SenseBall©. The exercises consisted of eight series that were designed by a youth football coach that is experienced in ECT, and the difficulty level was gradually increased with each exercise. Additionally, a Dutch training video was made available online for the teachers and the students in which all the physical exercises with the SenseBall© were clearly demonstrated (Everaert, 2021). The control group did not participate in ECT but followed the regular curriculum.

All students – regardless of their participation in the intervention or control group – administered pre-intervention (pre-I) and post-intervention (post-I) tests using a computer, assessing their executive functioning and well-being at school. The assessment of executive functions comprised of five validated tests: a Stop-Signal Test (response inhibition and impulse control), an Attention Network Test (abbreviated ANT, alertness and attention) and a series of Attention Span Tests (AST) including a Reading Span Test, an Operation Span Test and a Mixed Span Test (all three examining working memory). Details are given in appendix A. Academic well-being was assessed by a validated questionnaire, developed and used by the Flemish Ministry of Education (Vlaamse overheid, 2013). Academic well-being was defined in terms of satisfaction (school- and class environment), engagement (focus and

concentration during the courses), social relationships among students, pedagogical climate (student's vision on the teacher) and academic self-concept (student's vision on their learning outcomes). The questionnaire was completed individually through a Google Form.

The learning results for the courses French, Biology, and Geography were measured by calculating the mean grades before and after the intervention. A visualization of the intervention period is given in figure 1.

Figure 1: Visualization of the intervention period.

In summary, the following participants' data was collected: name, age, sex, body weight, length, body mass index (BMI), executive function test outcomes, well-being test outcomes, and learning outcomes for French, Biology and Geography.

Statistical Analysis

Statistical analysis was executed using R (RStudio v1.2.1335). A significance threshold was set at *P*-value <0.05. Data of the executive function tests, well-being test, and learning results were log-transformed to meet the criterium of normality.

A two-sided paired t-test – also called the within-groups hypothesis in this study - was done to check whether there was a difference within the pre- and post-executive function tests (mean reaction times), pre- and post-well-being at school and pre- and post-learning outcomes for French, Biology and Geography in the intervention group or in the control group. Besides, an unpaired t-test – called the between-groups hypothesis in this study - was executed to check whether there was a difference between the intervention group and the control group for the executive function tests (mean reaction times), well-being at school and learning outcomes for French, Biology and Geography. Effect sizes were expressed as Cohen's d.

To control for possible effects of covariates between two or more groups, and to increase statistical power because of low sample size, the same associations were checked via an ANCOVA-model analysis with the integration of independent variables (executive functions: mean RT pre-I; well-being: mean well-being score pre-I; learning results: mean learning results pre-I). Besides, the ANCOVA-model included following covariates: sex, BMI, number of received trainings, and groups (received the intervention [intervention group] or not [control group]). These covariates were added together to the ANCOVA-model. Assumptions were met (normality, equal variance, independent observations, and linearity between the independent variables with the mean RT, the mean well-being score and the mean scores of the learning results after the intervention) except for homogeneity. Effect sizes were calculated using generalized eta squared.

Results

As mentioned in the methods section, unpaired and paired t-tests were performed to check whether embodied cognitive training ensured better executive function test results, higher academic well-being and higher learning outcomes. Few results have emerged from these t-tests. Additionally, it was opted to perform the ANCOVA model analysis to control for possible side effects and to increase statistical power. Overall, more significant results have emerged from this analysis with bigger effect sizes.

Embodied Cognitive Training and Executive Functions

No difference was found between executive function Reaction Times (RT) of the intervention group and the control group post-I (Table 2). Hence, we checked for possible main effects and interaction effects within the intervention or control group by building an ANCOVA-model (Table 3). The standard model included 'mean RT pre-I' to examine the effect of this variable on mean RT post-I. The standard model also included following covariates: BMI, sex, number of received trainings, and group (intervention versus control group). The standard model failed to show significant effects (Table 3).

	Pre-I			Post-I			Pre- and post-I	
	I	C	I–C	I	C	I–C	I pre – I post	C pre – C post
	M ± SD	M ± SD	*P (d)*	M ± SD	M ± SD	*P (d)*	*P (d)*	*P (d)*
Stop Signal Test	242.40 ±482.47	249.42 ±420.92	1.00 (-0.01)	239.80 ±450.13	244.08 ±450.08	0.82 (-0.01)	0.79 (0.00)	1.00 (0.01)
Attention Network Test	580.13 ±126.96	622.33 ±129.36	0.17 (-0.23)	572.60 ±124.03	621.17 ±155.02	0.06 (-0.24)	0.68 (0.04)	0.96 (0.01)
Reading Span Test	18154.66 ± 9748.09	16479.21 ± 8411.43	0.28 (0.13)	16456.51 ± 7043.46	15407.17 ±6649.71	0.37 (0.11)	0.06 (0.14)	0.28 (0.10)
Operational Span Test	8926.14 ±2947.33	12486.18 ±10300.90	**< 0.01** (-0.33)	9201.20 ±3737.29	9372.89 ±3059.13	0.89 (-0.04)	0.61 (-0.06)	**< 0.01** (0.29)
Mixed Span Test	9106.07 ±3359.64	9740.80 ±3930.28	0.44 (-0.12)	9820.98 ±4749.87	8799.27 ±3074.15	0.16 (0.18)	0.23 (-0.12)	**0.03** (0.19)

Note. Pre-I = pre-intervention, Post-I = post-intervention, I = Intervention group, C = Control group, M = mean RT in milli seconds, SD = standard deviation, P = significant when <0.05, d = Cohen's d effect size: small effect size 0.20; medium effect size 0.50; large effect size 0.80.

Table 2: Average Reaction Times (RT) for Pre- and Post-Test Executive Functions.

However, sex was included in the final model since sex can be relationally related to executive functions (Grissom & Reyes, 2019). ECT can be a strength in terms of having a medium effect on working memory in the intervention group within the Reading Span Test ($P < 0.01$, $\eta^2 G = 0.49$) since the intervention group took less time (1698,152 ms) to perform this test (Table 3). However, this positive effect of ECT could not be observed for the Operational Span Test nor the Mixed Span Test. The adolescents within the intervention group took more time (275,054 ms) to perform the Operational Span Test ($P < 0.01$, $\eta^2 G = 0.45$) and the Mixed Span Test (714.914 ms, $P < 0.01$, $\eta^2 G = 0.42$) (Table 3).

Standard model: Independent variable: mean RT pre-I, tested covariates: all

	P	*F*	η²G
Mean RT pre-I	0.07	3.94	0.21
Sex	0.16	2.22	0.13
BMI	0.39	0.78	0.05
Training	0.06	4.25	0.22
Group	0.06	4.20	0.22
Sex*BMI	0.87	0.03	< 0.01
Sex*training	0.66	0.20	0.01
Sex*group	0.74	0.11	< 0.01
BMI*training	0.88	0.03	< 0.01
BMI*group	0.95	< 0.01	< 0.01
Training*group ; Sex*BMI*training ; Sex*training*group ; Sex*BMI*group ; BMI*training*group ; Sex*BMI*training*group	NA	NA	NA

Final model: Independent variable: mean RT pre-I, covariate: sex

Effect between	*P*	*F*	Mean RT Pre-I ± SD	Mean RT Post-I ± SD	η²G
Reading Span Test pre- and post-I	**<0.01**	14.61	18154.66 ±9748.09	16456.51 ±7043.46	0.49
Operational Span Test pre- and post-I	**<0.01**	13.23	8926.14 ±2947.33	9201.20 ±3737.29	0.45
Mixed Span Test pre- and post-I	**<0.01**	10.16	9106.07 ±3359.64	9820.98 ±4749.87	0.42

Note. Pre-I = pre-intervention, Post-I = post-intervention, RT = Reaction Time, ms = milliseconds, P = significant when <0.05, F = variance ratio, η²G = generalized eta squared effect size based on Pearson's r: small effect size 0.10; medium effect size 0.30; large effect size 0.50.

Table 3: Significant Outcome Measures of the Standard and Final ANCOVA-Model for Executive Functions.

Embodied Cognitive Training and Academic Well-being

To test the hypothesis that the mean well-being scores in the intervention group, after receiving the intervention, were higher compared with the control group, an unpaired t-test was conducted. ECT can be a strength in terms of having a medium effect on social relationships ($P = 0.049$, *Cohen's d* = 0.54) after the intervention period in the intervention group (M = 2.28/5) compared to the control group (M = 2.08/5) (Table 4). For satisfaction, engagement, academic self-concept and pedagogical climate, no significant results were obtained post-I. In addition, to test the hypothesis that ECT had a positive impact on adolescence's academic well-being, a paired t-test was performed. This could not be proven (Table 4). However, *P*-values in the intervention group are considerably more towards significance compared to the control group in terms of social relationships (I: $P = 0.08$ -- C: $P = 0.76$) (Table 4).

	Pre-I			Post-I			Pre- and post-I	
	I	C	I–C	I	C	I–C	I pre – I post	C pre – C post
	M ± SD	M ± SD	*P (d)*	M ± SD	M ± SD	*P (d)*	*P (d)*	*P (d)*
Satisfaction	2.98 ±0.54	3.17 ±0.60	0.45 (-0.24)	3.08 ±0.42	3.17 ±0.60	0.77 (-0.12)	0.17 (-0.15)	0.96 (0.00)
Engagement	2.77 ±0.28	2.64 ±0.26	0.21 (0.34)	2.70 ±0.27	2.65 ±0.22	0.66 (0.14)	0.39 (0.18)	0.71 (-0.03)
Academic self-concept	2.89 ±0.26	2.87 ±0.29	0.85 (0.05)	2.80 ±0.29	2.99 ±0.31	0.13 (-0.45)	0.28 (0.23)	0.29 (-0.28)
Social relationships	2.13 ±0.14	2.08 ±0.38	0.46 (0.12)	2.28 ±0.23	2.08 ±0.29	**0.049** (0.54)	0.08 (-0.56)	0.76 (0.00)
Pedagogical climate	2.82 ±0.41	3.12 ±0.31	**0.04** (-0.58)	2.93 ±0.47	3.16 ±0.40	0.16 (-0.37)	0.13 (-0.18)	0.74 (-0.08)

Note. Pre-I = pre-intervention, Post-I = post-intervention, I = Intervention group, C = Control group, M = mean well-being scores /5, SD = standard deviation, P = significant when <0.05, d = Cohen's d effect size: small effect size 0.20; medium effect size 0.50; large effect size 0.80.

Table 4: Average Academic Well-being Scores in Pre- and Post-Test.

Furthermore, an ANCOVA-model was constructed to correct for possible main and interaction effects. The standard model included following covariates: BMI, sex, number of received trainings, and group (intervention versus control). 'The mean well-being scores pre-intervention' was chosen as the independent variable and 'number of received trainings' was chosen to be included in the final model as covariate. This is because both variables showed respectively large and medium significant effects with the mean well-being scores after intervention (Table 5). ECT can be a strength in terms of having a large effect on satisfaction ($\eta^2 G = 0.84$, M pre-I = 2.98/5, M post-I = 3.08/5), and a medium effect on social relationships ($\eta^2 G = 0.48$, M pre-I = 2.13/5, M post-I = 2.28/5) and pedagogical climate ($\eta^2 G = 0.47$, M pre-I = 2.82/5, M post-I = 2.93/5) (all $P < 0.01$) (Table 5).

Standard model: Independent variable: mean well-being scores pre-I, tested covariates: all

	P	F	$\eta^2 G$
Mean well-being scores pre-I	**<0.01**	77.11	0.84
Sex	0.78	0.09	<0.01
BMI	0.62	0.26	0.02
Training	**0.04**	6.10	0.47
Group	0.06	4.29	0.22
Sex*BMI	0.11	2.97	0.17
Sex*training	0.15	2.28	0.13
Sex*group	0.19	1.89	0.11
BMI*training	0.41	0.71	0.05
BMI*group	0.39	0.77	0.05
Training*group ; Sex*BMI*training ; Sex*training*group; Sex*BMI*group ; BMI*training*group ; Sex*BMI*training*group	NA	NA	NA

Final model: Independent variable: mean well-being scores pre-I, covariate:

    number of received trainings

Effect between	P	F	Mean score pre-I ± SD	Mean score post-I ± SD	$\eta^2 G$
Satisfaction pre- and post-I	**<0.01**	77.11	2.98/5 ±0.54	3.08/5 ±0.42	0.84
Social relationships pre- and post-I	**<0.01**	13.80	2.13/5 ±0.14	2.28/5 ±0.23	0.48
Pedagogical climate pre- and post-I	**<0.01**	13.34	2.82/5 ±0.41	2.93/5 ±0.47	0.47

Note. Pre-I = pre-intervention, Post-I = Post-intervention, Mean well-being scores /5, P = significant when <0.05, F = variance ratio, $\eta^2 G$ = generalized eta squared effect size based on Pearson's r: small effect size 0.10; medium effect size 0.30; large effect size 0.50.

Table 5: Significant Outcome Measures of the Standard and Final ANCOVA-Model for Academic Well-being.

Embodied Cognitive Training and Learning Outcomes

A paired t-test was conducted to test the within-group hypothesis if ECT had a positive impact on the mean learning outcomes scores post-I compared with pre-I. Significant results for Biology were obtained for both the intervention (P = <0.01) and control group (P = 0.049) with clear differences in effect sizes (*Cohen's d* = 0.59 intervention group, *Cohen's d* = -0.25 control group) (Table 6). In addition, an unpaired t-test was conducted to test the between-group hypothesis: does ECT had a positive impact on the mean learning outcomes scores in the intervention group compared with the control group? This could not be confirmed since no significant results were obtained for French, Biology and Geography (Table 6).

	Pre-I			Post-I			Pre- and post-I	
	I	C	I–C	I	C	I–C	I pre – I post	C pre – C post
	M ± SD	M ± SD	*P (d)*	M ± SD	M ± SD	*P (d)*	*P (d)*	*P (d)*
French	5.40 ±1.64	6.30 ±2.10	0.99 (-0.34)	5.69 ±2.24	5.00 ±2.14	0.49 (0.22)	0.97 (-0.10)	0.52 (0.43)
Biology	8.50 ±0.81	7.30 ±1.80	**0.01** (0.61)	7.62 ±1.24	7.90 ±1.53	0.69 (-0.14)	**< 0.01** **(0.59)**	**0.049** (-0.25)
Geography	7.20 ±0.94	7.00 ±0.95	0.58 (0.15)	7.80 ±1.02	7.50 ±1.34	0.47 (0.18)	0.12 (-0.43)	0.17 (-0.30)

Note. Pre-I = pre-intervention, Post-I = post-intervention, I = Intervention group, C = Control group, M = mean learning outcomes /10, SD = standard deviation, P = significant when <0.05, d = Cohen's d effect size: small effect size 0.20; medium effect size 0.50; large effect size 0.80.

Table 6: Average Learning Outcomes in Pre- and Post-Test.

Possible main effects and interaction effects were examined within the intervention and control group by building an ANCOVA-model. The standard model included following covariates: BMI, sex, number of received trainings, and group (intervention versus control). The 'mean scores of learning outcomes pre-I' was only included in the final model since no covariate and only this variable demonstrated a significant medium effect ($P < 0.01$, $\eta^2 G$ = 0.40) with the mean scores of learning outcomes post-I (Table 7). ECT had a small effect (P = 0.04, $\eta^2 G$ = 0.22) on the mean scores of French post-I in the intervention group (M = 5.69/10) compared with pre-I (M = 5.40/10) (Table 7). In addition, the number of received trainings had a large effect ($P < 0.01$, $\eta^2 G$ = 0.67) on the mean scores for Geography in the intervention group after intervention (increased score of 0.6/10) (Table 7). Lastly, ECT was not a strength in terms of having a medium effect ($P < 0.01$, $\eta^2 G$ = 0.40) on the mean scores for Biology post-I in the intervention group (M = 7.62/10) compared with pre-I (M = 8.50/10) (Table 7).

Standard model: Independent variable: mean learning outcomes pre-I, tested covariates: BMI, sex, number of received trainings and group			
	P	*F*	η²G
Mean learning outcome scores pre-I	**< 0.01**	10.46	0.40
Sex	0.40	0.74	0.04
BMI	0.08	3.51	0.18
Training	0.21	1.68	0.10
Group	0.06	3.95	0.20
Sex*BMI	0.15	2.27	0.12
Sex*training	0.46	0.58	0.04
Sex*group	0.33	1.02	0.06
BMI*training	**0.03**	5.83	0.27
BMI*group	**0.03**	5.84	0.27
Training*group ; Sex*BMI*training ; Sex*training*group ; Sex*BMI*group ; BMI*training*group ; Sex*BMI*training*group	NA	NA	NA

Final model: Independent variable: mean learning outcomes pre-I, covariate: /					
Effect between	*P*	*F*	**Mean score pre-I ± SD**	**Mean score post-I ± SD**	η²G
Biology pre- and post-I	**< 0.01**	10.46	8.50/10 ±0.81	7.62/10 ±1.24	0.40
French pre- and post-I	**0.04**	4.79	5.40/10 ±1.64	5.69/10 ±2.24	0.22
Geography post-I and number of received trainings	**< 0.01**	16.52	7.20/10 ±0.94	7.80/10 ±1.02	0.67

Note. Pre-I = pre-intervention, Post-I = post-intervention, Mean learning outcomes /10, P = significant when <0.05, F = variance ratio, η²G = generalized eta squared effect size based on Pearson's r: small effect size 0.10; medium effect size 0.30; large effect size 0.50.

Table 7: Significant Outcome Measures of the Standard and Final ANCOVA-Model for Learning Outcomes.

Discussion

The current study examined whether ECT had a positive effect on executive functions, academic well-being, and learning outcomes among adolescents in a classroom context. Improvements for these three domains were expected in the intervention group. Despite no significant results were obtained within the (un)paired t-test analyses (expect for social relationships), the ANCOVA analyses resulted in significant effects in terms of working memory, satisfaction, social relationships, pedagogical climate, and learning outcomes for French and Geography in the intervention group because of ECT.

During the initial ECT, the researchers noted that some adolescents had difficulty with the dual-task training: some had difficulty with the motor or cognitive subtask, while others had difficulty with combining them both successfully. Over time, the integration of the dual task training went significantly better, probably because of better control in the brain and neuroplasticity due to new connections (synapses) between the cerebellum, basal ganglia and prefrontal cortex (Olszewska et al., 2021). These synapses can be made quite rapidly since the adolescent brain is plastic. In response to a change in synapses – as a result of learning - the brain will begin to reorganize, enlarge, and works more efficiently (Lundy-Ekman, 2018). In addition, these changes include dynamic reconfiguration of neural connections, myelination – which is important for message transfer -, and neurogenesis – i.e., manufacturing new neuron cells (Olszewska et al., 2021). Furthermore, low to moderate continuous physical activity leads to improved maturation of the myelin sheath and a thicker myelin sheath, causing nerve conduction of stimuli will be faster and more efficiently send out within the neural circuit (Bobinski et al., 2011). During the dual-task training, adolescents were continuously challenged with new or difficult subject matter (challenging cognitive skills) and more difficult SenseBall© exercises (challenging motor skills). Research by Diamond (2000) states that the prefrontal cortex and the cerebellum are activated during cognitive and motor tasks (Diamond, 2000).

No effect of ECT was found in current study on impulse control, alertness and attention. ECT did show small positive effects within the Reading Span Test (working memory). However, the adolescents in the intervention group took longer to perform the Operational Span Test and Mixed Span Test, both also considering working memory. During the course of the executive function tests proceedings, the researchers noted that most of the students had difficulty maintaining focus and attention. This was mainly because of conversations between other students who finished earlier, eventually causing classroom noise. Possibly this explains why no (strong) effect could be shown in current research of ECT on alertness, attention, and working memory (Retalis et al., 2014). Besides, a review concluded that the improvement of executive functions depends on the time of practicing (Diamond & Ling, 2016). Our planned six-week intervention in the current study was reduced by one week because of the Covid-19 measures. Hence, positive effects on executive functions of ECT in our healthy adolescence population, are probably negligible.

Social relationships, which is covered in this research by well-being, improved slightly after the intervention period. This is in line with the subjective findings of the researchers during the interventions' implementation: the students interacted with each other and were motivated to perform the ECT. Previous literature found a correlation between good friendly relationships in a school context and beneficial effects on mental health (Ueno, 2005). Moreover, ECT showed positive effects in terms of satisfaction and pedagogical climate. Within this context, Rita Dangol and Milan Shrestha (2019) examined the influence of

readiness to learn on well-being scores and learning outcomes in high school students. They found a significant relationship between willingness to learn and achieving high learning outcomes (Dangol & Shrestha, 2019). This is in line with research by Michel Bruyninckx - founder of the Michel-Bruyninckx-Method (MBM) - since he investigated the principle of ECT in a soccer context by using a similar experimental design to the present study. He concluded that ECT stimulates willingness to learn (Bruyninckx, s.d.).

ECT had a small positive effect on the average scores for French. Noteworthy, the number of ECT sessions had a medium effect on Geography learning outcomes. These findings are in line with previous research showing a positive relationship between ECT and these outcome measures in elementary school children (Mcclelland et al., 2014. Have et al., 2016). Contents of Biology were less successfully remembered during the ECT since ECT did not have a positive effect on the average scores for Biology. This result was not expected since Biology as well as Geography are both scientific courses. Because of the Covid-19 measures, the scheduled Biology tests at the intervention period end were reduced to one test and this test was taken one month after the intervention period ended.

Strengths and Limitations

Previous research has not focused on embodied cognition in adolescents, which makes the current study innovative and unique. The executive function tests, the well-being questionnaire and 50-minute training sessions were given by the researchers themselves, allowing for sufficient control. In general, there was little result from the t-test analyses, probably because of the low sample size. Once an ANCOVA model was built in which there was controlled for independent variables and covariates, significant effects were found. Besides, due to the Covid-19 pandemic, students were half-time physically present at school causing the intervention- as well as the control group to contain fewer participants. That on its turn influenced the statistical power. Furthermore, the Easter vacation was extended, causing the planned six-week intervention period to be brought back to five weeks. Hence, half of the students of the control group were present during the executive function and well-being test administration at the end of the intervention period. If the intervention period could take longer with more participants, we might have obtained more significant effects and results. Finally, due to strict restrictions on leisure activities and physical contact, students' well-being could be negatively affected. This is in line with research that argues that feeling lonely has a particularly negative impact on adolescents because they are in a sensitive period where socializing with friends is an important part of their development (Loades et al., 2020). In addition, Von Soest and colleagues (2020) show that adolescents have lower life satisfaction due to Covid-19 pandemic concerns (Von Soest et al., 2020). Finally, the intent was to collect data of the previous education of the students' mother (or guardian) and the financial background of the family. The participating school could not provide the desired information due to privacy regulation. Research by Najman et al. (2004) has shown that a significant predictor of mental well-being and cognitive development comes from the financial background of the family (low income) and low socioeconomic status of the mother (Najman et al., 2004).

Conclusion

Embodied cognition has been extensively studied in toddlers and elementary school children, but not yet in adolescents. Current pilot study and explanatory research was implemented as ECT and focused on the target group of adolescence, which made the study innovative. There

can be concluded that ECT showed positive but limited effects on adolescents' working memory, satisfaction, social relationships, pedagogical climate and learning outcomes for French and Geography. Besides, ECT fits closely with recent educational visions in which the curriculum is less teacher-driven, but starts more from a student-centred educational vision. This educational vision takes into account the students and positive psychology within the school. Our research is of social importance as it provides more insights into the cognitive processes entangled with the learning process in adolescents.

Future research should, on one hand, focus on a longer intervention period and larger study population (with and without developmental disorders) resulting in stronger associations and a higher power of the study. As executive functions include important processes, such as working memory and focus, the direct link between executive functions and learning outcomes should be investigated in future research by studying the executive function test outcomes and combine these results with the learning outcomes. Previous research concluded that different aspects of executive functions can be important for learning science courses (Rhodes et al., 2013). Also, more in depth research is necessary about which courses and course contents match with the education model of embodied cognition. Finally, the importance of classroom space and design should be explored. Current research could be repeated in a typologically diverse school setting; e.g., in large classrooms or a covered area with the possibility to use a projector to project the course matter. However, not every school has the ability to provide these diverse settings. Hence, future research should consider the optimal use of classrooms and classroom-design in an ECT setting so it can be implemented in every school context.

Acknowledgment

Appendix A: Description Executive Function Tests

The Stop-Signal Test (duration five minutes, one practice round, four experimental rounds) gave an indication of the adolescent's response inhibition and impulse control. During the 'go task', students had to correctly press the left or right arrow key as quickly as possible in response to the corresponding arrow direction displayed on the screen. During the 'stop task', the arrow turned red after a variable delay, implying that the students were not allowed to press the corresponding arrow key (Figure 2).

Figure 2: Visualization Stop-Signal Test.

The ANT (duration five minutes, one practice round, one experimental round) was performed to have an indication of participant's alertness and attention. Five arrows were shown on the screen of which students had to indicate the corresponding direction of the middle arrow as quickly as possible with the right or left arrow key (Figure 3).

Figure 3: Visualization Attention Network Test.

The AST (duration 30 minutes, one experimental round) is a collection of the Reading, Operational and Mixed Span Test. These tests give an indication of the students' working memory. During the Reading and Mixed Span Test, students had to rate (two to six) sentences for credibility; during the Operational Span Test they had to assess (two to six) calculations. Hereafter, students had to respectively remember words, letters or numbers after each sentence or calculation, which they had to recall later. Each test consisted of fifteen series. An example is given in figure 4 in Dutch.

Andy werd aangehouden door de politie, omdat hij door een gele hemel was gereden.   (6 ÷ 3) + 2 = 7

Figure 4: Visualization Attention Span Test.

References

Bobinski, F., Martins, D. F., Bratti, T., Mazzardo-Martins, L., Winkelmann-Duarte, E. C., Guglielmo, L. G. A. and Santos, A. R. S. (2011). Neuroprotective and neuroregenerative effects of low-intensity aerobic exercise on sciatic nerve crush injury in mice. *Neuroscience, 194, 337-348.*

Bruyninckx, M. (s.d.) Breincentraal leren in voetbal. [Online]. Available: https://www.coachesbv.nl/wp-content/uploads/2016/09/presentatie-m-bruyninckx-16-10-2013.pdf

Colcombe, S. J., Kramer, A. F., Erickson, K. I., Scalf, P., McAuley, E., Cohen, N. J., Webb, A., Jerome, G. I., Marquez, D. X. and Elavsky, S. (2004). Cardiovascular fitness, cortical plasticity, and aging. *Proceedings of the National Academy of Sciences of the United States of America, 101(9), 3316-3321.*

Cotman, C.W., Berchtold, N.C. and Christie, L. (2007). Exercise builds brain health: key roles of growth factor cascades and inflammation. *Trends in Neurosciences*, *30(9), 464-472.*

Dangol, R. and Shrestha, M. (2019). Learning Readiness and Educational Achievement among School Students. *The International Journal of Indian Psychology, 7, 467-476.*

Diamond, A. (2000). Close interrelation of motor development and cognitive development and of the cerebellum and prefrontal cortex. *Child Development*, *71(1), 44-56.*

Diamond, A. (2013). Executive functions. *Annual Review of Psychology, 64, 135-168.*

Diamond, A. and Ling, D. S. (2016). Conclusions about interventions, programs, and approaches for improving executive functions that appear justified and those that, despite much hype, do not. *Developmental Cognitive Neuroscience, 18, 34-48.*

Dickson, K. A. and Stephens, B. W. (2015). It's all in the mime: Actions speak louder than words when teaching the cranial nerves. *Anatomical Sciences Education*, *8(6), 584-592.*

Everaert, L. (2021). Embodied cognitive trainings video. [Online]. Available: https://youtu.be/x_kN7aV6a7g

Foglia, L. and Wilson R. A. (2013). Embodied cognition. *Wiley Interdisciplinary Reviews Cognitive Science*, *4(3), 319-325.*

Gomez-Pinilla, F. and Hillman C. (2013). The influence of exercise on cognitive abilities. *Comprehensive Physiology*, *3(1), 403-428.*

Grissom, N. M. and Reyes, T. M. (2019). Let's call the whole thing off: evaluating gender and sex differences in executive function. *Neuropsychopharmacology, 44(1), 86-96.*

Have, M., Nielsen, J. H., Ernst, M. T., Gejl, A. K., Fredens, K., Grøntved, A. and Kristensen, P. L. (2018). Classroom-based physical activity improves children's math achievement – A randomized controlled trial. *PLOS ONE*, *13(12), e0208787.*

Have, M., Nielsen, J. H., Gejl, A. K., Ernst, M. T., Fredens, K., Støckel, J. T., Wedderkopp, N., Domazet, S. L., Gudex, C., Grøntved, A. and Kristensen, P. L. (2016). Rationale and design of a randomized controlled trial examining the effect of classroom-based physical activity on math achievement. *BMC Public Health, 16, 304.*

Hillman, C. H., Erickson, K.I. and Kramer, A.F. (2008). Be smart, exercise your heart: exercise effects on brain and cognition. *Nature Reviews Neuroscience, 9(1), 58-65.*

Kempermann, G. (2008). The neurogenic reserve hypothesis: what is adult hippocampal neurogenesis good for? *Trends in Neurosciences*, *31, 163-169.*

Kopp, B. (2012). A simple hypothesis of executive function. *Frontiers in Human Neuroscience*, *6, 159.*

Koziol, L. F., Budding, D. E. and Chidekel D. (2012). From movement to thought: executive function, embodied cognition, and the cerebellum. *Cerebellum*, *11(2), 505-525.*

Loades, M.E., Chatburn, E., Higson-Sweeney, N., Reynolds, S., Shafran, R., Brigden, A., Linney, C., McManus, M. N., Borwick, C. and Crawley, E. (2020). Rapid Systematic Review: The Impact of Social Isolation and Loneliness on the Mental Health of Children and Adolescents in the Context of COVID-19. *Journal of the American Academy of Child and Adolescent Psychiatry*, *59(11), 1218-1239.*

Lundy-Ekman, L. (2018). *Neuroscience: Fundamentals for rehabilitation*. Elsevier, Oxford.

Mavilidi, M. F., Okely, A. D., Chandler, P. and Paas, F. (2017). Effects of integrating physical activities into a science lesson on preschool children's learning and enjoyment. *Applied Cognitive Psychology*, *31(3), 281-290.*

Mavilidi, M. F., Ruiter, M., Schmidt, M., Okely, A. D., Loyens, S., Chandler, P. and Paas, F. (2018). A Narrative Review of School-Based Physical Activity for Enhancing Cognition and Learning: The Importance of Relevancy and Integration. *Frontiers in Psychology*, *9, 2079.*

Mcclelland, E., Pitt, A. and Stein, J.F. (2014). Enhanced academic performance using a novel classroom physical activity intervention to increase awareness, attention and self-control: Putting embodied cognition into practice. *Improving schools*, *18(1), 83-100.*

Miyake, A., Friedman, N. P., Emerson, M. J., Witzki, A. H., Howerter, A. and Wager, T. D. (2000). The unity and diversity of executive functions and their contributions to complex ''frontal lobe'' tasks: a latent variable analysis. *Cognitive Psychology*, *41, 49-100.*

Mullender-Wijnsma, M. J., Hartman, E., de Greeff, J. W., Doolaard, S., Bosker, J. B. and Visscher, C. (2019). Follow-Up Study Investigating the Effects of a Physically Active Academic Intervention. *Early Childhood Education Journal*, *47, 699-707.*

Najman, J. M., Aird, R., Bor, W., O'Callaghan, M., Williams, G. M. and Shuttlewood, G. J. (2004). The generational transmission of socioeconomic inequalities in child cognitive development and emotional health. *Social Science & Medicine*, *58(6), 1147-1158.*

Olszewska, A.M., Gaca, M., Herman, A.M., Jednoróg, K. and Marchewka, A. (2021). How Musical Training Shapes the Adult Brain: Predispositions and Neuroplasticity. *Frontiers in Neurosciences, 15, 1-16.*

Pilcher, J.J. and Baker, V.C. (2016). Task Performance and Meta-Cognitive Outcomes When Using Activity Workstations and Traditional Desks. *Frontiers in Psychology*, *7, 957.*

Praag, H.V. (2008). Neurogenesis and exercise: past and future directions. *Neuromolecular Medicine*, *10(2), 128-140.*

Price, S., Roussos, G., Falcão, T. P. and Sheridan, J. G. (2009). Technology and embodiment: relationships and implications for knowledge, creativity and communication. *Beyond Current Horizons*, *1-22.*

Retalis, S., Korpa, T., Skaloumpakas, C., Boloudakis, M., Kourakli, M. Altanis, I., Siameti, F., Papadopoulou, P., Lytra, F. and Pervanidou, P. (2014). Empowering children with ADHD learning disabilities with the Kinems kinect learning games. *The 8th European Conference on Games Based Learning*. Berlin, Germany. (pp. 469-477).

Rhodes, S. M., Booth, J. N., Campbell, L. E., Blythe, R. A., Wheate, N. J. and Delibegovic M. (2013). Evidence for a Role of Executive Functions in Learning Biology. *Infant and Child Development*, *23(1), 67-83.*

Toumpaniari, K., Loyens, S., Mavilidi, M. F., and Paas, F. (2015). Preschool Children's Foreign Language Vocabulary. *Educational Psychology Review*. 27: pp. 445-456.

Ueno, K. (2005). The effects of friendship networks on adolescent depressive symptoms. *Social Science Research*, *34, 484-510.*

Vlaamse Overheid. (2013). Onderzoek het welbevinden van jouw leerlingen. [Online]. Available: https://onderwijsinspectie.be/sites/default/files/atoms/files/Welbevinden_leerlingen_soII_0.pdf

Von Soest, T., Bakken, A., Pedersen, W. and Sletten, M. A. (2020). Life satisfaction among adolescents before and during the COVID-19 pandemic. *Tidsskr Nor Laegeforen*, *16(10).*

Wilson, M. (2002). Six views of embodied cognition. *Psychonomic Bulletin & Review*, *9(4), 625-636.*

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Formulating Indicators of Creativity Among Gifted Learners in the Philippine Context

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

This study aimed to explore indicators that define creativity in the Philippine context. A qualitative textual study was employed which sought the data from varied participants chosen for their ethnic identity, cultural background, type of school, and academic level. The transcribed in-depth interviews were then thoroughly examined through textual analysis. Findings revealed that Filipino creative children (1) process creativity through their cognitive strengths, problem-solving and divergent skills, originality, elaboration, rich imagination and curiosity, (2) are naturally creative, highly motivated, passionate, diligent, hardworking, persistent, perfectionist, friendly, shy, generous, sympathetic, good leaders, respectful, obedient, oversensitive, flexible, resourceful, inventive, risk-takers, open-minded, humble, patient and dedicated to high standards of excellence; (3) create products that are novel, original, purposeful, employ recycling, 4) are influenced by nature, home, school, media, practice and competitions. This study concluded that Filipino creativity is an ability that is natural and God-given, greatly rooted to Filipino family traditions and cultural values. Filipino creative children are highly intellectual who excel in their academic endeavors, socio-civic and art competitions, expressive through their music, art, movement and literary outputs. It is recommended (1) to consider the creativity indicators defined in this study to identify learners' creative potentials and behaviour; (2) to consider the students' family, and specific ethnic culture in designing programs/activities for creative development; (3) for families and schools to support the creative children's needs; (4) for future research to explore studies on creativity from other regions; and (5) to consider adopting the creativity indicators in the development of a creativity tool.

Keywords: Intelligence, Gifted Education, Elementary, Creativity, Filipinos

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Introduction

Twenty-first century education demands the importance of developing creativity in this current climate on globalized, diverse, high technology and fast-paced society. With the unprecedented challenges we currently face in education due to the pandemic, we especially need our children to be taught with creativity for them to gain success in this rapidly changing times (Henriksen, Mishra, & Fisser, 2016). According to the report of *A Policy Brief on the Philippine Creative Industries* (2018)*,* creativity is the third most important skill that companies will want from employees and recruits by 2020 from being the 10th important skill in 2015 (Mercado & Tolentino, 2018).

Perceptions on creativity vary from person to person and it is viewed through different theoretical assumptions. Many experts and reseach on creativity agree that creativity is a complex concept with more than 100 definitions, as reviewed by Treffinger (1996), and is difficult to define and measure due to its multidimensional nature (Said-Metawaly, Noortgate, & Kyndt, 2017). The need to develop numerous instruments assessing creativity was given attention due to the growing body of creativity research, especially internationally, since the late 1990s yet the big problem is, there is still no single definition of creativity that is agreed by everyone and has a universal acceptance (Resnick, 2017). In addition, according to Baer & McKool (2009) and Kaufman et al. (2007), these body of instruments developed for measuring creativity have limitations due to lacking adequate psychometric properties and it lacks in looking into the trivial aspects of creativity (Said-Metawaly, Noortgate, & Kyndt, 2017). Moreover, it is still challenged with educational systems because according to Molinero et. al. (2016), the common school admissions standards for children who are gifted are still typically based on intelligence and academic aptitude (Santrock, 2018), overlooking non-cognitive potential areas such as creativity, and many researchers still following the traditional cretivity research (Sloane, Endo, & Della-Piana, 2019).

In the global context, the Marland Report in 1972 is often described and is the widely accepted definition in the field of gifted education. Creativity has been emphasized in this report as one of the six areas of the potential ability of gifted and talented children (Jolly & Robins, 2016). The theory of Renzulli's "Three-Ring Model" on giftedness recognized the importance of creativity as a component of the three-part model that leads to creative-productive giftedness. As cited by Craft (2002), fostering creativity in education is important as it develops the creative skills, which is seen to be a good thing particularly at a social and economic level. This is evident in England where creativity is now named within the school curriculum and in the curriculum for 3-5 year-old children (Craft, 2010). Roger (1970) supported this and highlighted that creativity produces "freely creative and original thinkers" rather than "conformists" and "stereotypes" (Shaheen, 2010). Though this novel movement and advocacy on the emphasis of creativity in education is gaining popularity, however, many schools still adopt educational practices that repress this attribute.

In the Philippines, there is limited research on creativity. It has been ranked 73rd (out of 126 countries) in the acquisition and application of higher-valued creative skills as reported in the 2018 Global Innovation Index report from the WIPO (World Economic Property Organization) in spite of the innate creativity of Filipinos. This gap between the innate ability of being *pagkamalikhain* and the competence in high value creative skills which is evident on innovative and creative products and services could be addressed through quantity and quality of creative education programs (Mercado & Tolentino, 2018). Gifted education is still a growing field in developing countries like the Philippines. Davis, Rimm, and Siegle (2011)

reviewed Pawilen's (2014) identification on the general attributes of Filipino gifted individuals and classified them into three: (1) high intellectual ability, (2) exceptional talents, and (3) outstanding leadership skills. The concept of creativity is more of a link only as talents in music and arts develop (Pawilen & Manuel, 2018). The Department of Education and some private schools for the gifted have a few implemented programs, which promote creativity yet the context of creativity was not thoroughly defined. Although there is a growth of interest in measuring creativity and it gave rise to the development of creativity instruments, with different approaches to represent the main categories of creativity definitions because a lot of researchers admit that measuring it is a big challenge due to the fact that there was no consensus on the definition of creativity. These main categories are process; product, person and press (Said-Metawaly, Noortgate, & Kyndt, 2017). In this literature review, 18 instruments were found yet none of these are Filipino localized creativity instruments or tools. The Philippines' education system has adapted to the K-12 program since it was enacted into law as RA 10533 in 2013 and the Senior High School Curriculum was completed in 2015 (Estacio, 2015). The SHS Curriculum includes the Arts and Designs track alongside with the Academic, Sports and Technical-Vocational Livelihood Tracks (Department of Education). Some schools in the Philippines also regard the importance of creativity in the curriculum as early as primary education such as the Philippine High School for the Arts (PHSA) and the Central Visayan Institute Foundation (Pawilen & Manuel, 2018).

Theories on Creativity

This study is anchored on three related developmentalist theories on creativity. First is David Henry Feldman's development of creativity giftedness as cited by Lin (2011). This theory comprises different dimensions that interact to establish its development and realization. It focused on factors that support the development of creativity and these include cognitive processes, social/emotional processes, family aspects (i.e., birth order and gender within the family), education and preparation (informal and formal), characteristics of the domain and field, social/cultural contextual aspects, historical forces, events and trends (Kaufman J. C., Kaufman, Beghetto, Burgess, & Persson, 2009).

Joseph Renzulli's Three-Ring Model is also associated to this study because it involves the creative-productive giftedness as one of the 3 factors that develop gifted behavior. According to this theory, one of the qualities a gifted child must have is creative-productive (Smiley, Richards, & Taylor, 2019).

Another contemporary theory that is linked to this research is Robert Gagné's Differentiated Model of Giftedness and Talent (DMGT), which identifies creativity as one of the key gifted aptitudes and differentiates it from talent (or achievement). This model emphasizes the developmental process of talent through the transformation of the following abilities: Natural Abilities (intellectual abilities (reasoning, memory, metacognition, etc.); Creative abilities such as imagination, originality, fluency, and so on); Socio Affective abilities like perceptiveness, communication, empathy; and sensorimotor abilities such as strength, endurance, coordination (Kaufman J. C., Kaufman, Beghetto, Burgess, & Persson, 2009).

Conceptual Framework

Figure 1: Conceptual Framework

The figure above shows this study's conceptual framework. Emerging definitions of creativity in the Philippine context is studied through the 2 variables or factors that contribute to its concept. The theoretical basis and assumptions of creativity gathered in the literature and the perspectives of Filipino parents and teachers of creativity in the context of their most creative learners have a bearing on the emerging definition of Filipino creativity.

The theories linked to this study have become a foundational basis on the existing understanding of the Filipinos' theoretical assumptions toward creativity. Feldman's theory on the development of creativity, which comprises different dimensions such as cognitive, social/emotional processes, family aspects, education and preparation, characteristics, social/cultural aspects and history have greatly affected how creativity is defined. The theory of Joseph Renzulli's Three-ring model of creativity is important in this study because Filipinos' emerging definitions of creativity rely greatly on the quality behaviors exhibited by a gifted individual. One of the 3 rings that affect one's giftedness is the creative-productive abilities and this basis is significant for participants and informants because of the innate or natural abilities of creativity of Filipinos. Robert Gagne's DMGT is also linked to this study because of the belief that giftedness and talent are progressive and can be transformed based on the development of different abilties, which includes creativite abilities. These abilities reflect the Filipino informants' perspectives about a creative person and have become influential factors on how they view creativity as a whole.

Statement of the Problem

This study aimed to explore indicators that define creativity in the Philippine context. It sought the views of Filipino parents and teachers on what creativity is in the context of their most creative learners. Specifically, it aims to answer the following questions:

1. How do parents and teachers view creativity in the context of their most creative children?
2. What are the underlying dimensions of creativity as viewed by their parents and teachers in the context of their most creative children?

Method

This research used the Textual Analysis Research Design, particularly, the qualitative methods in a single study. Textual analysis is described as a methodology that involves understanding language, symbols, and/or pictures present in texts to gain information regarding how people make sense of and communicate life and life experiences (Allen, 2017). Interview transcripts and the images of the sample works of the participants are the main sources of the data. Through the textual analysis research design, the researcher was able to analyze and understand the data through forming coomon themes from understanding the language, text, symbols and pictures provided.

Participants

The main participants of this study are the identified "most creative" learners from the five various selected middle schools in Northern Mindanao, Philippines, particularly students in Grade 5-8 and their parents and teachers. The researcher gave an endorsement letter to the school principals to choose and decide as a school who they think is the most creative. They had top 2 choices for each school. A creativity assessment tool that assess the 4 Personal Creativity Characteristics described in the *Assessing Creativity: A Guide for Educators* published in the *National Research Center on the Gifted and Talented Journal*, developed by a group of researchers from universities in the U.S in search of creativity characteristics (Treffinger, Young, Selby, & Shepardson, 2002), was used as reference for selecting the participants. After they were handpicked by their school head and faculty who know them, their parents were contacted by the school principal to get permission if they could participate in the study. The primary participants selected to be subjects of the study are coded with the names Child A, Child B, Child C, Child D and Child E.

Sampling Design

This study used non-probability purposive sampling design was used to handpick the 5 different schools that best represent the groups of people in the region for this study. According to Patton (1987), the interviewer asks questions orally to the interviewee in a flexible and continuous manner considering the three basic approaches to qualitative in-depth interviewing, informal conversational interview, general interview guide approach and standardised open-ended interview (Showkat, 2017).

Research Instruments

Inclusion criteria/checklist adapted from the *Assessing Creativity: A Guide for Educators* published in the *National Research Center on the Gifted and Talented Journal*, developed by a group of researchers from universities in the U.S (Treffinger, Young, Selby, & Shepardson, 2002) were used as basis in the research instruments for this study. This tool was employed for the study because it is a good screening tool, especially for parents and teachers who have seen the learners' performance in a "real-life" setting for a long time (Treffinger, Young, Selby, & Shepardson, 2002).

The following 4 Categories of Personal Creativity Characteristics are (1) *Generating Ideas* - cognitive characteristics: divergent thinking or creative thinking abilities and metaphorical thinking. (2) *Digging deeper into ideas*- cognitive characteristics: convergent thinking or critical thinking. (3) *Openness and courage to explore ideas*- personality traits: interests,

experiences, attitudes, and self-confidence. (4) *Listening to one's "inner voice"*- traits: personal understanding of who you are, a vision of where you want to go, and a commitment to do whatever it takes to get there.

For this study, evaluation on the supporting documents that prove the creativity of the participants are based on their performance data as referred in the matrix for the systematic assessment of creativity based from the *Assessing Creativity: A Guide for Educators* published in the *National Research Center on the Gifted and Talented Journal* of page 51. The creative outputs used as supporting documents include: portfolios and real-life activities, structured performance tasks, evidence of awards and/or recognitions in contests, competitions or special programs, product evaluation scales or ratings by judges. The researcher collected photographs and videos of the said supporting documents with the permission of the parent and teacher key informants. These supporting documents strengthen the validity of the study through a triangulation approach.

This research also used the key informant interview questionnaire developed by the researcher for the teachers and parents of the identified creative students. Socratic or open-ended questions were used to identify the definitions of creativity and characteristics of these identified students. Interview questionnaire was validated by 3 experienced university professors from the College of Education of the University of Southeastern Philippines. This descriptive study used the key informant interviews as a novel approach to uncover key pieces of information. This is a type of qualitative in-depth interview that will focus on the dynamic flow of conversation between researcher and participant(s) in their native environment. The data-gathering procedure of this study has 3 phases. The first phase is selecting student participants, interview as the 2nd phase and the third third phase is document analysis.

Data Gathering Procedure and Data Analysis

The researcher first transcribed the recorded audio interviews after conducting the key informant in-depth interviews. Then, the researcher started analyzing the data by creating themes from the recorded and transcribed interviews. Analyses was based on the clustered data to create themes. Thematic analysis was chosen as a type of qualitative analysis that was used for the study. According to Allen (2017), messages in textual analysis, may it be visual, written, or spoken messages provide cues to ways through which communication may be understood. Thematic analysis allowed the researcher to closely examine the data to identify common themes which are topics, ideas and patterns of meaning that come up repeatedly. The researcher transcribed the interview recordings manually. After the interviews were fully transcribed and proofread, this study used the NVivo as the qualitative data analysis software technology that helped in making more robust research results in less time. Using the NVivo tool as an electronic technique of data coding helped in obtaining rigor in dealing with the data. Using this computer software package produced by QSR International has many advantages and "ensures that the user is working more methodically, more thoroughly, more attentively" (Hilal & Alabri, 2013). Moreover, to ensure the objectivity of this study, the researcher asked a third person who listened and took down notes of the answers of the informants while the researcher is conducting the face-to-face in-depth interview. The researcher also sought another set of data for triangulation to validate the outcome of this research through the outputs, documentation and internet links of sample works of the creative students.

Ethical Consideration

The researcher ensured quality and integrity of the research by seeking permission and meeting ethical considerations set by the Department of Education in the Philippines. Ethical guidelines set by the university were followed and the researcher secured the standard informed consent forms for the informants. The consent from the participants had the following content: information about the study, description of research purpose, procedures including research duration, benefits and risks to participants, voluntary participation, right to privacy and assurance that there is no cost or compensation for participation. The confidentiality and anonymity of the research participants was respected by ensuring that names and pictures will be hidden and only the researcher involved in the study has access to the informants' information. The participants were kept completely anonymous in the research and were fully aware of the observation records from this study will remain confidential and was informed of the interview flow and protocol. The informants were also informed through the consent letter that they signed that their participation in this research was completely voluntary which meant that they had the right to discontinue their participation if they felt like they were not able to continue the study.

Conclusion

Emerging definitions of creativity in the Philippine context were described and analyzed based from the theoretical basis/assumptions of creativity and the perspectives of parents and teachers of creativity in the context of their most creative children. There were 6 main approaches to studying creativity that emerged in defining it through textual analysis and these are creativity as (a) Process, (b) Person, (c) Product, (d) Press (environment), (e) Multidimensional domain, and (f) Socio-cultural aspects.

Figure 2: Summary of the Emerging Filipino Definitions of Creativity Framework

The figure above illustrates the combined data on the informants' views of creativity in the context of their most creative children. This sums up the researcher's analysis on the purpose

of this study that seeks the emerging definition and indicators of creativity among gifted learners in the Philippine context. This illustrates that creativity is defined into 6 main domains or approaches to defining creativity, which are creativity as a (a) Process, (b) Person, (c) Product, (d) Press (environment), (e) Multidimensional, and (f) Socio-cultural aspects.

Filipino creativity is an ability that is natural and God-given greatly rooted to Filipino family traditions and cultural values. Filipino creative children are highly intellectual who excel in their academic endeavors, socio-civic and art competitions, expressive through their music, art, movement and literary outputs. Their natural, home and school environments, media and competition exposures, and time devoted for practice developed this innate ability of Filipinos of being *malikhain.* The strong connection to the culture and value system of Filipinos that's deeply rooted to the importance of family, collaboration and *pakikisama* with social groups and community, religiosity and Filipino creative traits such as high cognitive skills, problem-solving, divergent thinking, originality, rich imagination, elaboration, curiosity, diligence, passion, hard work, persistence, respect, obedience, leadership, inventiveness, generosity, resourcefulness, sympathy, shyness, oversensitive, flexible, open-mindedness, inventive, resourcefulness, risk-taking, humility, patience, and dedication to high standard of excellence. Specifically, the study sought to answer how creativity is defined in the Philippine context and the characteristics of Filipino creative learners.

The researcher chose the sample of the study purposefully and participants from Region X were picked. The study sought the data of varied participants considering their ethnic identity, cultural background, type of school and curriculum. Parents and teachers of the identified "most creative" children of the sample schools answered the qualitative research questions through a key-informant in-depth interview. The focus educational levels of this study are the middle school-aged students (Grade 5-8).

The 10 informants who knew the 5 chosen creative students very well have shared through in-depth interviews, the personality, behavior, work attitude, behavior and characteristics of Filipino creative children. They are described in different dimensions that could be indicators of creativity. They process creativity through they cognitive strengths, problem-solving skills, divergent skills, originality, elaboration, rich imagination and curiosity.

These creative learners were described according to their personality and abilities. They are naturally creative, highly motivated, passionate, diligent, hardworking, persistent, perfectionist, friendly, shy, generous, sympathetic, good leaders, respectful, obedient and oversensitive. They are also viewed as flexible, resourceful, inventive, risk-takers, open-minded, humble, patient and dedicated to high standard of excellence. Filipino creative children are also described based on the products they create, which are novel, original, purposeful, and know how to recycle. Filipino creativity was defined under the influences of the environments on the children's creativity. The participants developed their creativity with the help of the natural environment, home and school environments, media influence, and encouragement of the support to practice and have healthy competitions.

Filipino creativity was also described in a general-domain and muti-dimensional construct. It was highlighted that creativity is viewed as something pertaining to the beauty and aesthetics of art, and consider the different specific aptitudes such as the abilities in language, mathematical/logical and practical living skills, visual and performing arts and the musical abilities.

The key informants of this study believe that their children are creatively gifted and viewed creativity in social-cultural perspectives. This study was focused on the specific understanding based on Filipino Mindanao perspectives, influenced by Filipino family values, traditional and religious practices, ethnicity, environmental influences such as social play, strong support system and collaboration with other cultural groups, which are indicators of the Specific Socio-Cultural Influence dimension.

This dimension on the socio-cultural aspect of creativity must be considered since 70% of the participants agree that having full moral support from the family and friends of the creative learners plays an important role in the development of creativity. The Philippines has a diverse culture and religions. Social play was also highlighted by informants which they strongly suggested to better their children's creativity. Also, it enhances a Filipino value or attitude of *pakikisalamuha* (interaction with) as part of Filipinos' attitude of "togetherness"/ Filipinos' cultural backgrounds vary from one place to another and from one ethnic group to another. Hence, the importance of being able to socialize, collaborate and interact with other sets of groups and/or ethnic tribes is being supported by the Philippine Department of Education which shows the urgency of needing to widen cross-cultural understanding for social solidarity to be strengthened among the many ethno-linguistic groups.

This study defines Filipino creativity as an ability that is natural and God-given, which is greatly rooted to Filipino family practices and cultural values. It is defined in a multifaceted way because of the different dimensions it cover, This includes creativity being defined in a process, person, product, press, multidimensional and socio-cultural aspects.It is shaped by the diverse Filipino culture and tradition including their religion, customs, languages and dialects, traits and family practices and the challenges they endured. It is a skill that is developed by the support and encouragement of the home and school, hours spent on practicing and the various environments (nature, school environment and media) they are exposed to.

The results of the study tell us that Filipino creative children are highly intellectual who excel in their academic endeavors, socio-civic and art competitions, expressive through their music, art, movement and literary outputs. They are naturally creative, highly motivated, passionate, diligent, hardworking, persistent and perfectionist. They are also described as flexible, resourceful, inventive, risk-takers, open-minded, humble, patient and dedicated to high standards of excellence.

They are admirable children in their community who seek and create beautiful, original and novel products, help solve problems among their peers, perform in community celebrations and school events. They are keen to details, observe very well and are organized in making their outputs beautiful which are considered extraordinary and something that everyone can be proud of. They are usually quiet when they are not yet comfortable with the group and sometimes get sensitive or emotional when handling frustrations or unexpected circumstances.

On the other hand, Filipino creative children have great leadership skills that enable them to initiate activities among their peers and influence their peers in doing good deeds and creative works. It is boosted by the different social collaboration they had with other children through play and interactions with other people during celebrations and competitions and school events. They stand out in the group because of their work ethics, commendable attitude of

diligence, hard work, and persistence and are tagged as perfectionists who are committed to do their best in whatever tasks given to them.

Figure 3: Summary of the Underlying Dimensions of Creativity in the Philippine Context

The figure above summarizes the underlying dimensions of Filipino creativity in the perspectives of the gifted learners' parents and teachers. This study formulated different domains and indicators of creativity that would be helpful in studying creativity in a more scientific way through a development/assessment tool. This framework may serve as indicators of measuring creativity in taking the first step in formulating a creative development tool.

Recommendations

In light of the findings and conclusions of this study, it is recommended for teachers, school administrators, curriculum makers and school heads may consider looking into creativity indicators/dimensions identified in this study to identify the creativity potentials and behavior of their learners. Also, they should consider the students' family, friends and specific ethnic culture when designing programs/activities that will lead to the creative development of the students.

Parents and family members may show support to the creative children's needs at home and in school by preparing a conducive, peaceful and free environment for creating where resources are found and practice is encouraged. Future researchers may explore related studies on the definition of creativity from other regions and cities outside Region X or non-Mindanaoan ethnic groups that have different dialects, culture and ethnicity.

Future researchers may consider adopting the creativity indicators/dimensions as identified in this study in the development of a Filipino context-based Creativity Assessment tool, which may be studied further for validity.

Acknowledgments

References

Allen, M. (2017). *Textual Analysis.* Retrieved February 8, 2020, from SAGE Research Methods: https://methods.sagepub.com/reference/the-sage-encyclopedia-of-communication-research-methods/i14636.xml

Craft, A. (2010). The Limits to Creativity in Education: Dilemmas to the Educator. *British Journal of Educational Studies , 51* (2), 113-127.

Department of Education. (n.d.). *Republic of the Philippines- Department of Education.* Retrieved June 15, 2021, from deped.gov.ph: https://www.deped.gov.ph/k-to-12/about/k-to-12-basic-education-curriculum/#

Estacio, M. P. (2015, September 2). *Republic of the Philippines- Department of Education.* Retrieved June 28, 2021, from deped.gov.ph: https://www.deped.gov.ph/2015/09/02/all-set-for-k-to-12-implementation/

Henriksen, D., Mishra, P., & Fisser, P. (2016). Infusing Creativity and Technology in 21st Century Education: a Systemic View for Change. *Journal of Educational Technology & Society , 19* (3), 27-37.

Hilal, A. H., & Alabri, S. (2013). Using NVivo for Data Analysis in Qualitative Research. *International Interdisciplinary Journal Education , 2* (2), 181-186.

Jolly, J. L., & Robins, J. H. (2016). After the Marland Report: Four Decades of Progress? *Journal for the Education of the Gifted* , 132-150.

Kaufman, J. C., Kaufman, S. B., Beghetto, R. A., Burgess, S. A., & Persson, R. S. (2009). Creative Giftedness: Beginnings, Development and Future Promises. In *International Handbook on Giftedness* (pp. 585-598).

Mercado, P., & Tolentino, C. (2018, November). A Policy Brief on the Philippine Creative Industries. *Policy Briefs*.

Pawilen, G. T., & Manuel, S. (2018). A Proposed Model and Framework for Developing a Curriculum for the Gifted in the Philippines. *International Journal of Curriculum and Instruction* , 118-141.

Resnick, M. (2017). *Lifelong Kindergarten: Cultivating Creativity Through Projects, Passion, Peers, and Play.* Cambridge, Masachusetts London, England: The MIT Press.

Said-Metawaly, S., Noortgate, W., & Kyndt, E. (2017). Approaches to Measuring Creativity: A Systematic Literature Review. *Creativity: Theories - Research - Applications , 4* (2), 238-275.

Santrock, J. W. (2018). *Educational Psychology: Theory and Application to Fitness and Performance* (Sixth Edition ed.). New York, New York, USA: McGraw-Hill Education.

Shaheen, R. (2010, September 21). Creativity and Education. *Creative Education* , 166-169.

Showkat, N. (2017, August 17). In-depth Interview. *E-Pathshala: A Gateway to all Post Graduate Courses*.

Sloane, H. N., Endo, G. T., & Della-Piana, G. M. (2019, October 10). Creative Behavior. Salt Lake, Utah, USA.

Smiley, L. R., Richards, S. B., & Taylor, R. L. (2019). *Exceptional Students: Preparing Teachers for the 21st Century* (Third Edition ed.). New York, New York, USA: McGraw-Hill Education.

Treffinger, D. J., Young, G. C., Selby, E. C., & Shepardson, C. (2002, December). Assessing Creativity: A Guide for Educators. *The National Reearch Center on the Gifted and Talented* , 41-70.

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The Assessment of Potentials as a Basis to Reform University Management

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

The Bologna Reform in Europe, which led to systematic changes in academic teaching and learnings structures, finally implemented in 2002, also made a need for reforms at the management level of universities visible. However, approaches to modernize the management structure with components such as strategy and structure, performance measurability, or process economy via key figures have not found lasting acceptance in the administrative landscape yet. Particularly cultural changes towards a motivating working environment for academic and non-academic professionals remained underdeveloped. In this respect, research mainly focusses on questions on how to implement transformation in administrative structures through motivation, a methodical approach to change, establishing jointly lived attitudes and values as well as the design of a sense of commitment and belonging together in a work context. Conceptually, reference is made to the "Theory of Absorptive Capacity" based on Cohen/Levinthal for innovative capacity and the future viability of organizations, including three partial capabilities. This leads to a brief overview of fundamental approaches to change management from the perspective of organizational design to increase the maturity of organizational change. A quantitative survey shows the existing reasons, and why high potentials leave the administrative sector, exemplarily in German-speaking countries. Based on this survey on changes in work requirements, the importance of recruitment and the possibility of winning over 'designers' will be presented. This approach aims to show opportunities to derive recommendations on service initiatives and to launch efficient reforms in the public learning management.

Keywords: Digitization, Panel Study, Upskilling, Skills, Learning Preferences, Management and Administration of Universities

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Introduction

Understanding generational shifts is essential when it comes to digitized educational offers that aim to contribute to current social changes. A change in self-conception concerning participation and in self-determination of the individual, but also the arrival of technology in everyday life, lead to a new and different way of acquisition and processing of information. Meta-shifts in the present world of work are defined by the so-called "Society 5.0." "A human-centered society that reconciles economic progress with the solution of social problems through a system that highly integrates cyberspace and physical space" (Cabinet Office, Government of Japan 2021). Since the 2010s, innovation has been the focus of social reform, so learning opportunities need to be established "on demand" to support the increasing necessity of dynamic behavior towards new and complex challenges in a practical way. This on the background of a volatile, uncertain, complex, and ambiguous, so called VUCA world, where vision, understanding, clarity, and agility is needed to deal with massive and numerous changes in short intervals. Innovation is the lever to be pulled by companies as well as by civil service and by universities to transform knowledge into new processes (see Sancho-Zamora et al. 2022, p. 1). Knowledge management capability therefore is a synonym for success, following the concept of absorptive capacity (Cohen & Levinthal 1990). In this respect, course design needs to focus on "domain-specific usable learning outcomes" supported by interactive designs of learning progress. Learning processes that are committed to the recognition of a shared responsibility of teaching learning relationships need to be considered. Achievements, learning success, or learning progress should come as visual experience for each learning objective, designed to be evaluated by learning analytics software. The in-service education market is getting more attractive, from digital teaching to the point of flexibility and individualization of the learning and teaching offers (see Handtke, 2015).

The Starting Point of Reforms

Countries such as Switzerland and New Zealand already approached the modernization of state activities in the 1980s with a broad range of ideas, objectives, proposals, and instruments. But there was no strictly coherent model. Reforms started with changes to formal, legal, and institutional aspects to minimize the state sector by privatizations. Results were less regulations, public-private partnerships, and even total retreat of the public sector in certain fields. Since 2000, reforms of the public service in Germany have been following the optimization of performance and efficiency, of recruitment based on skills and qualifications, of revised qualification procedures, of the importance of skills in different academic disciplines for the public sector, i.e. public management. "This requires a targeted acquisition of competence in systemic thinking of employees of different levels of responsibility, in order to enable the recognition of optimization of potentials as well as sustainability criteria in everyday work processes. Digital tools and dashboards seem to be tools used as means of transparency of the burdens on the climate balance in the course of the provision of services in public spaces" (McKinsey, 2019).

Studies show that employees on management level leave the public sector due to different reasons. Concerning compensation, unmet salary expectations are mentioned. Furthermore, job security was not given, as well as promotion opportunities and attractive career paths. In terms of leadership and culture, a lack of inspiring leaders is reported next to a less innovative organizational culture. Many people state a missing compatibility of family and

career as well as missing training opportunities. Last but not least, benefits for the general public, the main concerns of the public sector, were reported as not distinct.

Organizational learning, more specifically absorptive capacity, and knowledge sharing can be seen as key factors for the public service to keep up with the changing demands of citizens as a result of transformation processes in other parts of their everyday life, such as digitized communication, to recruit and to keep high potentials. This is also valid for universities, either as public service or private institution, in both terms of administration and teaching (see Sancho-Zamora et al. 2022, p. 2).

Hypothesis

Challenges of Administrating Universities lead to Framework Conditions of VUCA. Aspects which pay in to the hypothesis are:

- a new self-conception of students
- reforms of higher education and sources of funding
- competition in the higher education landscape
- reputation measurement based on changed standards with a focus on practical transfer
- control tasks and
- stakeholder management are getting more complex
- recruitment becomes more difficult and
- staff retention gains in importance

Main Perspective

In democratic states, research on higher education and teaching in higher education show the aim of added value (see Berthold et al., 2009). This so-called "third mission" in administration means that research and teaching should include socially relevant questions and, if possible, their inclusion into events. Another level of the interweaving of higher education and vocational training is the conception of continuing innovative in-house education and the optimization of work processes as part of the survey.

Even today, the characteristics of civil service are legal commitment, hierarchy, and loyalty. These are highly formative. However, customer, i.e. citizens', here students', expectations and requirements have changed completely. Therefore, authorities and non-profit organizations need to actively shape social change with measures to optimize and expand services. Technology as a driver for change requires addressing user scenarios in the public interest-oriented range of tasks through collaborative projects with business and science, especially in the provision of services to companies and also citizens (see Matzat et al., 2019, p. 55).

Based on the aim of a user-centered service orientation, the fundamental mindset of public administration should include openness, innovation, solidarity, and agility. Factors necessary to focus the VUCA world. Scenarios to implement change management should not only focus on internal structures and processes, but also on innovation design concerning external services.

In addition to previous values of strict legal conformity and quality orientation, a change in attitude towards innovation is necessary. The models of the 'learning organization' represents

this. Additionally, the concept of absorptive capacity generates advice on an abstract level, which enables the professionalization of service in order to social transformation through agile decisions. The perspective of 'absorptive' as ability of an organization to absorb new external knowledge and to combine this with internal knowledge includes innovation in sustainable systems (see Cohen & Levinthal, 1990, p. 128). This requires using assimilated knowledge in a value-creating cycle of continuously expanding proactive-strategic effect.

To transfer the concept of absorptive capacities for the creation of innovative learning processes in typical processes of university management, based on quality-assured standards, the following illustration will outline a schematic procedure.

Figure 1: Absorptive Capacity in context of University Management

The mentioned concept of absorptive capacity includes identification and value-enhancing which derives from using external sources of knowledge. Finally, much attention has been paid to the transfer of this concept to ensure corporate success by Zahra & George (2002) in relation to the 'dynamic capability' described by Teece et al. (1997). To combine "both internal and external learning processes and thus respond to the demands of the environment through innovation" (Sancho-Zamora et al. 2022, p. 2) leads to an update in core competencies, which means successful changes in an organization. "The ability to learn, meanwhile, makes it possible to generate new internal knowledge, to develop the necessary competencies, to understand the process of knowledge development and, together with the knowledge acquired externally, to achieve innovations that are difficult to imitate" (ibid).

In addition, the hypothesis that increased internal exchange and a highly automated IT structure also have a positive impact on the ability to absorb innovation was not clearly proven empirically. On the other hand, it was possible to prove that strong absorptive capacity of those being managed has a positive effect on the willingness of those being managed to innovate. In order to promote commitment to innovative thought and action processes, it is important to express agility as a central value by communicating meaning, trust, and the transfer of responsibility. In order to be able to communicate agility convincingly, managers must demonstrate an authentic, respectful inner attitude in addition to systemic and group-dynamic background knowledge. This is seen as the only way to build lasting personal relationships with employees, stakeholders, and customers.

Conceptual Basis

The task of local authorities in case of supporting society's mission to use technology with added value is building digital infrastructures, which make date usage concepts and applications tangible with citizen participation. Introducing the topic of intelligent data analysis and automated data preparation for improved decision-making can be understood as an educational mission. The municipal concepts of 'Smart City/Smart Region' might be adapted to higher education due to comparable intentions. With 'Smart University', the public mandate to create added value of services via online services might be transferred (see Schachtner, 2020).

'Digital agendas', which derive project priorities out of public opinion formation processes, can be transferred to acquire skills within the framework of informal learning and participation formats with different target groups. In turn, research also benefits from results, as new target groups for empirical surveys are created. At the same time, a new strategic level of maturity of colleges and universities can be achieved.

Figure 2 displays the four core areas of the 'Smart University' concept (Schachtner, 2020):

1. Goals, Strategies and Structures

Fields of Action

Process efficiency, transparency and participation, projects to promote climate goals, regional innovation, and economic development...

Promote interactions between the fields for

Socially acceptable, energy- and resource-efficient measures to support the added value of the circular economy and the design of sustainable lifestyles

2. Transparency, participation, and co-creation

Fluid organizational structures should support cooperative patterns of interaction between the municipality, the economy, research, and civil society to form a structured innovation process in interdisciplinary networks

By using the

Principle of 'design for all', to give all sections of the population access to decision-making

3. Infrastructures, Data and Services

Available data sets (big data) have great potential for user engagement in case of criteria of automated decisions, after anonymization. Algorithms must not replace democratically elected bodies or the responsibility of natural or legal persons

Manageable services need technical infrastructure, shared data, and a well-designed service design

4. Resources, Skills and Cooperation

"Non-profit Centre of Excellence" are open to all actors to spread knowledge and meet the demands of rapid change processes in case of available human and financial resources

Digital skills in the context of cross-functional work in networks enables a discussion sustainability strategy, cross-generational and cross-society learning

Figure 2: The Concept of the Smart University

Next to application-oriented questions concerning the content orientation of seminar concepts based on digital transformation, planning and decision-making processes on how to deal with the neo-liberal paradigm of the 'human capital of the actors' (Stewart, 1999) stands a basic

scientific orientation. In this respect, economic concepts should also be discussed in terms of internal control of public institutions such as lateral leadership, or open innovation management, and the learning needs of specialists and managers in public administration, and therefore universities.

Research design

Based on the previous findings, empirical consideration focusses a full-standardized, anonymous online survey with a closed-question metric procedure. In this context, with a comprehensive look for international requirements of future management of institutional governance in higher educational institutions and its pain points in the age of digitalization, the chances in University Strategies should be able to be identified. Internationally, business and management as well as marketing and communication are the cases, besides digitization, for further education. The panel study aimed at all skills related to securing the ability to stay competitive in the individual business field. In this context, personal skills or skills acquired in informal context are not in the focus of the study. For many people, lifelong learning is the be-all and end-all, in terms of personal development.

The further Procedure of analyzing the management-based aspects of University Management follows these methodical setting:

1. creation of the research question, formation of hypothesis, theoretical modelling
2. pretest in workshop format with experts (N= 12 Managers and CIOs of transforming Universities; February 2023)
3. quantitative-qualitative online questionnaire survey with organizational managers at German universities (10 sets of questions; March – April 2023)
4. Qualitative Text Analysis to prioritize the response range (June 2023)

Data Sources

The focus group of the initial survey will be managers of Universities and Universities of applied Sciences in Germany (n=422). The study was internationally designed, so that different stages of digitally and organizationally transformed systems were taken into account.

The research data collection group consists of scientifically educated adult professionals, established forces of administrative modernization, developers of university strategies, and service managers. It is heterogeneous in terms of teaching experience, gender, and age. Sample based on assessments of, etc. with at least 3 years of operational experience in the field.

Method: Content-analytical evaluation of qualitative data bases

A qualitative-quantitative research design allows to reduce complexity of real-causal relationships in framework conditions to generalize these in the field of trend research (Mayring 2015).

With qualitative analysis methods, the integration of secondary results intends to derive the need for reforms of University strategies.

Figure 3: Empirical Setting

The interpretation was carried out by means of qualitative text analysis. Core sentences and summaries of categories represent the range of statements. Restrictive of the survey should be noted that no absolute statements can be derived in the absence of primary surveys in the domain of the General Internal Administration. In addition, the framework conditions and starting points of systematic learning processes for the development of innovation structures were not collected.

Results

Due to the early status of the considerations of this pre-study survey, no final statements can yet be made. Nevertheless, based on the basic assumptions, various starting positions are given in the primary survey for the examination of the target states or preconditions:

What has to be proven are possible input factors in three cluster categories:

A. Business Process Management for analysis
– Before the start of process optimizations, strategy, method, tool, modeling conventions, and a process model should be agreed on.
– Employees need to be involved with appropriate communication measures, they also need Business Process Model (BPM) training, access to BPM tools, and roles to improve processes need to be defined in work groups
– process goals, key figures, measurement methods, and process responsibility for each process must be transparent
– BPM organization, process controlling, and a continuous improvement process for benchmarking in innovation rings needs to be implemented (see Cordella & Iannacci 2010)

B. Frameworks for a Change in the Mindset for a Successful Transformation
For example Liberating Structures (Lipmanowicz & McCandless, 2010). as a collection of 33 methods support coordination, prioritization, moderation, and goal setting.

C. Data Governance for an End-To-End Digital Data Situation
Effective management of data on basis of the goals, processes, standards, regulations, and responsibilities mentioned under A (see Gabler, 2022).

- Modernization of control systems, e.g. through Enterprise Resource Planning (ERP) and Business Intelligence cockpit solutions as reporting tools.
- Alignment to the individual needs of authorities via KPIs and OKRs, so that the right information is available at the right time for everyday decisions.
- Modernization of the control systems in budget, cash, and accounting through automated instruments of strategic management or impact control of public budgets (see Dezousa et al., 2020).

Conclusion

Against the backdrop of the deductively developed hypothesis of success chances for the concept of 'Smart University' the survey should confirm the following aspects:

Change of framework conditions
Further education is rated as a personal matter. There is no doubt about its importance. Even though one in two people would like to continue their education for professional reasons, there is one thing that is most important to most respondents, which is personal further education, regardless of their profession. Simply because they are interested in a particular subject.

Administration is not in focus, but a managerial necessarity
More than two thirds of those surveyed state positive experiences with further education. For more than half of the people, the curriculum perfectly matched their own personal goals. The quality of the learning content and the professional approach of the specialist staff also ranked highly among 46.9% of respondents.

Create incentives as high-potential employees leave facilities
Information is everything, so another result of the survey shows that over half of the people internationally have already found suitable further education courses. The rest are still looking. Those who have already investigated it but have not yet found anything are primarily concerned about the lack of flexible courses with suitable content.

Agile methods as a chance for innovation
Online learning means more flexibility. Even though further education is influenced by current trends, online teaching is generally preferred internationally. Best of all with flexible, self-determined scheduling or in a virtual classroom online at fixed times. In contrast, only very few people prefer face-to-face teaching.

In agile work segments, new processes and methods often emerge more quickly through informal learning than they can be mapped via classification systems. In this respect, qualifications can only ever determine a level entry with a basic portfolio of skills and knowledge, which must be supplemented by industry-typical dynamics of further training and at the same time kept up to date. Therefore, an organizational framework which supports knowledge assimilation, internally and externally, is necessary to perform in a VUCA world and to meet the needs in the field of academic administration, learning and teaching.

References

Berthold, M. R., Cebron, N., Dill, F., Gabriel, T. R., Kötter, T., Meinl, T. & Wiswedel, B. (2009). KNIME-the Konstanz information miner: version 2.0 and beyond. *AcM SIGKDD explorations, 11(1),* 26-31.

Cabinet Office [Government of Japan] (2021). *Society 5.0.* https://www8.cao.go.jp/cstp/ english/society5_0/index.html

Cohen, W. M. & Levinthal, D. A. (1990). Absorptive capacity - A new perspective on learning and innovation. In: *Administrative Science Quarterly, 35(1)*, 128-152.

Cordella, A. & Iannacci, F. (2010). Information systems in the public sector: The e-Government enactment framework. *The Journal of Strategic Information Systems, 19(1)*, 52–66, https://doi.org/10.1016/j.jsis.2010.01.001

Desouza, K. C., Dawson, G. S. & Chenok, D. (2020). Designing, developing, and deploying artificial intelligence systems: Lessons from and for the public sector. *Business Horizons, 63(2)*, 205–213, https://doi.org/10.1016/j.bushor.2019.11.004

Handke, J. (2015). *Handbuch Hochschullehre Digital.* Marburg: Tectum Press.

Lipmanowicz, H., & McCandless, K. (2010). Liberating structures: Innovating by including and unleashing everyone. *E&Y Performance, 2(4)*, 6-19.

Matzat, L. (2019). Algorithmic Accountability - Automatisierte Entscheidungen sichtbar machen. In. M. Brüggemann, S. Eder & A. Tillman (Hrsg.), *Medienbildung für alle – Digitalisierung. Teilhabe. Vielfalt.*, GMK-Schriften zur Medienpädagogik 55, München: kopaed publishing.

Mayring, P. (2015). *Qualitative Inhaltsanalyse - Grundlagen und Techniken*. 12. Ed., Weinheim: Beltz Press.

McKinsey (2019). Die Besten, bitte - Wie der öffentliche Sektor als Arbeitgeber punkten kann. https://www.mckinsey.de/~/media/mckinsey/locations/europe%20and%20middle% 20east/deutschland/news/presse/2019/2019-04- 03%20die%20besten%20bitte/20190402_ die%20besten%20bitte_studie%20fachkrftemangel%20ffentlicher%20sektor.pdf

Sancho-Zamora, Rafael, et al. (2022). The impact of absorptive capacity on innovation: The mediating role of organizational learning. International *Journal of Environmental Research and Public Health 19(2)*, 842.

Schachtner, C. (2020). Educating Sustainable Development (ESD) in the Context of Public Management - Conceptual Considerations for the Design of a Collaborative Educational Format for Local Sustainability. In: Müller Werder, C., Erlemann, J. (Eds.). Seamless Learning – lebenslanges, durchgängiges Lernen ermöglichen. Proceedings Gesellschaft für Medien in der Wissenschaft (GMW) Tagung 2020. Waxmann Press, 121-131.

Stewart, T. (1999). *Intellectual capital - The new wealth of organizations*. New York: Currency Doubleday Publishing.

Teece, D. J., Pisano, G. & Shuen, A. (1997). Dynamic Capabilities and Strategic Management. *Strategic Management Journal, 18(7)*, 509-533.

Zahra, S. A. & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension, *Academy of Management Review 27(2)*, 185-203.

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Retracing, Reimagining and Reconciling Our Roots in Social Work Education

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

This paper contributes to discussion regarding creative and arts-based research methods for researchers interested in pedagogies aiming for more meaningful engagement with decolonization and Indigenous reconciliation in graduate/undergraduate education of social workers in postsecondary university settings. We share our research and pedagogical process from SSHRC funded research carried out in a recent postsecondary course. We describe our a/r/tographic methodology involving practices of artmaking, attunement to everyday relations with the land and to our teacher and practitioner experience, aimed at finding more generative opportunities arising in these interrelations. Our research objectives include exploring the potential of art and artists for provoking complex conversations about Indigenous-settler relations in social work pedagogy as they relate to reconciliation, land and culture. Specifically, we explain some of the implications of artistic influence and aesthetic walking and writing practices grounded in local histories, land and culture for concrete steps in advancing social work education towards reconciliatory practice. By working alongside traditional Indigenous Knowledges, we were able to foster practices grounded in respect, relevance, reciprocity and responsibility across cultural difference. Using the land as one of our texts, walking practices, artist inspirations, and art-making opportunities engaged geo-specific Indigenous-settler relations and histories, providing immersive experiences aimed at more impactful learning. We share some beginning analyses of student responses that seem to convey how artists and art practices associated with the land may precipitate stronger implications for learning than those that occur in commonly expected student responses within a solely social-critique approach to facts.

Keywords: Arts-Based Research, Land, A/r/tography, Walking, Pedagogy

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Introduction

We are two university professors in postsecondary faculties of social work and education and in the spring of 2022, we were able to work alongside each other in the teaching of a social work graduate class entitled, *Current Issues in Aboriginal Social Work.* Because we both have strong commitments to finding ways to enliven the work of decolonization and reconciliation in our separate course teachings, we were deliberate in locating ways to attend together, to the student quotes below, the bolded sections of, which were representative of what we had received to this point. The quotes seem to indicate that while students recognize how important it is to know the facts of colonization, the conventional rationalionalist assumptions of anticipated learning responses often used in postsecondary curriculum, were re-inscribing heirarchies between thought and action, theory and practice, mind and body.

> I know of these stories because I learned of it from school. But that was just it, we only learn of the history, **but not its relation to our present situation.** I have also taken some Indigenous courses before this one, but we were not really taught what to do or how to do social work when we work with Indigenous populations. (Excerpt from final paper, M.B, Student in SW 405: Social Work with Indigenous populations, Winter 2021)

> Kimmerer (2013), has pushed me to reimagine lessons in cultural competency in ways that include engagement with the land. The immersive experiences we have had in this class live in the body in ways that the classroom settings cannot replicate. I recall feelings associated with provocation walks throughout this course that contain **more knowledge and learning than I would gain from memorizing frameworks and facts that are often presented to me**. (Excerpt from final paper, E.R. in SW 835, Spring 2022)

Premising social critique, reflection and consideration of all viewpoints seem to have become a way to transform learning into already-understood rational arguments and responses, through universalized capacities for language and reason. We found that these matters of fact are read too quickly. Immediate abstract rational explanations and observations that we hear repeated in the courses we teach, seem to perpetuate the very polemic relations that we are seeking to improve, in that students continued to feel at a distance from this information. As Bruno Latour (2004) notes, "explanations resorting automatically to power, society, discourse may have outlived their usefulness" (p. 229). Latour argues not for getting away from facts but for inquiries that permit one to get closer to them in order to detect how many participants are actually gathered into a fact in order for it to exist and in order to maintain its continued existence.

The students in this course were at various points in their graduate studies. Most had some familiarity with the terms decolonization, Indigenization and reconciliation but did not find them particularly meaningful to grapple with in terms of how they themselves, might be implicated or how they might respond to these concepts. Most agreed that the contestedness and complexity of the concepts—just made it difficult for them, even Indigenous students, to engage.

The need to think about this detachment between students and facts that was occurring even in the midst of this important teaching, became of interest to us. We hoped that art might help. Art changes things—itself, and others and not in ways that are usually predictable. We

hoped the change that art might evoke might offer ways for our students to feel more woven into the web of relations even when they only have partial understanding. We turned to Elizabeth Ellsworth's (2005) work on pedagogic design to assist us in thinking through the focus of this course this past spring and we also turned to various other artists' connections to land. Before we discuss these influences and our turn to arts based teaching and research, we will tell you some of the details of our most recent course, our reasoning for making these changes and the course texts that served to fuel our pedagogy, artistry and imagination.

> And—we will begin this introduction to the course with a two minute trailer draft from a film about our research in this course, on which we are currently working. (Film trailer unavailable for the proceedings.)

Course Details

This graduate course took place over 6 weeks; each class was 6 hours. The Faculty of Social work has two campus sites: one in Regina and another in Saskatoon. Students in the course lived near or in, one or the other of these cities that are a 2 ½ hour drive apart from each other. The course was offered in a format that allowed students to choose to attend either in person or via Zoom. We taught half the course on-site in Saskatoon and the other half on-site in Regina.

Currently, as co-investigators on a Social Sciences and Humanities Research Council funded project entitled: *Retracing, Reimaging and Reconciling our Roots*, we decided to attempt to change what we have experienced as purely fact-oriented teaching about the histories and contemporary effects of colonization. Instead, the research objectives for this research project include exploring the potential of the arts and artists for provoking complex conversations about Indigenous-settler relations in social work education as they relate to reconciliation, land and culture.

We are currently working with our research data and today we will share very preliminary findings based on student work. We will discuss some of our design thinking of assignments of artmaking, walking, and writing, and share a few of the student responses—all of which may offer new insight into social work pedagogy, research, and practitioner work.

Starting with Facts

While we critique the rational critique of facts approach, facts **are** important. In the Canadian context, for example, the key places to look for the most devastating manifestations of colonialism are found in histories of residential schools and the 60's Scoop, current child welfare practices and the incarceration of many Indigenous peoples, each described briefly below.

The residential school system operated from the 1880s into the closing decades of the 20th century. The Canadian government set up, and had administered by churches, a schooling system that involved the forcible separation of children from their families for extended periods of time and forbade children in these schools to acknowledge their Aboriginal history, heritage and culture. Further to this, students of these schools were severely punished if they spoke in their Indigenous languages or attempted to practice culture and ceremony. Former residential school student survivors have and continue to recount experiences of severe sexual, physical and emotional abuses.

First Nations social work scholar Raven Sinclair (2007) writes that the "Sixties Scoop" describes a period in Aboriginal history in Canada in which thousands of Aboriginal children were removed from birth families and placed in non-Aboriginal environments. In the mid-sixties government agents were tasked with the job to 'scoop' from their mothers on reserves almost all newly-born children (p. 23). Even today in Canada, 53.8% of children in foster care are Indigenous, but account for only 7.7% of the child population according to Census 2021 (Govt of Canada, 2022). Additionally, Indigenous adults make up 32% of the total number of incarcerated people in Canada and many of these situations are relatable to ongoing systemic racism in police forces and the legal system (Chartrand, V. [2020]).

In 2015, the Truth and Reconciliation Commission of Canada (TRC) was created through a legal settlement between Residential Schools Survivors, the Assembly of First Nations, Inuit representatives and the parties responsible for creation and operation of the schools: the federal government and church bodies. The TRC's mandate was to inform all Canadians regarding what happened in residential schools. The TRC documented the truth of Survivors, their families, communities and anyone personally affected by the residential school experience. This included First Nations, Inuit and Métis former residential school students, their families, communities, the churches, former school employees, government officials and other Canadians.

There are a total of 94 *Calls to Action* for structural change that were agreed as substantive and important to address and implement. However, as of 2022, Alessia Passafiume reports on the *Yellowhead Institutes's Report* that indicates only 13 of the 94 have been actualized (Passafiume, 2022) So, Canada has much work to do. The question for teachers in educational settings is how to go about the *Calls to Action* in ways that not only provide important factual information but also offer opportunity for student response that is not predetermined and may be still very much in process.

Course Texts

In teaching, we drew on the work of Robin Kimmerer's (2013) text, *Braiding sweetgrass: Indigenous wisdom, scientific knowledge and the teachings of plants*. Kimmerer who is a member and citizen of Potawatomi Nation is a botanist who embraces the notion that plants and animals are our oldest teachers. As teachers, we hoped that by learning about and engaging with what she calls the language of animacy, new appreciations of the land as teacher and healer might be enlivened in our students' engagement with course ideas as well as potentially provoking new ways to appreciate and then practice social work.

In addition we chose Rene Linklater's (2014) book, *Decolonizing Trauma Work: Indigenous Stories and Strategies* because of the way the book challenges mainstream disciplines of psychiatry and psychology and their biased influences on healing and wellness in Indigenous communities while also offering opportunity for non-Indigenous practitioners to consider how to overlap or interweave their own practices with Indigenous worldviews regarding healing.

Our Turn to Arts-Based Research and Teaching

One of the benefits each of has come to appreciate about arts-based research is that engaging art practices circumvents "… the literalness of language while gesturing explicitly to knowledge in the process of being made", according to Ellsworth (2005, p. 168). Using art in

social work was a way of focusing on the learning self rather than on the fixing of knowledge by adopting pre-arranged positions or rational critique. We felt a need for a way out of perpetuating further binary thinking and instead, sought the pedagogical force of transformation that art already carries in changing itself and others.

Pedagogy, according to Ellsworth, is a force that is already at play in the world—one that gives form to being with oneself and at the same time being in relation to others; it puts our insides and outsides into relation without collapsing the difference between them with realistic representations or, indisputable facts. What gives voice to the learning self, according to Ellsworth, is not just the formal language of art but also invented and indirect communication and this includes poetic, metaphorical assemblages of movements/sensations in and through the study and embodied perception of paths, landscapes, buildings, and places, as they are sensed.

In our case, we are interested in the implications of aesthetic walking practices that offer opportunity to map one's reflexive engagement with the environment, practice the sensoriality of place in relation to ways of knowing, and engage in artmaking practices that are grounded in local histories, land and culture for concrete steps in advancing social work education towards reconciliation and reconnecting with land as teacher and healer for Indigenous populations. More specifically, the project focused on ways in which arts-based methods and the research methodology of a/r/tography might work alongside traditional Indigenous Knowledges to help social work students foster practices grounded in respect, relevance, reciprocity and responsibility across cultural difference. In this endeavor, we worked alongside Indigenous artists, medicine keepers and Elder helpers and were supported by a film student who was hired to document the weeks of this coursework.

Our methodology is best described as A/r/tography, which is an adaptive approach to research encouraging application of hybrid methods to document visual, auditory, sensory and text-based data as well as invite participatory approaches in artmaking, research and practitioner work. A/r/tography emerges from the practice of artists, teachers and researchers interested in the interdisciplinary pedagogy of contemporary art-making (May, O'Donoghue & Irwin, 2014) and is a way to invite practices of artmaking, living, knowing, teaching and learning to augment one another, inviting relationality in and among our roles, work and selves (Irwin & de Cosson, 2004). It encourages bringing together various practices of artmaking, everyday living and professional practice to find generative opportunities arising in this interference. We chose a/r/tography because of its opportunities for offering a sense of the entanglement of things one with another as well as with things not all present at once, including those things that are never entirely available to knowledge.

Lastly, walking on the land was an important part of our pedagogical design in this research, because of the many Indigenous scholars who claim the importance of "inserting people into relations with and on the land as a mode of education" (Wildcat et al., 2014, p.ii – in Madden 2019, p. 294). Walking is a way of channeling the earth's pedagogical force in its offering of potential for continual responsive repositioning. Each site engaged in our walking practice had geo-specific Indigenous-settler relations and histories, providing students a more immediate grappling with reconciliatory responsiveness.

Walking artist and architect Francesco Careri (2017) writes that walking is a good way to stumble on the 'other', and one way to approach conflict between differences is to walk with a non-belligerent greetings, disarmed, unthreatening, reaching for an embrace—advice that

works well in actuality as well as with the consideration of one's openness to learning difference.

Weekly Artmaking and Writing

Each week we engaged the class in some form of artmaking usually inspired by an Indigenous artist. Students completed titled artist statements that were a minimum of 300-written words explaining their materials, their process, various authors/artists/knowledge keepers whose work influenced their own, and shifts in one's thinking about reconciliation, retracing, reimagining or their ideas and reflections on rootedness—as well as some explanation regarding what they learned from the land. In this section, we share excerpts of a couple of these student responses and photographs of some of their artwork from various weeks.

One week, students learned beading techniques from a Saskatchewan Métis beading artist, Tania Nault (see Tania Nault, 2023). We also learned from Ojibway First Nations artist Malinda Joy Gray's (2017) research, that beads are examples of Indigenous resiliency and initially they were made from resources made available from the land—shell, bone, pottery, nuts, stone, horn fragments, etc. Furthermore, understanding the historical reciprocal exchange of land and beads might help shift's one's understanding of how the land was meant to be sustenance for all.

Our student Melinda Alexson shares her beading in the figure below and her thinking about rootedness that the artmaking evokes for her.

Figure 1, *Sitting Still*, Melinda Alexson, 2022

Alexson writes:

> I remembered why I avoided beading. It forced me to become stationary, while my hands and my mind became busy. Linklater (2014) writes that working with traditional practices, perhaps like beading, may bring up memories for Indigenous peoples even if colonization mutes them. Memories can carve a path to culture and ceremony. I thought about the Elders and Knowledge Keepers, their kindness, patience, and love.

Drawing inspiration from Canadian artist Jackie Traverse and her painting titled *Harvesting the Hair of Mother* (2019), as well as from Saskatchewan mixed media artist, Maria Enns, students harvested grass and made grass baskets.

Our student Angela Luron writes:

> Early in the week, I explored the outskirts of the city of Regina, hoping to spot some grass long enough to weave into a basket. I did find some, but since it was such a warm day and rain was in the forecast, I decided to let it grow a few more days. When I returned, the grass was 8" long. Being mindful of Kimmerer's teaching, I waited until what seemed like permission from the grass arrived, as a whisper in my ear. I offered tobacco and took only what I needed.

A photograph of Luron's basket is shared in Figure 2 below:

Figure 2. *Harvest Memories*, Angela Luron, 2022

Luron's writing express a continued evolving theme for her throughout the course involving a desire to live in more intentional reciprocity with the land and its processes. She expresses the ways in which the land brings awareness of Western society's obsession with the

ineffectiveness and potential damaging practice of putting people and their complexities into separate individual boxes and how engaging in reciprocal practices such as offering tobacco and asking permission require thought and consideration about reconciliation beyond one's own generation.

In another week's class students were inspired by ink artist Jason Logan (2018) who makes ink from whatever he forages in the city, sending unique small-batch pigments to artists all over the world. Logan that the process of inkmaking holds potential for changing how one sees and interacts with the world even while its process is not entirely knowable in words. This potential for changing how one sees and interacts with the world may involve engaging in the pedagogical force that Ellsworth claims is already at play around us, perhaps available through the land. Kimmerer (2013) writes: "Our Indigenous herbalists say to pay attention when plants come to you; they're bringing you something you need to learn" (p. 275).

Our student Gillian Cook writes her contemplations of reimagining in the midst of her inkmaking:

> [In the inkmaking] I was influenced by Jason Logan's vision of re-imagining the items he forages from land that are long forgotten by others and yet he reveals their beauty and their energy. I re-imagined those others that have beautiful energy that have been forgotten, devalued, and cast aside by Westernized models of practice. Reimaging difference and interrelatedness of all beings and how this can influence social work practice.

Figure 3. *Live Ink,* Gillian Cook, 2022

In further writing, Cook explains that Logan's work and her practice with inkmaking was a startling acknowledgement of the animacy of the world. In this teaching from the land she felt the ink as alive, waiting for its colour and energy to be revealed in ways free of expectation and predetermination.

Weekly Walking and Fieldnotes

In each weekly class, we provided in-class time for solo walks on which we encouraged the students to walk until something drew their attention—they were asked to linger and write in only descriptively—no explaining. Linger where one is invited by the nonhuman world, and then write some description. We encouraged students not to offer any explanation of what they saw. The rationale for asking them to remain in descriptive writing alone was to help them to attend to the actuality of the moment rather than return too quickly to what is already known or what they think they already know. Based on work in other courses (see Triggs,Sorensen & Irwin, 2022), we found that the longer students remained with description of the immediate present, the more likely they will find new knowledge emerging, rather than returning to their habitual pathways of thought and movement. When students slip too quickly into explanation, rational critique, or into a story of what they are reminded of, the materiality of the animate moment is lost and they miss the potential generated by each new actual emergence that is offered to them.

Student walking was further augmented each week with assigned "provocations", which were quotes from class reading, mostly from the work of Kimmerer. They were designed as another layer of interaction with the land, as they walked. One example of a provided provocation includes the following:

> …Bend and pull, bend and pull. Kaie"ri, wisk, ia:'k, tsia:ta, she calls to her granddaughter, standing waist deep in the grass.

> Her bundle grows thicker with every stoop of her back. She straightens up, rubs the small of her back, and tilts her head up to the blued summer sky, her braid swinging in the arch of her back.

> The breeze off the water sets the grasses weaving and carries the fragrance of sweetgrass that rises in her footsteps. (Kimmerer, 2013, p. 254)

Kimmerer's poetic writing and artful observations seemed to augment and orient student learning from the land. In their field notes about their walks, many struggled for words to describe the impacts they felt at a deeper inarticulate level and some indicated new awareness of how their body rhythms attune to the rhythms of the land.

Due to the time constraints in sharing our paper, we will not share examples of the field notes –but we will tell you we were amazed by the students' capacities for descriptive writing and for noticing the world around them, as well as by the learning that they gained simply by spending time with the land. In response to the invitations from the land and to Kimmerer's poetic text, students wrote with poetic sensitivity to their experiences of repositioning and opening to insights they had not previously considered.

Our last assignment involved final papers written by students which focused on one of the 4 R's we had emphasized: Reimagining, Retracing, Reconciling, Roots. We share a couple of

excerpts from final papers that seem to indicate students appreciated being able to connect to their learning voice that was still in formation, able to partially express their response through artforms as well as through poetic and descriptive language.

Our student Mikayla writes:

> Coming into this class I thought I had learned all that there was to know about the history of Indigenous peoples in Canada, and the profession of social work.

> In the first class where the course was laid out I assumed I would fulfill it in the same way I had in other classes, by giving the professor what they wanted to hear.

> This invitation was different and after I completed the first assignment, I realized that there was a deeper learning that I was being called into.

> Intrigued I accepted the invitation…Through the process of listening, walking art making I am learning the power of art as a tool for healing. (Mikayla Shilling, 2022)

Our student Hillary writes:

> I am reminded of Kimmerer's (2013) words that "Alone" is a word without meaning in the forest (p.4), and to me this means that I cannot and should not do this work alone. Part of being culturally competent will require me to seek out partnerships that can support my practice, including building relationships with Elders, Knowledge Keepers, and Indigenous artists.

> It is through Metis artist, Tania Nault's teaching of beading to our class that I was given the gift of understanding how making art like beading, can inspire the teaching of patience, presences and the expectation of imperfection.
> (Hillary Wand, 2022)

Conclusion

As authors and researchers, we still have much work to do with all of the wonderful responses that students produced. We will spend lots of time this winter analyzing data in order to understand more deeply what this kind of arts-based pedagogy might make possible for future students who will are currently, or will eventually become, social workers or teachers.

In the meantime, student work seems to indicate that pedagogic design for engagement in aesthetic (partially-expressed, partially-articulated) forms of response rather than for rational argument—and the orchestration of opportunities for experiencing the pedagogic force of land and art, students are feeling connections and responsibilities they did not feel before, in terms of working alongside Indigenous populations, or, in living in relation to the land and one another. With arts-based approaches, we are seeing that Indigenous and settler researchers and pedagogues may be able to design spaces of deep learning and knowledge creation with students in ways that focus on learning selves, rather than solely on predetermined knowledge, already-anticipated responses, or rational critique.

Acknowledgements

References

Chartrand, V. (2020). Unsettled times: Indigenous incarceration and the links between colonialism and the penitentiary in Canada. *Canadian Journal of Criminology and Criminal Justice*. https://doi.org/10.3138/cjccj.2018-0029

Careri, F. (2017). *Walkscapes: Walking as an aesthetic practice.* Culicidae Architectural Press.

Ellsworth, E. (2005). *Places of learning: Media, architecture, pedagogy.* NY: Routledge.

Government of Canada (2022). Reducing the number of Indigenous children in care. *First Nations Child and Family Services.* https://www.sacisc.gc.ca/eng/1541187352297/1541187392851

Gray, M. J. (2017). *Beads: Symbols of Indigenous cultural resilience and value*. Unpublished Master of Arts thesis, Department of Anthropology, University of Toronto.

Irwin, R. L. & De Cosson, A. (2004). *A/r/tography: Rendering self through arts-based living inquiry.* Vancouver: UBC Press.

Kimmerer, R. (2014). *Braiding sweetgrass: Indigenous wisdom, scientific knowledge and the teachings of plants*. Minneapolis, MN: Milkweed.

Latour, B. (2004). Why has critique run out of steam? From matters of fact to matters of concern. *Critical Inquiry 30* (Winter 2004), 225-248.

Linklater, R. (2014). *Decolonizing trauma work: Indigenous stories and strategies.* Halifax, NS: Fernwood Books.

Logan, J. (2018). *Make ink: A forager's guide to natural inkmaking*. NY: Abrams May, H., O'Donoghue, D. & Irwin, R. L. (2014). Performing an intervention in the space between art and education. *International Journal of Education through Art, 10*(2), June 2014, 163-177. DOI**:** https://doi.org/10.1386/eta.10.2.163_1

Madden, B. (2019). A de/colonizing theory of truth and reconciliation education. *Curriculum Inquiry 49*(3), 284-312.

Nault, T. (2023). https://www.facebook.com/TaniaNaultArtist/

Passafiume, A. (2022). At this rate, Canada won't meet Truth and Reconciliation calls until 2065. *Toronto Star,* Dec. 15, 2022. https://www.thestar.com/news/canada/2022/12/14/at-this-rate-canada-wont-meet-truth-and-reconciliation-calls-until-2065-report-suggests.html

Sinclair, R. (2007). Identity lost and found: Lessons from the sixties scoop. *First Peoples Child & Family Review: A Journal on Innovation and Best Practices in Aboriginal Child Welfare Administration, Research, Policy & Practice 3*(1), 65-82.

Traverse, J. (2019). Harvesting the hair of mother earth.
https://resilienceproject.ca/en/artists/jackie-traverse

TRC (2015). *Final Report*
https://www.rcaanccirnac.gc.ca/eng/1450124405592/1529106060525#chp2

Triggs, V., Sorensen, M. D. & Irwin, R. L. (2022). Lively pathways: Finding the aesthetic in everyday practice. In Eds L. Trafi-Prats, A. Castro & R. Fendler, *Visual participatory arts-based research in the city: Ontology, aesthetics and ethics.* NY: Routledge.

Effects of Literature and Multi-Cultural Experience on Growth and Development of TCKs

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

This work investigates the impacts of changing education systems on Third Culture Kids (TCKs). Particularly, how Classical Literature influences the education, growth, behaviour and personality development in the nomadic lifestyle of TCKs. While plenty of research exists on the positive attributes of TCKs around the world, this study will also focus on the negative impacts of a peripatetic childhood by looking at existing literature and surveys, while closely examining the stability provided by the Classics. We see that although TCKs are indeed adaptable, approachable and flexible as previous research suggests, TCKs also have to contend with negative traits like loss of identity, feeling of displacement and cultural duality during their growing years. Here, we see that Classical Literature provides a Touchstone, points of reference and stability to the TCKs.

Keywords: Third Culture Kids, Classical Literature, Secondary Education, Behavioural Studies, Education Board

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Introduction

The term, 'Third Culture Kid' (TCK) was first coined by John and Ruth Hill Useem (1963), sociologists living in India, who observed American expatriate families there (Kwon, 2019; Halme, 2019). This greatly energized research in this field (Useem et al., 1976). Alternate terms such as "nomadic children" (Eidse et al., 2011), "global nomads" (McCaig, 1996), "transculturals" (Willis et al., 1994), and "internationally mobile children" (McLachlan, 2007) were also used until 'TCK' became a universally acknowledged phrase through the popularisation of the book Third Culture Kids by Pollock et al. (2010). TCKs were described by Pollock (1988) as:

> … an individual who, having spent a significant part of the developmental years in a culture other than the parents' culture, develops a sense of relationship to all of the cultures while not having full ownership in any.

On average, TCKs are frequently bilingual or even multilingual from a very young age, due to early exposure to diverse languages and cultures (Eidse et al., 2011; Pollock et al., 2010). They seem more interested in global politics and learning foreign languages (Davis et al., 2010; Useem et al., 2011) than their non-TCK peers who stay within the country of their birth. They tend to be more open-minded (Dewaele et al., 2009) and have an expanded worldview (Eidse et al., 2011; Ezra, 2003). They are extremely complex people (Useem et al., 1996). However, they also tend to develop problems related to self-identity (Fail et al., 2004; Useem et al., 1996), sense of belonging (Pollock et al., 2010; McLachlan, 2007), isolation and depression (Davis et al., 2010; Devens, 2005). We now look at some of these in more detail through the following research questions:

1. How does a multi-school experience impact the growth and development of TCKs during childhood?
2. What are the effects of Classical Literature during childhood on the growth and development of Third Culture Kids?

This article deals with the challenges faced by TCKs, focusing on the impact of changing education systems and culture on the development of education and identity in TCKs. At this juncture, it is also fascinating to note the role that Classical Literature plays in the psychological development of young minds. Classical Literature, for the purpose of this work, points to the collection of Greek, Roman and Early English texts which form the foundation of Literature as we know today. These include the works of Homer, Virgil, Ovid and, to a certain extent, Shakespeare.

Methodology

The autoethnographic style was introduced at this juncture as a way to tell the 'journey' of the researcher in the 'quest' of finding the result of a particular thesis or research question. As hoped for, the work would be full of emotion and personal experiences that would not only pull at the heartstrings of not only the researcher but also evoke a reaction from the reader as well (Ellis et al., 2000). In other words, while a typical research has one linear process of thought that is restricted by the limitations of its paradigms, the autoethnographic style of writing constantly and consistently flows in many tangential directions but remains true to the topic/thesis as the researcher reigns in the thoughts by providing evidence and proof at every turn.

Autoethnography, as the name suggests, is the systematic analysing (graphy) of the personal experiences of the researcher (auto) with respect to the cultural influences of their immediate surroundings (ethno). In other words, the autoethnographic style of writing is the combination of two other styles of writing - an autobiography and an ethnography (Ellis et al., 2011). Rather than collecting data from an immense number of sources and collating their various components in order to try to create a conclusion that may or may not answer the research question, the authors of the autoethnographic style of writing explores all the facets and nuances within one (or at most a handful of) case study, going deeper into the particular case. In this way, the research thesis is explored in a deeper and a more profound manner without straying too far from the initial question at hand.

While the autoethnographic form of writing is more subjective (Sikes, 2015; Reissman, 2008), it also presents a nuanced, emotional outlook on the research question(s) at hand (Ellis et al., 2000). Custer (2014) further states that this transformative research method requires depth and innovation while evoking empathy and vulnerability in both the reader and the writer. As the problems raised in the project regarding the TCKs have to do with humans, their interactions with their surroundings and their relative self-identity within their own society (Pollock et al., 2010; Fail et al., 2004), it becomes important to consider emotionality, reflexivity and depth which are present in the autoethnographic style of writing (Jones et al., 2016; Ellis et al., 2000; 2010). This article, written through the qualitative paradigm, supported by primary data in the form of personal journals, diaries and accounts and secondary data in the form of quantitative data from existing literature, seeks to find the answers to the main research questions.

Discussion

1. How does a multi-school experience impact the growth and development of TCKs during childhood?

(i) Fitting-In and Culture Shock

As pointed out before, changing schools and education systems every few years make TCKs more adaptable and good at 'blending in' (Pollock et al., 2010; Useem et al., 1996; Kwon, 2019). They are sensitive to others and often stay quiet rather than invite ridicule (Useem et al., 1996). However, they often have trouble fitting-in with the new, host culture (Pollock et al., 2010; Devens, 2005; Fail et al., 2004). Even returning to their original home (or passport) culture does not help leading to feelings of 'prolonged' or "delayed adolescence" (Useem et al., 1996). Although Martinez (2019) and Dunsmore (2019) claims that an initial 'cultural shock' is important for an individual to adapt and survive in the ever-changing surroundings of the 21st Century world, Rafika et al. (2018) argue that 'culture shock' has adverse and lasting impacts on the young mind, especially on a TCK who has been torn out of their own home culture at a very early stage of their childhood (Pollock et al., 2010; Useem et al., 1996). Even when coming back to their host countries they feel "re-entry problems" or "reverse culture shock" (Pollock et al., 2010; Useem et al., 1996) – they still don't fit-in (Walters et al., 2009).

In such cases, receiving support and guidance from their school from that stage in their childhoods could greatly help their futures (Morales, 2015; Vidal, 2000; Halme, 2019). Through their survey (604 respondents) Useem et al. (1996) show that TKCs are extremely complex people, with "bland and unremarkable exteriors, however, [have] considerable

talents and a wealth of memories." They also continue to worry about blending in, even in adulthood.

According to Useem et al. (1996), coming in from different education systems and cultures causes TCKs to retain not only knowledge from their earlier schools/colleges, but also about the cultures of their previous host countries. Most of the samples within the secondary data were found to be internationally experienced and were seen to continue their international involvement, with 90% reportedly having more understanding and awareness of other peoples and cultures than most Americans, owing to their diverse education abroad. Over 90% have at least yearly contact with people from other countries with 25% interacting at least once a month. More than 60% say that "maintaining an international dimension in their lives is important to them" and keep informed about the places they have lived abroad hoping to revisit. Interestingly, according to Useem et al. (1996), consistent with their general interest in going abroad, most keep a current passport, which is also true in my case as a TCK.

Similarly, looking back through my records I see that changing schools had a very detrimental impact on my academic and emotional well-being. In one occasion, there was less than five months for me to learn a years' worth of CBSE (Indian board) curriculum. My grades suffered. An extract from a full-length poem (Chakraborty, 2019) that I wrote at this stage indicates the extent of my frustrations and my perspective on schools in India which seek to make 'accomplished' products of children:

> …and make of them 'accomplished men'
> with everything but their own minds.
>
> I have seen many such a place
> spread across seas and lands,
> where these children have been laid to waste,
> thrown their lives in Devils' hands.
>
> They sleep, they eat, they walk, they sit,
> they do what all children do

Here, it is evident that Literature played an important role in the development of TCKs. After having read multiple forms of poetry in diverse languages, it was the Classical form of Poetry which was embraced while writing these verses. Literature, in this case, has its own place as an unshakable touchstone in the English syllabus. The unchanging works of Homer, Virgil and Shakespeare create solace and comfort for these nomadic children who have to face changing boards and syllabi from all around the world. Consistency, then, becomes key in the mental make-up of young adults.

(ii) International Interests

Most TCKs have clear plans and achieve academic success in their secondary education (Kwon, 2019). However, Ebbeck et al. (2007) examined TCKs' adaptation to new school environments and found that they feel highly vulnerable and nervous about starting a school in a new educational context and country. Repetitive relocation and transition to new school, culture, and country often make them feel rootless and isolated (Fail et al., 2004) and cause challenges in building relationships with teachers and peers (Lijadi et al., 2014). 90% say that

they are "out of sync" with their age group throughout their lifetime, especially, painfully, during the late teens and twenties (Useem et al., 1996).

TCKs are also often seen to develop added interest in international affairs (Kwon, 2019; Pollock et al., 2010). For instance, in their survey Useem et al. (1996) found that 25% of the respondents chose majors that were obviously international in content. Even my choice of major was, incidentally, International in nature i.e. MA in 'International Education' as opposed to many of my peers who chose 'Education' as their major. 71% say third culture childhood and education experiences affected their college choices and experiences (43% say 'greatly', 28% say 'somewhat') (Useem et al., 1996). For many TCKs their choice of a major is influenced by their overseas experiences. Useem et al. (1996) explains:

> … [TCKs] who chose biology had been captivated by early exposure to African wildlife; historians and artists cited their exposure to European art ... For many TCKs their future growth and career choices are born out of their overseas experiences.

Personally, I found myself gravitating toward English Literature from the Undergraduate level as English – both language and literature – were constants in my life, and written classics are forever engraved as unchangeable parts of history. This goes back to the claims made by Pollock et al. (2010) and Useem et al. (1996) that many TCKs search for permanency and stability in their lives and try to achieve this through academia. Works translated from foreign languages such as *One Hundred Years of Solitude* by Márquez or *Rhinoceros* by Ionesco also attract the minds of these children who do not see language as a barrier to learning. The Old Classical Epics like Homer's *Iliad*, Virgil's *Aeneid* and Milton's *Paradise Lost* teach of the follies of Anger (Chakraborty et al., 2023), Manipulation (Chakraborty et al., 2022) and Ambition (Chakraborty et al., 2023), characteristics that are very much a part of our lives even today.

(iii) Early Support

According to the research by Useem et al. (1996), TCKs never fully adjust – they adapt, find niches and become "loners without being particularly lonely" (Useem et al., 1996).   During these growing years some young adult TCKs appear to their close peers, parents, and counsellors as being self-centred adolescents, as being luxurious to the point of extravagance, as not being able to make up their minds about their futures (Useem et al., 1996; Walters et al., 2009).

While receiving early support at the school level would greatly help them in later life (Halme, 2019), this does not always come through (Devens, 2005; Fail et al., 2004; Davis et al., 2010). An online survey by Halme (2019) shows that 73% of the TCKs respondents did not receive any exclusive academic support when they were under 7 years of age. A staggering 100% find it important to support TCKs in early childhood education and care (Halme, 2019). More than half say they needed support in later life as well (Halme, 2019). This echoes my opinion that it is necessary to give TCKs help and support from early childhood education level in order to try and mitigate the later problems faced by TCKs.

2. What are the effects of Classical Literature during childhood on the growth and development of Third Culture Kids?

As mentioned above, Classical Literature is described as the bedrock for modern scholarly interpretation of more recent literature, both poetry and prose. Homer's *Iliad*, Virgil's *Aeneid* or Milton's *Paradise Lost* are prime examples. Writers over the years have attempted to replicate the form, structure and tone found in these texts to varying degrees of success. However, one of the main reasons these works are taken to be the Classics is that even through the grand scale of the events within these texts, full of mythology, magic, gods and demons, the central ideology and theme for each of these texts tend to resonate to readers even today (Chakraborty et al., 2023). Homer's *Iliad* talks of the ramifications of anger (Chakraborty et al., 2023), Virgil's *Aeneid* depicts the feelings of loss of control (Chakraborty et al., 2022) and Milton's *Paradise Lost* describes the follies of unchecked pride and ambition (Chakraborty et al., 2023).

Although the settings may be grandiose in nature, at the core of each of these lies a moral or a tale which warns the readers of dangerous emotions while encouraging positive growth in them. Tales like Dicken's *Hard Times*, Conrad's *Heart of Darkness* or Osbourne's *Look Back in Anger* bring to light the struggles and toils of the past while Shaw's *Pygmalion*, Austen's *Pride and Prejudice* or Pope's *Rape of the Lock* talk of the norms of a beautiful society not too long in our past. This brings a grounded reality, a sense of belonging and presents as a point of reference to TCKs. Classical Literature provides a window into the soul of different cultures for people in general, but in TCKs in particular as they become a source of stability and comparison. It provides a stable basis from which they are able to integrate different facets of new cultures.

Conclusion

Constantly changing educational systems leads to initial difficulties with performance within the new academic system and makes TCKs feel marginalized by their own peers – that they don't fit-in, and are 'Othered' (Beauvoir, 1972), in both their home and host countries (Pollock et al., 2010; Useem et al., 1996). Although Martinez (2019) and Dunsmore (2019) claim that an initial 'cultural shock' is important for an individual to adapt and survive in the ever-changing surroundings of the 21st Century world, Rafika et al. (2018) argue that it has adverse and lasting impacts on young minds, especially on TCKs who have been torn from their own home culture at an early stage of their childhood. Even when returning to their passport countries, they face 'reverse cultural shock' (Walters et al., 2009; Pollock et al., 2010). Useem et al. (1996) furthers that this leads to TCKs becoming "out of sync" with their own age group throughout their lifetimes.

Indeed, it becomes a more harrowing experience for the TCKs to constantly change schools. This is so as most countries follow their own Board of Education, which are mostly different – IB (International Baccalaureate), AP (Advanced Placement), CBSE (Central Board of Secondary Education) etc. As each of these Boards brings with it its own set syllabus and teaching methods, it becomes difficult for the nomadic TCK to adjust into or fully comprehend the components of any.

Coming in from different education systems and cultures causes TCKs to retain more than just knowledge from their earlier schools/colleges – they also absorb the cultures and practices of their previous host countries (Pollock et al., 2010; Useem et al., 1996). They are

also seen to develop added interest in international affairs (Kwon, 2019), choose subjects that are obviously more 'international' in content or majors that allow international travel (Useem et al., 1996). For many TCKs, including myself, future growth and career choices are born out of their overseas experiences (Pollock et al., 2010; Useem et al., 1996). However, there is a dearth of options for such courses in High School or Higher Secondary Levels of Education.

Adult TCKs (ATCKs) realize that receiving early support, at a younger age, would have helped them settle into later adult life better (Halme, 2019). TCKs who have had to immerse themselves into strange and new surroundings are seen to develop conditions such as depression, feelings of isolation and loss of identity as they grow older (Fail et al., 2004; Devens, 2005). They have feelings of rootlessness and not belonging to any one culture or nation as there is not much to tether or ground them to one place (Pollock et al., 2010; Davis et al., 2010). It is required to give such TCKs support in early childhood education in order to try and mitigate any later problems faced by them (Morales, 2015).

Due to their nomadic lifestyles, TCKs not only experience a number of cultures and traditions during their childhood, but often find themselves becoming rootless in the process. Classical Literature, although centuries old in origin, often describe fundamental principles and central ideologies that resonate with readers even today. Within the tomes of verbose and obscure writing lie some of the most informative morals that are relevant even today.

References

Beauvoir, S. de. (2015). The second sex. Vintage Classics.

Chakraborty, S. "Life is a Many Wonder Thing." Aadhunik Sahitya, 2019, pp.63.

Chakraborty, S., Chakraborty, D., Gulati, V., Prasad, V. (2022, November 20-21) *Comparative Analysis of Control in Virgil's Aeneid and Shakespeare's Othello* [Conference Presentation] 14th Worldwide Forum on Mental Health & Psychiatry, Rome, Italy.

Chakraborty, S., Chakraborty, D., Gulati, V., Prasad, V. (2023, April 5-6) *Comparative Analysis of Ambition in Milton's Paradise Lost and Shakespeare's Macbeth* [Conference Presentation] 4th Annual Psychiatrists and Psychologists Meet, Vancouver, Canada. [submitted]

Chakraborty, S., Chakraborty, D., Prasad, V. (2023, February 20-21). *Comparative Analysis of Anger in Homer's Achilles with Shakespeare's Hamlet* [Conference Presentation] Annual Congress on Child Care: Mental Health, Psychology and Nursing, Goa, India.

Chakraborty, S., Chakraborty, D., Prasad, V. (2023, May 19-22) *A Comparative Study of Greek and Roman Mythologies with Special Reference to Excerpts from Ovid's 'Metamorphoses' and Riordan's 'Percy Jackson'* [Conference Presentation] The 13th Asian Conference on Cultural Studies (ACCS2023), Tokyo, Japan. [submitted]

Custer, D. (2014). Autoethnography as a transformative research method. *Qualitative Report*, *19*(37).

Davis, P., Headley, K., Bazemore, T., Cervo, J., Sickinger, P., Windham, M., & Rehfuss, M. (2010). Evaluating impact of transition seminars on missionary kids' depression, anxiety, stress, and well-being. *Journal of Psychology and Theology*, *38*(3), 186-194.

Devens, J. A. (2005). *Depression rates among third culture kids in an international school setting*. Capella University.

Dewaele, J. M., & Van Oudenhoven, J. P. (2009). The effect of multilingualism/multiculturalism on personality: No gain without pain for third culture kids?. *International Journal of Multilingualism*, *6*(4), 443-459.

Dunsmore, K. (2019). Teaching Resilience to Digital Culture Shock. *Internationalizing the Communication Curriculum in an Age of Globalization*, 98.

Ebbeck, M., & Reus, V. (2006). *The experiences of third-culture children* (Doctoral dissertation, Lawrence Erlbaum Associates).

Eidse, F., & Sichel, N. (2011). *Unrooted childhoods: Memoirs of growing up global*. Hachette UK.

Ellis, C., & Bochner, A. (2000). Autoethnography, personal narrative, reflexivity: Researcher as subject.

Ellis, C., Adams, T. E., & Bochner, A. P. (2011). Autoethnography: an overview. *Historical social research/Historische sozialforschung*, 273-290.

Ezra, R. (2003). Culture, language and personality in the context of the internationally mobile child. *Journal of Research in International Education*, *2*(2), 123-149.

Fail, H., Thompson, J., & Walker, G. (2004). Belonging, identity and third culture kids: Life histories of former international school students. *Journal of research in international education*, *3*(3), 319-338.

Halme, K. R. (2019). Belonging everywhere and nowhere: The struggle of Third Culture Kids and their need for support in early childhood education and care.

Jones, S. H., Adams, T. E., & Ellis, C. (2016). *Handbook of autoethnography*. Routledge.

Kwon, J. (2019). Third culture kids: Growing up with mobility and cross-cultural transitions. *Diaspora, Indigenous, and Minority Education*, *13*(2), 113-122.

Lijadi, A. A., & Van Schalkwyk, G. J. (2014). Narratives of third culture kids: Commitment and reticence in social relationships. *The Qualitative Report*, *19*(25), 1.

Martinez, C. (2019). Culture Shock and College Success.

McCaig, N. M. (1996). Understanding global nomads. *Strangers at home*, 99-120.

McLachlan, D. A. (2007). Global nomads in an international school: Families in transition. *Journal of Research in International Education*, *6*(2), 233-249.

Morales, A. (2015). Factors affecting third culture kids (TCKs) transition. *Journal of International Education Research (JIER)*, *11*(1), 51-56.

Pollock, D. C., Van Reken, R. E., & Pollock, M. V. (2010). *Third Culture Kids: The experience of growing up among worlds: The original, classic book on TCKs*. Hachette UK.

Pollock, D., & McCaig, N. (1988). The Third Culture Kid Profile. *SIETAR International, Montreal, Quebec, Canada*.

Rafika, D. A., Syahri, I., & Susanti, R. (2018). Culture shock experienced by foreign workers. *Archives of Business Research*, *6*(4).

Riessman, C. K. (2008). *Narrative methods for the human sciences*. Sage.

Sikes, P. (2015). Ethical considerations in autoethnographic research. *Specialist Research Ethics Guidance Paper*.

Useem, R. H., & Cottrell, A. B. (1996). Adult third culture kids. *Strangers at home: Essays on the effects of living overseas and coming home to a strange land*, 22-35.

Useem, R. H., & Downie, R. D. (1976). Third-Culture Kids. *Today's Education*, *65*(3), 103-5.

Useem, R. H., & Downie, R. D. (2011). Third-Culture Kids Ruth Hill Useem and Richard D. Downie1. *Writing Out of Limbo: International Childhoods, Global Nomads and Third Culture Kids*, 18.

Vidal, X. (2000). Third culture kids: A binding term for a boundless identity. *Senior Essay, April*, 10.

Walters, K. A., & Auton-Cuff, F. P. (2009). A story to tell: The identity development of women growing up as third culture kids. *Mental Health, Religion and Culture*, *12*(7), 755-772.

Willis, D. B., Enloe, W. W., & Minoura, Y. (1994). Transculturals, transnationals: The new diaspora. *The International Schools Journal*, *14*(1), 29.

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Job Satisfaction of Special Education Teachers of La Union, Philippines in the New Normal

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Abstract

The shift from traditional classrooms to the use of different learning modalities transformed the 21st century educational landscape during the new normal. Situating education at a different setting poses a challenge on the job satisfaction of teachers more so in special education where SPED teachers elaborate guidance and specialized skills are matched to the specific needs of learners with special needs. Hence, this study aimed to determine the job satisfaction level of SPED teachers in the new normal along nature of work, supervision, administration, relationship with co-workers, policy, and fringe benefits and the challenges encountered. With this, a mixed method design was employed, a questionnaire on job satisfaction was adapted, and a focus group discussion through a saturation method on the challenges encountered was conducted. The results revealed that the over-all level of job satisfaction of SPED teachers in the new normal is Very Highly Satisfied (4.63), specifically fringe benefits (4.73), relationship with co-workers (4.68), policy (4.66), administration (4.62), nature of work (4.56), and supervision (4.53). Challenges such as lack of trainings and parent-student collaboration were highlighted. In this regard, emphasis on the use of different new normal management strategies should be reemphasized and considered by the school heads in order to develop, improve, and maintain the maximum job satisfaction level of the SPED teachers in the new normal.

Keywords: Job Satisfaction, Job Satisfaction Challenges, Special Education, SPED Teachers, New Normal

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Introduction

Situating education at a different setting poses a challenge on the job satisfaction of teachers more so in special education where SPED teachers elaborate guidance and specialized skills are matched to the specific needs of learners with special needs. Hence, this study aimed to determine the level of job satisfaction and challenges encountered by SPED teachers in the new normal. This study can help curriculum developers understand the needs of the teachers and create plans and strategies that may help students with disabilities based on the job satisfaction specific needs and requirements. Moreover, this can help educators make necessary adjustments in their over-all work styles in order to meet the needs of the learners with special needs. With this, learners with special needs will benefit as well for their educational needs in the new normal environment would be addressed through the SPED teachers' preparation and adjustment of teaching approaches.

Literature Review

COVID-19 Challenges Hit Special Ed Teachers especially Hard (Murez, 2022). Challenges such as high teacher turnover rate is one of the obstacles in the new normal education leading to a domino effect on student and institution's performance. In truth, Toropova (2019) raised the growing issue of increasing teacher turnover rates which led to subsequent shortage of qualified teachers. She also emphasized that teacher shortage can be highly merited to job satisfaction that contributes to the well-being of teachers and students. However, measures are taken by institutions to address concerns in in the job satisfaction of SPED teachers in the new normal.

In the Philippines, in the Department of Education based on performance appraisal, SPED teachers' challenged satisfaction in the new normal surfaced as a problem. Helpline PH (2022) cited Carlos in the viral SMNI News Channel Presidential Debate, where she reiterated that the critical variable for effective learning to happen is to invest in the teachers. Romero and Bantigue (2017) in the result of their research entitled "Job Satisfaction Level of K To 12 Teachers Utilizing Multiple Statistical Tools" reiterated that the change in the Department of Education, school managers and teachers are challenged to maintain job performance under stressful conditions. Nonetheless, in the news and media press releases of the Department of Education Regional Office III said that Amid the COVID-19 Pandemic: DepEd Region III assures learning for children with special needs continues; trains SPED teachers in Central Luzon (DepEd Region III, 2022). With this, there is a need to identify the SPED teachers' level of job satisfaction and challenges in the new normal.

In the context of this study, job satisfaction refers as an important aspect of a SPED teacher's life which occupies a lot of personal and professional time compared to any other activity with the pleasure felt after a need is fulfilled. It is determined through the SPED teachers' job satisfaction in the new normal along the following areas: nature of work, supervision, administration, relationship with co-workers, policy, and fringe benefits. Navarrete (2022) defined the six job satisfaction domains as follows: 1) nature of work covers the overall operation, description, and responsibility, 2) supervision covers guidance, support, and monitoring from school heads, supervisors, and other leaders of the division, 3) administration focuses on how the administrators handle and implement the rules, regulation, and policies, 4) relationship with co-workers involves the status of relationship of SPED teachers, 5) policy refers to the present policies the administration has, and 6) fringe benefits

attained through benefits, rewards, and other privileges from working as SPED teachers in the new normal.

Problem Statement

This study aimed to determine the level of job satisfaction of SPED teachers in the new normal along the following areas, nature of work, supervision, administration, relationship with co-workers, policy, and fringe benefits.

Method

Mixed method convergent parallel design was used to systematically analyze and measure the level of job satisfaction of SPED teachers in the new normal.

Materials

A 61-item job satisfaction questionnaire was adapted from the research entitled by "Performance and Job Satisfaction of Proficient Junior High School Teachers in the SDO in the New Normal" by Navarrete (2021). It has a Cronbach's alpha of 0.97 which means that the items in the questionnaire have relatively high consistency. It is composed of questions along the six areas of job satisfaction competencies specifically, 20 questions on nature of work, 15 questions on supervision, seven questions on administration, nine questions on relationship with co-workers, five questions on policy, and five questions on fringe benefits. This questionnaire was distributed through the use of electronic (Google form) and printed format. The interview guide was made by the researchers and it was content validated by experts.

Samples

Universal sampling was employed. With this, a total of (66) SPED teachers from 11 SPED schools were identified, specifically, (33) or 50% from the Schools Division Office - City of San Fernando and (33) or 50% from La Union Schools Division Office.

Site

The 11 SPED schools identified from the Schools Division Office - City of San Fernando and La Union Schools Division Office were the public schools that provide special education program in the new normal both in elementary and secondary levels.

Procedures

Before the data gathering collection, the researchers sought approval to administer the questionnaire, letters of permission to conduct the study and invitation to participate, and participant consent forms were given to the schools' division superintendents, school heads, and teachers of the target institutions. These letters and forms contain details about the study that need to be known to the participants.

During the data gathering collection, there was a consent form distributed informing the participants that the study does not have known risks, costs, nor monetary compensation, and is voluntary. They were also informed that they were given anonymity and should the data

published or disseminated; their individual information will not be disclosed. Furthermore, they were informed that the data gathered from the participants will solely be used for the purpose of the study.

After the data gathering collection, numerical data collected from the rating scale and questionnaire were both statistically treated, analysed, and interpreted. The researchers also organized an individual and group interview with the participants of the study to further validate the results of the study and research on the challenges they encountered with their job satisfaction.

Measurement

A 5-point Likert scale was used to allow the participants to express their satisfaction and dissatisfaction with the items provided in the questionnaire. The response of the participants ranges from not satisfied (1) to very highly satisfied (5).

On the other hand, the qualitative data gathered from the individual and group interview using inclusion criteria from the correspondence regarding the challenges encountered by SPED in the new normal in their job satisfaction were analyzed thematically using thematic analysis and triangulation of available data. Cool-warm analysis was used wherein during the cool analysis, the significant statements were taken verbatim from transcripts and through warm analysis, the significant statements further analyzed into codes and clustered into categories and finally themes.

Data Analysis

Weighted mean was used to identify the level of job satisfaction of SPED teachers in the new normal along nature of work, supervision, administration, relationship with co-workers, policy, and fringe benefits.

Table 1 presents the 5-point scale that was used to categorize and interpret the level of job satisfaction of SPED teachers in the new normal along nature of work, supervision, administration, relationship with co-workers, policy, and fringe benefits.

Table 1. Level of Job Satisfaction

Statistical Range	Descriptor	Interpretation
4.21-5.00	Very Highly Satisfied	The level of SPED teachers' job satisfaction is met in all areas.
3.41-4.20	Highly Satisfied	The level of SPED teachers' job satisfaction is met in the majority of the areas however some areas need improvement.
2.61-3.40	Moderately Satisfied	The level of SPED teachers' job satisfaction is met in at least half of the areas however teachers are prone to dissatisfaction when more factors or domains are not satisfied.
1.81-2.60	Poorly Satisfied	The level of SPED teachers' job satisfaction is met in only a few areas.
1.00-1.80	Not Satisfied	The level of SPED teachers' job satisfaction is not met, majority of these areas needs improvement since teachers are dissatisfied with their job.

Validity and Reliability

The reliability of the questionnaire adapted for the study has a Cronbach's reliability coefficient that is considered as highly consistent. The interview guide used for the challenges encountered were validated by the research panel members of the University of the Cordilleras. After the data gathering collection, the process of triangulation was also utilized to further analyze and verify the findings of the study. The researchers organized individual and group interview with the participants of the study using inclusion criteria.

Results and Discussion

This portion of the study presents analysis, interpretation, and discussion of the data collected on the level of job satisfaction of SPED teachers in the new normal along nature of work, supervision, administration, relationship with co-workers, policy, and fringe benefits and the challenges they encountered.

Table 2 presents the level of job satisfaction of SPED teachers in the new normal along nature of work.

Table 2. Level of job satisfaction of SPED teachers in the new normal along nature of work

Items	Weighted mean	Descriptive equivalent
My students respect me as a teacher even when there are no face-to-face classes.	4.79	VHS
Teaching encourages me to be creative with this new normal.	4.70	VHS
I do have responsibility for my teaching in the new normal.	4.65	VHS
My work this new normal consists of routine activities.	4.65	VHS
Teaching in the new normal provides me the chance to develop new methods.	4.65	VHS
Teaching provides me a secured future even during this pandemic.	4.61	VHS
The freedom to make my own decision in dealing with my students and with the parents is practiced.	4.59	VHS
Working conditions in my school allow me to work productively on-site.	4.59	VHS
Changes in teaching brought by the new normal allow me to convert them into opportunities for growth and improvement.	4.58	VHS
Teaching provides me an opportunity to use a variety of skills in this new normal.	4.58	VHS
I feel inspired to perform my responsibility in this new normal.	4.55	VHS
Teaching provides me the opportunity to help my students learn through synchronous and asynchronous modalities.	4.55	VHS
Teaching this new normal encourages originality.	4.55	VHS
Physical surroundings in my school are pleasant.	4.53	VHS
Working conditions in my school under the skeletal-Work-force arrangement is comfortable.	4.52	VHS

Working conditions at home allow me to work productively under the work-from-home arrangement.	4.48	VHS
Working conditions in my school are comfortable.	4.44	VHS
I feel secure in my teaching job this new normal.	4.42	VHS
Teaching in the new normal provides me an opportunity for promotion.	4.39	VHS
Blended learning provides unlimited opportunities for advancement.	4.36	VHS
General weighted mean	4.56	VHS

VHS – Very Highly Satisfied

The results reveal that SPED teachers' scores had an average mean of very highly satisfied rating (4.56) which indicates that the level of job satisfaction of SPED teachers in the new normal along nature of work is very highly satisfied. The items in tables 2 to 7 were arranged from highest to lowest to show emphasis. This implies that the SPED teachers in the new normal were fulfilled with regard to the overall work description, operation, and responsibility. This suggests that SPED teachers in the new normal gratified their job and that their well-being were positively affected that is why they were very pleased with the nature of work. This further implies that SPED teachers were VHS because they were fond of the benefits of their teaching job to their personal lives as SPED teachers in the new normal due to the work from home arrangement and usage online group chats for meetings.

The outcome of the study backs Rai et al. (2021) where they found that satisfaction with nature of work had a significant positive impact on the affective and normative commitment of the employees. This also corroborates the findings of Gu (2016), wherein he found that SPED teachers who loved their job had higher levels of job satisfaction. Further, when the work contributes positively to the well-being of teachers and students, high job satisfaction occurs, Toropova (2019). This supports the study of Yudhie Suchyadi (2018) stating that the higher the supervision of the principal, the higher the teacher job satisfaction.

On the other hand, the results oppose the findings of Reilly (2020) noting that there were problems in the work conditions among teachers worldwide and mentioned that being a facilitator of learning during the new normal forces both regular and SPED teachers to use their own money for school supplies and even prevent them from being able to afford children of their own. The article of Bautista (2020) furthered that teachers took loans to prepare classrooms and not just for emergencies. However, in the midst of the pandemic, the Department of Education (Ph) issued "Expanded Career Progression" or added plantilla positions from Teacher 1 to 7 for public school teachers. This was made in order to reiterate that the new normal requirements in the academe are reciprocated with such programs to ensure that teachers were consistently motivated in providing quality education to Filipino learners (DepEd, 2022).

Table 3 presents the level of job satisfaction of SPED teachers in the new normal along supervision.

Table 3. Level of job satisfaction of SPED teachers in the new normal along supervision

Items	Weighted mean	Descriptive equivalent
Praises good teaching.	4.62	VHS
Think of our safety.	4.62	VHS
Helps with improving instructions.	4.59	VHS
Gives me assistance when I need help.	4.56	VHS
Makes the materials available for me to do my best.	4.56	VHS
Makes me feel comfortable	4.56	VHS
Offers suggestions to improve teaching.	4.56	VHS
Is willing to listen to suggestions.	4.53	VHS
Builds and keeps relationships with all employees equally.	4.53	VHS
Explains what is expected of me.	4.52	VHS
Treats everyone equitably.	4.52	VHS
Gives recognition.	4.50	VHS
Backs me up.	4.47	VHS
Gives many meaningful instructions.	4.45	VHS
Tells me that I am a good teacher.	4.41	VHS
General weighted mean	4.53	VHS

VHS – Very Highly Satisfied

Table 3 reveals that the job satisfaction level of SPED teachers in the new normal along supervision was very highly satisfied (4.53). It is evident that the domain supervision attained the highest possible general weighted mean and descriptive equivalent. This suggests that most of their specific expectations or requests were met. The result implies that the SPED teachers in the new normal were very content with their school heads, supervisors, and other leaders' standard monitoring, guidance, and support during the implementation of the new normal. This hints that the majority of are pleased with the roles being portrayed by the school heads, supervisors, and other leaders. 100% or a total of 9 SPED teachers in the new normal from the participating 9 SPED schools agreed during the individual and group interview by the researcher conducted via Zoom meeting that the SPED teachers' school heads, supervisors, and other school leaders acknowledged their efforts during the new normal.

The result supports the importance of supplies in the success of the instruction as it was highlighted during the bond paper drive conducted all over the Philippines to sustain the different learning modules relevant to the use of self-learning modules (Rappler, 2020). The statement of one of the SPED teachers corroborates the findings of Mercieca et al. (2021) that SPED teachers created relevant decisions or judgments at precisely those moments where guidelines and procedures are unclear, and the criteria open to multiple interpretations. The result supports Formoso (2019) when the respondents in her research also reported that they were mostly challenged by their lack of knowledge and trainings on the proper conduct of SPED but opposed the shortage of material resources.

This corroborates Romero and Bantique (2017) when they cited Herzberg theory of motivation where their study unravelled the job satisfaction level the K to 12 teacher respondents including SPED teachers were satisfied with the actuations of their superior or manager. The result also agrees with the findings of the Department of Education (2020)

wherein Hernando-Malipot (2020) cited that DepEd addresses challenges in Special Education under "new normal". It was stated that the former Education Secretary Leonor Briones wanted to give careful attention in finding ways to increase access for students with special needs in schools. Moreover, the Department of Education (Philippines), developed a Basic Education-Learning Continuity Plan (BE-LCP) and assured that Special Education is included in the different learning modalities, to ensure that learning continuity is possible for learners with special education needs.

Table 4 presents the level of job satisfaction of SPED teachers in the new normal along administration.

Table 4. Level of job satisfaction of SPED teachers in the new normal along administration

Items	Weighted mean	Descriptive equivalent
Works for the good of all stakeholders this new normal.	4.70	VHS
Listens to the concerns and issues of the teaching personnel.	4.65	VHS
Provides materials in producing modules. (e.g., bond papers)	4.64	VHS
My school communicates its policies well.	4.61	VHS
Provides a convenient working environment this new normal.	4.61	VHS
Administrators treats all its employees fairly.	4.58	VHS
My school clearly defines the policies.	4.56	VHS
General weighted mean	4.62	VHS

VHS – Very Highly Satisfied

Table 4 reveals that the job satisfaction level of SPED teachers in the new normal administration was very highly satisfied (4.62). Specific to environment for teaching, clear policy, fairness, communication, and supplies during the implementation of the new normal. This claim was elaborated by a SPED teacher from one of the participating SPED schools when he mentioned that though some supplies were a bit delayed the supplies came as long as they waited patiently.

The result supports the cited research of Lujan (2020) where it stated that students with disabilities were entitled to an education just like all students that is why teachers need adequate supplies and curriculum to teach this population of students in a fair and equitable way. The result backs Briones (2022) as cited by DepEd (2022) when she suggested that 100% onsite reporting only for Alert-level 1 areas opened an opportunity to improve the implementation of the different learning modalities. This also supports the study of Glessner and Johnson (2020) in their findings that specific factors that promoted resiliency in teaching during a pandemic – special education teachers sought connections and relationships, they established routines and looked to administrators for guidance and support.

On the other hand, it was evident that though SPED teachers in the new normal benefited from the work from home arrangement in terms of safety it caused the opposite to the parents, challenges were experienced by the parents of children with special needs. The claim that parents were struggling in this process supports the revelations of Hill (2020) when she elaborated that parents were not teachers and no amount of love and care at home can turn the average parent into a special-education teacher overnight. The result backs that the SPED teachers' sentiments regarding the parents' insufficient ability to connect with SPED teachers were true in a sense that the parents were struggling with the adjustment too. In light of the

result, Department of Education provided kamustahans, trainings, and home-visitations through the SPED teachers to extend assistance among the parents.

The result supports the findings of Lingayo and Madriaga (2021) when their research presented that SPED teachers' most encountered challenge focused on the family support given to the children with special needs. The statement paralleled the study of Glessner and Johnson (2020) wherein they found that parents were stressed and worried about keeping their family healthy while providing income and that very few parents mentioned concerns on the learning of their children with special needs. This result corroborates with the claim of Maslow's Theory that basic needs must be fulfilled for a person to prioritize the next level of needs (Chand, n.d.).

However, despite the challenges, Department of Education's press release entitled "Deped to Maximize Use of SEF in Aid for Distance Learning" ensuring that learning opportunities be made available despite the situation for the acquisition of learning materials, mental health, and Psychosocial Services for SPED teachers in the new normal, learners with special education needs, and parents of learners with special education needs (DepEd, 2020). For instance, Division B regularly provides sign language and orientation on learning disability trainings among their parents.

Table 5 gleaned on the next page presents the level of job satisfaction of SPED teachers in the new normal along relationship with co-workers.

Table 5. Level of job satisfaction of SPED teachers in the new normal
along relationship with co-workers

Items	Weighted mean	Descriptive equivalent
I appreciate it when my colleagues provide me with suggestions or feedback about my teaching.	4.79	VHS
I appreciate the assistance of every co-worker in the school.	4.73	VHS
I have made lasting friendships among my colleagues.	4.73	VHS
I like the people whom I work with.	4.73	VHS
I can observe that my colleagues stimulate me to do better.	4.71	VHS
I get cooperation from the people I work with.	4.71	VHS
I can see that the teachers in my school are concerned about the well-being of fellow teachers.	4.62	VHS
I believe that my colleagues are highly critical to one another.	4.59	VHS
I am knowledgeable that my interests are like those of my colleagues.	4.55	VHS
General weighted mean	4.68	VHS

VHS – Very Highly Satisfied

Table 5 reveals that the job satisfaction level of SPED teachers in the new normal along relationship with co-workers is very highly satisfied (4.68). The result implies that the SPED teachers in the new normal were pleased with the status of relationship or bond of SPED teachers with their fellow SPED teachers and enjoyed their involvement because it positively affected their satisfaction towards work.

This corroborates the findings of Samuel (2020) when he showed in his research that elaborated enjoyment is critical for success among teachers. The result supports Anyon et al.

(2018) when he found "...supportive and genuine relationships are essential in creating a positive school climate, reducing problem behaviors, and lessening racial discipline gaps" (p. 222). This also backs the study of Glessner and Johnson (2020) findings where it demonstrated specific factors that promoted resiliency in teaching during a pandemic – special education teachers sought connections and relationships from peers for support.

On the other hand, the result on gaps made among SPED teachers even long the new normal opposed the findings of Samuel (2020) in his research that showed two to three years together to see greater teamwork in co-teaching partnerships, and a need to support teachers in relationship building to increase enjoyment of co-teaching. However, in the midst of pandemic SPED Schools in the Department of Education (Philippines) continuously promoted team building programs specific to SPED teachers according to the Education Program Supervisor in-charge of SPED (personal communication June 30, 2022).

Table 6 gleaned on the next page presents the level of job satisfaction of SPED teachers in the new normal along policy.

Table 6. Level of job satisfaction of SPED teachers in the new normal along policy

Items	Weighted mean	Descriptive equivalent
I carry out policies in support of the mission of the DepEd.	4.73	VHS
I have policies that uplift my morale to perform my best.	4.71	VHS
The policies promote my well-being and protection.	4.70	VHS
I implement legitimate policies of the school without any hesitation.	4.62	VHS
I am considered in the crafting of policies that affect me.	4.55	VHS
General weighted mean	4.66	VHS

VHS – Very Highly Satisfied

The result reveals that SPED teachers in the new normal has an average mean of very highly satisfied rating (4.56) along policy. The result of the job satisfaction survey along policy implies that the SPED teachers in the new normal were contented with regard to the mandate of policies they have at present which anchors the realization of the vision, mission, and goals of the school among the SPED teachers in the new normal.

The result suggests that SPED teachers in the new normal follow the policies in accordance to their will even though there was an increase of job demand accordingly. The result hints that the policies were crafted in accordance to the teaching needs of the SPED teachers in the new normal. This further infers that SPED teachers were very highly satisfied because the new normal policies were crafted to strengthen the delivery of instruction.

The outcome of the study supports Tria (2020) where he elucidated that children are vulnerable in public places such as school. That is why the need to strengthen policy in terms of the delivery of instruction should be present because this provides opportunities for online learning platforms. The results oppose the research findings of Mahmood et al. (2021) where they showed evidence that teachers' satisfaction with teleworking has been reduced as a consequence of the job demand increase.

Table 7 presents the level of job satisfaction of SPED teachers in the new normal along fringe benefits.

Table 7. Level of job satisfaction of SPED teachers in the new normal along fringe benefits

Items	Weighted mean	Descriptive equivalent
I receive performance and/or incentive bonuses.	4.85	VHS
I am provided additional benefits such as midyear and yearly bonuses.	4.83	VHS
I receive cash allowances.	4.67	VHS
I can avail leaves such as vacation and sick leaves.	4.65	VHS
I can avail for a loan anytime for emergency purposes.	4.64	VHS
General weighted mean	**4.73**	VHS

VHS – Very Highly Satisfied

The table reveals that the job satisfaction level of SPED teachers in the new normal along fringe benefits was very highly satisfied (4.68). The result implies that the SPED teachers in the new normal were pleased with the extra benefits supplementing their salaries. The result hints that SPED teachers in the new normal enjoyed the fringe benefits which positively affected their satisfaction towards work that is why they stayed in their work. This suggests that the bonuses, additional benefits, cash allowances, vacation and sick leaves, as well as loan were easily accessed by the SPED teachers in the new normal.

The result affirms DepEd (2022) in its announcement of the increase ceiling of provident from loans to assist personnel. The result backs Yavuz (2018) in his research finding that salary at SPED schools is a convenient variable in job satisfaction. This result corroborates Symonds (2022) in his article entitled "Fringe Benefits Examples to Boost Employee Satisfaction" wherein it presented that attractive benefits and compensation packages can be a great way to attract and retain top talent. This supports the research of Nisar and Siddiqui (2019) research where he elaborated that when a good number of leaves is provided by the employer, the employees tend to be more satisfied and committed towards their job.

Moreover, the result backs that SPED teachers' finances affect job satisfaction, based on its relationship with head teacher leadership (Ali et al., 2021). This corroborates Maslow's theory related to financial elements in explaining teacher' job satisfaction. The theory states that finance is a necessity for a person to achieve satisfaction in work. However, the result negates Ordway (2020) when she said that bigger paychecks do not guarantee greater job satisfaction but later said that academic studies indicate that when teacher earnings rise, school districts and students can benefit in a range of way.

Table 8 presents the analysis of the data on the summary of level of job satisfaction along nature of work, supervision, administration, relationship with co-workers, policy, and fringe benefits.

Generally, the SPED teachers in the new normal were very highly satisfied (4.63). This hints that SPED teachers in the new normal received what they expected and that the challenges they encountered highlighted their satisfaction on fulfilling their respective responsibilities. The result supports the findings of Tsakiridou and Kolovou (2018) when they showed in their survey that the participants including SPED teachers are rather satisfied with their job. This result supports the Range of Affect Theory reiterated in reverse that when the actual situation received is not the exact expectation of the SPED teachers it can affect their satisfaction Morris (2021).

Table 8. Summary of level of job satisfaction

Items	General Weighted mean	Descriptive equivalent
Fringe Benefits	4.73	VHS
Relationship with co-workers	4.68	VHS
Policy	4.66	VHS
Administration	4.62	VHS
Nature of Work	4.56	VHS
Supervision	4.53	VHS
Over-all weighted mean	**4.63**	VHS

VHS – Very Highly Satisfied

Table 9 presents the challenges encountered in the job satisfaction of SPED teachers in the new normal.

Table 9. Challenges encountered in the job satisfaction

Theme	F	Sample Responses
Connectivity and Technological Difficulty	7	With the works *naman*, some of us experienced difficulty with signal in (..) with the reports being chairman, I have difficulty consolidating the reports because they were late because of the signal like that. May be as time goes by, *siguro* adjust-adjust *nalang.* ~KR1
Difficulty coping with the Changing Administrative Policies and Guidelines	7	Yes, Ma'am so, I experienced difficulty in coping with my work load because in our Division I was chosen to be one of the module writers so it demanded so much time and even night time until I finish with my own modules.~KR1
Insufficient Learning and Financial Resources	6	*Saakin* ma'am *maidadagdag ko nalang* ma'am you use your initiative *pakapalan iti rupa tayo puskulek* you need also to solicit other stakeholders *lalo yung mga kakilala natin natin sa buhay.*~KR7 (For me ma'am what I can add is to be initiative and be determined when solicitation is needed specially with the people we know.)
Difficulty in facilitating SPED Pedagogies	6	Difficulty on how we teach the learners, how we come up with new activities.~KR3
Unprepared Parents	5	And then yung modules *mismo,* learners and parents misunderstood or misinterpret the contents of modules. Some learners do not listen to their parents to answer to their modules. ~KR5

Connectivity and technological difficulty

Ranked first in the challenges encountered in job satisfaction is the connectivity and technological difficulty experienced by 7 out of 9 key respondents as seen on Table 9. This

pertains to challenges brought by the limitation in the different dimensions in job satisfaction because of the use of technology instead of the face-to-face setting.

This hints that difficulty in internet connectivity and lack gadgets which were supposed to aid in the different learning modalities in the new normal that promote job satisfaction. This infers that SPED teachers in the new normal were challenged because there are certain limitations in using tech, the absence of internet connectivity and lack of technological items led to disruption of control and continuation of classes in the new normal. This hints that SPED teachers preferred to work at home because they had stronger internet connectivity despite having to do it with their own expense since that helped them provide uninterrupted learning experience to their learners. This suggests that SPED teachers looked for ways to provide gadgets since they lack learning resources such as the internet used as a way to connect to their SPED learners and used the internet as a bridge to the gap that the face-to-face restriction created.

According to KR1 who is from one of the schools in Division A several SPED teachers in the new normal had difficulty with signal in their school. She highlighted that as a chairman, the bad signal led to late submission of consolidated reports to which were labelled urgent. The same issue was raised in the school of KR4 and said that LSENs main hindrance was the lack of gadget and internet connectivity that marked the LSENs absent during *kamustahans.* KR2, KR5, KR6, KR8 and KR9 mentioned that connectivity and technological limitations manifested both in the SPED teachers since they relied to fast internet connection and great signal to perform their duties as SPED teachers and communicate with parents, they furthered that laptops were not provided by the school as well and LSENs since most of them did not have e-connectivity, manifested lack of tech that made them miss classes online. This is related to the third challenge which focuses on lack of financial and learning resources. The abovementioned adjustments showed that SPED teachers in the new normal did their best to rise above the challenge for the benefit of the LSENs.

The result corroborates the revelation that technology became a down fall for a veteran SPED Master Teacher however even made her a better teacher since she was able to cope with the changing times as discussed in Table 2 under job satisfaction. This is related to the discussion of the positive impact of tech to SPED teachers when done correctly by Winsterstein (2021) and Kormos (2018) (Please see Table 2). Further this justifies the challenge on technology which was dubbed as "added work for young SPED teachers" but help them relate with other teachers as seen on the previous discussion (Please see Table 5) nature of work had a very highly satisfied rating (Please see Table 2) since the SPED teachers were able to fulfill their duties at home despite the challenge brought by internet connectivity. This affirms the research entitled "Research Supervision in Distance Learning: Issues and Challenges" authored by Zaheer and Munir (2020) where they acknowledged that technology is one of the main issues faced by students, teachers, and supervisors that affected student–supervisor interaction, diversity, perceptions, virtual communities and academic collaboration in a non-face-to- face classroom.

Conclusion

This portion of the study presents the conclusion drawn and recommendations proposed by the researchers. Looking through the level of job satisfaction and challenges showed that SPED teachers in the new normal can share their best practices to other SPED schools. In light of the findings of the study, the following conclusions are drawn: The parallelism of the

SPED teachers' expectations and reality in the new normal resulted to their optimum contentment in all areas of their job contributing to their innate disposition of satisfaction. The challenges of the SPED teachers and other school stakeholders were caused by the essential abrupt changes during the new normal.

After a careful review of the conclusion, the following are recommended. SPED teachers in the new normal are recommended to sustain the level of job satisfaction in ways such as the continuation of faculty development programs or training for personal and professional development. Create a solid working open communication and collaboration, as well as sharing of best practices between and among the internal and external stakeholders to address those challenges. In addition, future researches are recommended to look into other variables aside from the new normal that causes the challenges encountered in job satisfaction.

Certainly, being able to reveal the over-all level of job satisfaction and challenges encountered of SPED teachers in the new normal along the six are vital in the 21st century learning as a reflection of our special education system's adaptability in the changing environment.

Acknowledgements

References

Journal Publication

Ali et al. (2021). Financial elements in job satisfaction of special education teachers in Malaysia. *Turkish Journal of Computer and Mathematics Education (turcomat) Vol. 12 No. 11 (2021).*

Anyon, Y., Atteberry-Ash, B., Yang, J., Pauline, M., Wiley, K., Cash, D., Downing, B., Greer, E., & Pisciotta, L. (2018). It's all about the relationships: educators' rationales and strategies for building connections with students to prevent exclusionary school discipline outcomes. *Children & Schools, 40(4), 221–230.*

Formoso, D. (2019). Supervision of instruction in special education in two schools in the Philippines. *Elixir Soc. Sci. 126 (2019) 52529-52533.*

Glessner, M. & Johnson, S. (2020). The experiences and perceptions of practicing special education teachers during the COVID-19 pandemic. *The Interactive Journal of Global Leadership and Learning.*

Gu, X. (2016). Teacher job satisfaction in public schools. *CORE.*

Kormos, E.M. (2018). The unseen digital divide: urban, suburban, and rural teacher use and perceptions of web-based classroom technologies. *Computers in the School*s, 35(1), 19-31.

Lingayo, K. & Madriaga. I. (2021). Strategies of teachers in teaching children with special needs in online learning. *4th International Academic Conference on Education, Teaching, and Learning.*

Lujan, S. (2020). The importance of administrative support for special education teachers. *University of the Pacific Theses and Dissertations.*

Mahmood, F., Ariza-Montes, A., Saleem, M., & Han, H.(2021). Teachers' teleworking job satisfaction during the COVID-19 pandemic in Europe. *Curr Psychol* (2021).

Mercieca, D., Mercieca, D., & Ward, K. (2021). Teachers working in special schools in Scotland acting with practical wisdom: supporting children with additional needs in COVID-19 lockdown. *Educ. Sci. 2021, 11,569.*

Nisar, S. & Siddiqui, D. (2019). Survey on the role of fringe benefits in employee satisfaction – an analysis of organizations of Pakistan. *International Journal of Human Resource Studies 9(1):232.*

Rai, A., Budhathoki, P., & Kumar, C. (2021). Linkage between satisfaction with colleagues, promotion, nature of work. *Problems and Perspectives in Management, 19 (1), 127-136.*

Romero G. & Bantigue N. (2017). Job satisfaction level of K to 12 teachers utilizing multiple statistical tools. *Asia Pacific Journal of Contemporary Education and Communication Technology (APJCECT) ISBN: 978 0 9943656 82; ISSN: 2205-6181 Year: 2017, Volume: 3, Issue: 1.*

Toropova, A. (2019). Teacher job satisfaction: the importance of school working conditions and teacher characteristics. *Educational Review, 73:1, 71-97.*

Tria, J. (2020). The COVID-19 pandemic through the lens of education in the Philippines: the new normal. *International Journal of Pedagogical Development and Lifelong Learning, Volume 1, Issue 1.*

Tsakiridou, H. & Kolovou, S. (2017). Job satisfaction among special education professionals. *American Journal of Educational Research*. 2018, 6(11), 1565-1572.

Yavuz, M. (2018). Examination of the job satisfaction of teachers working with individuals in need of special education with regards to certain variables. *Journal of Education and Training Studies . Issn 2324-805x (Print) Issn 2324-8068 (Online).*

Yudhie Suchyadi, N. (2018). Relationship between principal supervision in increasing the job satisfaction of private junior high school teachers in East Bogor District. *Journal of Humanities and Social Studies.* https://journal.unpak.ac.id/index.php/jhss/article/view/818

Zaheer, M. & Munir, S. (2020). Research supervision in distance learning: issues and challenges. *Asian Association of Open Universities Journal*, *15*, 131-143.

Book

Navarrete, M. (2022). *Performance and job satisfaction of proficient junior high school teachers in the SDO in the new normal.* Saint Louis College, Lingsat, City of San Fernando.

Resources

"Amid the COVID-19 Pandemic: DepEd Region III assures learning for children with special needs continues; trains SPED teachers in Central Luzon" by Department of Education Regional Office III: https://region3.deped.gov.ph/amid-the-covid-19-pandemic-deped-region-iii-assures-learning-for-children-with-special-needs-continues-trains-sped-teachers-in-central-luzon/

"COVID-19 Challenges Hit Special Ed Teachers especially Hard" by Jim Murez: https://around.uoregon.edu/content/covid-19-challenges-hit-special-ed-teachers-especially-hard

"Deped Addresses Challenges in Special Education Under 'New Normal'" by Merlina Hernando-Malipot: https://mb.com.ph/2020/07/03/deped-addresses-challenges-in-special-education-under-new-normal/

"DepEd Increases Ceilings of Provident Fund Loans to Assist Personnel" by Department of Education: www.deped.gov.ph/2022/02/23/deped-increases-ceilings-of-provident-fund-loans-to-assist-personnel/

"Deped Issues Updated Alternative Work Arrangement, Ensures Welfare, Support to Personnel" by Department of Education: https://www.deped.gov.ph/2022/04/19/deped-issues-updated-alternative-work-arrangement-ensures-welfare-support-to personnel/?utm_source=rss&utm_medium=rss&utm_campaign=deped-issues-updated-alternative-work-arrangement-ensures-welfare-support-to-personnel

"Deped Pursues Major Innovations to Ensure Learning Continuity" by Merlina Hernando Malipot: https://mb.com.ph/2020/10/30/deped-pursues-major-innovations-to-ensure-learning-continuity/

"Deped to Maximize Use of SEF in Aid for Distance Learning" by Department of Education: https://www.deped.gov.ph/2020/12/03/deped-to-maximize-use-of-sef-in-aid-for-distance-learning/

"Help! These Schools Need Bond Paper, Printers for Students' Learning Modules" by Rappler: https://www.rappler.com/moveph/help-schools-buy-bond-papers-printers-learning-modules/

"How Will the Government Invest on the Teachers?" by Helpline Ph: https://helplineph.com/opinion/invest-on-the-teachers/

"Improving Co-Teachers Relationships" by Asher Samuel: https://scholar.stjohns.edu/jovsa/vol5/iss2/6

"On the Issuance of the Expanded Career Progression for Public School Teachers EO" by Department of Education: https://www.deped.gov.ph/2022/06/24/on-the-issuance-of-the-expanded-career-progression-for-public-school-teachers-eo/

"The Pandemic is a Crisis for Students with Special Needs" by Faith Hill: https://www.theatlantic.com/education/archive/2020/04/special-education-goes-remote-covid-19-pandemic/610231/

"Raising Public School Teacher Pay: What the Research Says" by Denise-Marie Ordway: Https://Journalistsresource.Org/Education/School-Teacher-Pay-Research/

"Range of Affect Theory – a Complete Guide" by Alex Morris: https://www.emexmag.com/range-of-affect-theory/

"Teachers Taking Out Loans to Prepare Classrooms" by Jane Bautista: https://newsinfo.inquirer.net/1578832/TEACHERS-TAKING-OUT-LOANS-TO-PREPARE-CLASSROOMS

"Theories of Job Satisfaction and their Impacts on Workers Employee Management" by Smriti Chand: https://www.yourarticlelibrary.com/employee-management/theories-of-job-satisfaction-and-their-impacts-on-workers-employee-management/29521

"This is what it's like to be a teacher during the Coronavirus pandemic" by Katie Reilly:
　　https://time.com/5883384/teachers-coronavirus/

Life and Work Skills in Performing Arts: A Basis for the Developmental Guidelines of the UC – Center for Creative Productions Members

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

The goal of every academic institution is to prepare students for life and work. Aside from completing competencies based on the curriculum, institutions also offer education-based activities such as performing arts which provide opportunities to enhance the imagination and intelligence of student artists and develop various skills. In connection, this study aimed to identify the attainment of basic skills towards life and work and the impact of the training in the development of 21st-century skills. A mixed method design was employed using quantitative for the level of attainment of the former University of the Cordilleras – Center for Creative Productions (UC-CCP) members on life and work where questionnaire and weighted mean were utilized. Qualitative was used to determine the impact of the training program in the development of 21st-century learning and innovation skills along with creativity, critical thinking, communication, and collaboration through focus group discussion using a saturation method. Findings show that respondents have fully attained both life (3.51) and work (3.42). The impacts include high standards, making objective decisions, listening, and teamwork. With these results, performing arts is a big contributor to better real-life activities of the UC-CCP members. The University should therefore develop a developmental guideline for the CCP. The UC-CCP shall foster new approaches in developing knowledge, skills, and attitude, preparing globally competitive individuals promoting culture and arts, holistic development, and quality educational experiences.

Keywords: Life and Work Skills, Training Program, Performing Arts, Holistic Development, Educational Experiences

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Introduction

The goal of every academic institution is to prepare students for life and work. Institutions also offer educational-based activities in promoting holistic development, one of which is the performing arts. It provides opportunities to enhance the imagination and intelligence of members and develop various skills which play vital for life and work. Engaging in performing arts bring out members' maximum potential, completes the academic curriculum, and builds self-identity. Extracurricular activities such as music and dance are an integral part of education along with academics for holistic development (Singh, 2019).

In the United Kingdom, schools offer a substantial program that can offer students a wide range of experiences, intellectual, cultural and relaxing (Headmasters' and Headmistresses' Conference, 2021). It has an advantage on students' academic performance as well as improving personal dimensions such as social, emotional, mental, and physical. Extracurricular activities are considered supportive and necessary for students as they provide them not only health benefits, but opportunities to learn more about others, develop empathy and self-esteem, and lead students to build positive relations with peers (Sullivan, 2018). Individuals who are into extracurricular activities boost confidence in social interaction, expansion of social networks, and acquire new skills.

Performing arts is a way of life that allows individuals to showcase one's culture. According to Johnston (2017) and Fleming (2019) dances and music keep the culture of a person alive by sharing and teaching younger generations and keeping the history as well. Performing arts in the Philippines showcase the identity of its people and its rich culture among communities. The history of dance and music is rich and vibrant, demonstrating how dances connect and reflect everyday life and significant occasions (Crawford, 2021).

Having been involved in performing arts contributes to the full attainment of basic skills and the development of 21st-century skills (Stauffer, 2020). Performing arts develop basic skills in preparation for life and work aside from completing the required curriculum. According to Mercer (2018), creativity, critical thinking, communication, and collaboration are observed through performing arts which are commonly known as the four C's.

The University of the Cordilleras - Center for Creative Productions (UC-CCP) is the official performing arts center that manages all performances either on-off campus. Aside from providing creative and innovative performances, the UC-CCP's main goals are to provide academic support for exemplary students and to aggressively promote and preserve the rich culture and tradition of the Cordillera.

The objectives of UC-CCP are as follows, to balance academic performance and extracurricular activities, to enhance the necessary skills needed for life and work, to uphold the mission-vision of the university, and to nurture the conservation of culture and tradition.

The researcher will explore the experiences of the former UC-CC members in terms of their training program. It identifies and discovers how performing arts contribute to the development of the different skills which are necessary for life and work. And recognizes the impact of the training program in the improvement of 21st-century learning and innovation skills. And it will serve as an eye-opener in formulating new and additional programs that will improve further its training program.

The researcher utilized four concepts to substantiate the study. First, attainment is a measurable progress of skills that are needed to succeed (National Improvement Hub, 2022) and for meeting the demands of the 21st-century industry and existence.

Second, life skills are a group of psychosocial competencies and people skills to ensure a healthier life and productivity (May 2018), however, skills can be developed or changed at any stage of life but what is most important is the willingness to learn since change is constant. There are three sub-variables based on the competency model namely: self-awareness which talks about understanding oneself; interpersonal relates to establishing and maintaining social relationships; and thinking skills deal with thoughtful rationalizing things before making any decisions.

Third, work skills serve as the foundation to ensure employability considering the new sets of competencies and skills in the 21st-century workplace. The Competency Model Technical Assistance Guide from the Competency Model - Communicating Industry's Education and Training Needs (2019) stated that workers must demonstrate that they have the right skills to enter and compete in today's labor market. There are three sub-variables under work skills: personal effectiveness referred to as soft skills which include traits of individuals that are vital in any workplace; academic covers critical basic competencies that students are expected to develop in school; and workplace focus on the skills and abilities of individuals to effectively and efficiently function in the workplace.

And lastly, 21st-century skills are the extensive competencies, the most critically important to success in this generation that will ensure the quality of life and work among students. It promotes the development of lifelong skills that caters to life skills and work skills. According to Bogler (2018), the 21st Century Skills can help students prepare for the real world while still meeting or exceeding curriculum goals. In this study, the researcher focuses on learning and innovation skills which are also known as the Four C's. Creativity allows the students to embrace their inner strengths from big-picture planning to meticulous organization (Stauffer, 2020) and it promotes innovation to stay competitive individuals and remains significant in the workplace. Critical thinking is the ability of a person to filter information in making dependable judgments whereas Peart (2019) stated that employers value people who can work as effective members of a team by defining the issues carefully. Communication is necessary for creating a harmonious relationship and is an advantage to communicating accurately and effectively (Faleti, 2017). And collaboration is the ability to work effectively as part of a team has also grown in importance (Peart, 2019) as a result of the fast-changing time and to ensure success.

The research aimed to identify the level of attainment of basic skills both in life and work, and the impact of the training in the development of 21st-century skills among former UC-CCP members. Specifically, it sought to answer the following: what is the level of attainment of the former UC-CCP members on life skills along self-awareness, interpersonal, and thinking, and work skills along personal effectiveness, academic, and workplace; and the impact of the training program in the development of 21st-century learning and innovation skills along creativity, critical thinking, communication, and collaboration.

A mixed method design was employed using quantitative for the level of attainment of the former University of the Cordilleras – Center for Creative Productions (UC-CCP) members on life and work where questionnaire and weighted mean were utilized with 232 respondents. A qualitative method using thematic analysis was used to determine the impact of the training

program in the development of 21st-century learning and innovation skills through focus group discussion using a saturation method with 16 key informants. Both methods used instruments that were adopted from the UNICEF Basic Life Skills Curriculum, Competency Model Technical Assistance Guide from the Competency Model - Communicating Industry's Education and Training Needs, and 21st Century Skills Standard Based Rubrics.

Results and Discussions

The following are the major findings on the level of attainments in life and work skills, and the impact of the training program among the former members of the UC Center for Creative Productions (UC-CCP).

Table 1 shows the overall weighted mean level of attainment in life skills which were considered as fully attained (3.51). All variables are rated as fully attained, with the highest possible response.

Indicators	W.M.	Q.V.
Interpersonal	3.54	Fully Attained
Self-awareness	3.53	Fully Attained
Thinking	3.48	Fully Attained
General Weighted Mean	**3.51**	**Fully Attained**

Table 1. Level of Attainment in Life Skills

This implies that the former UC-CCP members were able to develop life skills that are an essential part of everyday aspects of life. To cope with the fast-paced and technological life, individuals must possess these life skills to adapt to the demands of society.

The result further connotes that the attainment of life skills is necessary for making decisions in life, interacting with other people, and managing emotions. During an informal interview with a music teacher, the development of different life skills can help individuals to adapt to any situation and can be able to handle challenges. She mentioned that most of her students developed a positive outlook on life and self-confidence. Being involved in the performing arts promotes holistic development and success in life.

Life skills are a set of personal skills and social features that the individual needs to interact confidently and efficiently with themselves or with other people and with the local community (The Scientific World, 2019). This definition is evident in the training program where the members are encouraged to interact and collaborate with their peers and superiors in enhancing not only their performing skills but also their different life skills. The UC-CCP promotes not only holistic development but also the attainment of lifelong learning skills which are vital to succeeding in life.

In addition, May (2018) defines life skills as a group of psychosocial competencies and people skills that help individuals to become more efficient and effective members of the community. Former UC-CCP members were able to establish the willingness to improve further their skills to maintain as competitive and competent individuals.

Interpersonal was the highest sub-variable which is interpreted as fully attained (3.54). Indicators of interpersonal include listening skills, managing relationships, confidence in communication. empathy, handling relationships, and interpersonal effectiveness.

This means that the skill fosters harmonious relationships and works together as one team in achieving a common goal. The respondents confirmed that the sub-variable interpersonal is fully attained from their experiences as a student in the university and as former UC-CCP members through the training program.

Interpersonal skills help people to make informed decisions, solve problems, think critically and creatively, communicate effectively, build healthy relationships, empathize with others, and cope with and manage their life healthily and productively (May, 2018). The UC-CCP training program acknowledges that the development of the interpersonal skills of its members serves a vital role to ensure success in life.

The lowest sub-variable is thinking which is still considered as fully attained (3.48). Indicators include decision-making, critical thinking, goal-setting, executive function skills, resilience, and problem-solving.

This indicates that former UC-CCP members were able to process information before making any action. All performing groups were able to incorporate the development of these skills as important life skills. The respondents verified that the sub-variable thinking is still considered as fully attained from their experiences as a student in the university and as former UC-CCP members through the training program.

According to LilyWhite (2021), critical thinking is a valuable skill that can help to make better decisions and judgments on exploring new possibilities, approaches, and strategies in resolving a problem. The respondents considered themselves logical and rational thinkers to overcome challenges in life and with their experience in the center, they were able to inject creative ways of handling situations. The UC-CCP training program recognizes that the development of the thinking skills of its members serves a vital role to ensure success in life.

It is synthesized that the respondents stand firm that the attainment of life skills is necessary for making decisions in life, interacting with other people, and managing emotions. The development of different life skills can help individuals to adapt to any situation, can be able to handle challenges, and developed a positive outlook in life.

Table 2 shows the overall weighted mean level of attainment in work skills which were considered as fully attained (3.42). All variables are rated as fully attained, with the highest possible response.

Indicators	W.M.	Q.V.
Personal Effectiveness	3.50	Fully Attained
Workplace	3.44	Fully Attained
Academics	3.31	Fully Attained
General Weighted Mean	**3.42**	**Fully Attained**

Table 2. Level of Attainment in Work Skills

This implies that the former UC-CCP members were able to develop work skills which are a vital part of any workplace. To become competent and competitive in this modern workplace, students need to ensure the full development of the different 21st-century skills and the required competencies. This is to manage the demands of the 4.0 industries and in the global market.

The result further connotes that the attainment of work skills is necessary to equip oneself with the skills which are needed in today's industries. Aside from technical skills, it is also equally important to develop soft skills which most employers are taking into consideration. In an informal interview with the Human Resource Officer, she confirmed that there are applicants who are very qualified for the post in terms of technical qualifications but lack interpersonal attributes which might be a problem in working with others and in the organization.

This is consistent with The Competency Model Technical Assistance Guide from the Competency Model - Communicating Industry's Education and Training Needs (2019) stated that workers must demonstrate that they have the right skills to enter and compete in today's labor market. This is the reason why aside from the hard skills or the job-related knowledge and skill, it is equally important that all students develop their soft skills or the personal tributes/qualities which serve as an advantage in getting into any career. The UC-CCP training programs prepare its members to become equipped individuals who are experts in their respective fields of specialization, proficient when it comes to deliverables, and possess positive attitudes who are motivated and inspire others.

Personal effectiveness was the highest sub-variable which is interpreted as fully attained (3.50). Indicators include integrity, dependability and reliability, professionalism, lifelong learning, adaptability and flexibility, interpersonal skills, and initiative.

The UC-CCP promotes the advancement of personal effectiveness aside from sharpening individual performing skills. This means that the former members use their skills to become successful in their respective careers. Usually, those individuals who possess personal effectiveness are more productive because they are motivated, engaged, managed, and reliable.

This is similar to the definition by Virtual College (2022), where they mentioned that personal effectiveness is entirely different for everyone, and it utilizes the skills, talent, and energy of a person to achieve goals. And the only way to achieve it is through our experiences. The new knowledge and skills that a person acquires in any of their experiences can contribute to the development of personal effectiveness. The UC-CCP training program always includes cognitive and practical activities that will help in the development of this skill to ensure success in the workplace.

The lowest sub-variable is "academic," which is still considered as fully attained (3.31). Indicators include reading, basic computer skills, communication, writing, critical and analytic thinking, science and technology, and mathematics.

This implies that academics play a significant role to the former UC-CCP members in finding their present work and job opportunities for any individual. The aforementioned implication on academic serves as a reminder that the topmost priority of every student, especially those who are into educational-based activities, are academics. Nevertheless, academics without other soft skills are worthless. Technical knowledge and skills must be paired with soft skills. This is where the advantage of those who are into educational-based activity, they were able to develop these soft skills from their training and performances.

It can also be associated with the theory of the right-left brain by American psychobiologist Roger Sperry in the late 1960s. According to the article of Boddy-Evans (2019), the right

brain is more visual and processes information intuitively and simultaneously while the left brain is verbal and processes information analytically and sequentially. Based on the result of the study, academics ranked as the lowest indicator but still has a qualitative value of fully attained because artists are generally considered visual people.

Having been involved in an educational-based activity like performing arts, students can develop soft skills which contribute to the development of 21st-century skills (Lobell, 2018). The acquisition of different skills, with the completion of the academics, will provide an advantage to a person to scout for a better job opportunity. The UC-CCP training program caters to holistic development for its members to ensure success in work.

It is synthesized that the respondents possess work skills that are necessary for today's industries. Aside from technical skills, it is also equally important to develop soft skills which most employers are taking into consideration.

The development of 21st-century skills, specifically learning and innovation skills are equally important to become competitive and competent individuals. The study aims to recognize the effectiveness of the training program in the development of creativity, critical thinking, communication, and collaboration skills among former UC-CCP members.

Creativity facilitates all members in the group or organization to see things from different perspectives which are toward the success of the goal. Stauffer (2020) stated that creativity allows students to embrace their inner strengths from big-picture planning to meticulous organization. A person who learns to utilize creativity makes productivity outputs while enjoying and developing a sense of fulfillment. Based on the responses of the key informants, themes of creativity include high standards, innovation, alternative ideas, and self-confidence.

High standard pertains to the quality of work of the former members being rendered to their respective groups and by the University's standards. A person who exercises high standards believes that everything matters even the very least details. "We have a higher sense of creativity; we want to maintain a high-quality output (Key informant 3)". Hudson-Searle (2017) stated that standards must align with your mission and be implemented consistently across your organization's objectives. Key informants 8, 9, 14, and 16 stated that "we always aim for excellence, set high quality in all members, close to perfection, and outstanding performance."

Innovation is a fundamental skill to adapt to the fast-changing world. In the world of performing arts, innovation was already incorporated through the existence of technology. As testified by key informant 7 and 14 "we are required to present something new" and "to come up with unique ideas to help our presentation stands out." Innovation can also help to develop original concepts while giving the innovator a proactive, confident attitude to take risks and get things done (Henderson, 2017). Key informants 5 and 13 were able to apply innovation to their current jobs "I was able to integrate teaching and music" and "I used my inventiveness to deliver the lesson more interestingly."

Having several plans is known as an alternative idea. It is closely similar to innovation where an alternative idea pertains to the backup plans while innovation is the creation of new ideas using different styles and approaches. As confirmed by key informant 1 "I was able to produce different ideas through brainstorming." Fischer (2022) explained that the more ideas you come up with the more likely you are to get some that are useful. Also, the key

informants were able to employ the concept of alternative ideas in handling problems in life and work. Key informant 4 shared that "having better ideas and other alternatives when it comes to problem-solving."

Self-confidence is necessary for every aspect of life. Key informant 3 mentioned that "they were able to acquire a better sense of competence and confidence to be more presentable". It means former members have trust in their abilities. People with a strong sense of self and who project their inner confidence are more likely successful in life (Alford, 2022). Participants considered self-confidence as an asset that was fully developed among themselves. People who have self-confidence are happier and have a more fulfilling life.

Critical thinking enables all members of the group or organization to become objective in analyzing and evaluating information before creating any judgment. Kleemola et al. (2021) define critical-thinking skills as a combination of complex cognitive skills. Musicians analyze musical pieces to successfully interpret a specific repertoire while for the dance they analyze the intended message of body movement. Critical thinking is crucial to understanding rationally, clarity, fairness, and consistency of the group or organization to achieve a common goal. Based on the responses of the key informants, themes of critical thinking include making objective decisions, logical thinking, accuracy and precision, and understanding.

The bulk of our life and work is about decision-making. Participants were able to enhance their skills by partaking in the decision being made by the group for the betterment of its training program and performance. "We always want to improve so we have that growth mindset already, to grow ourselves especially in making a decision" (Key informant 3). Gaille (2018), mentioned that decisions must be based on logic instead of emotion. They have to detach emotions in making an objective decision to increase the level of productivity. "There should be checkpoints and structure in decision making" (Key informant 2).

The development of logical thinking contributed to overcoming challenges among the participants, a valuable skill in their workplace. And it is even more critical nowadays with the presence of technology to analyze and evaluate all information. As testified by key informant 3 "we need to think about everything, whether that be our technique, our presentation, the program in a concert, or a repertoire." The key informants were able to apply logical thinking to their respective fields as they gained it from the training program as cited by key informant 8 "I can use it on the actual operation, specifically, how to manage a situation." Employers place a high value on workers who display strong logical thinking or reasoning skills because their decision-making is based on factual data (Doyle, 2021).

It is necessary to be accurate and precise at all times. As to the performances, the correctness of the dance and the rendition of songs is very crucial as this can be assessed using one measurement or basis while the exactness of the performance can be achieved through rigid practices. As confirmed by key informant 3 "the correctness and aesthetic of things, and most importantly the impact we will be leaving to the person or group who requested us to perform." McGowan (2017) stated that getting things accurate is far harder than precise. Key informant 5 shared that one of his learnings as a former UC-CCP member was "to make sure that the information is accurate."

Understanding others is a way of displaying interest and concern among their co-members rather than knowing others' feelings and emotions. Participants were able to develop the traits of being considerate, compassionate, and empathetic in the training program. Key informants

6 and 15 mentioned that "we are all different individuals with different characters and came from different colleges/departments" and "you need to choose your words, and need to become understanding and compassionate." It corroborates the statement of Lukas Hermann, "you need to know yourself to understand other people" (cited by Nierenberg, 2017). Individual needs to have the self-awareness to know their strengths and weakness. Former members had fully attained self-awareness; therefore, they are equipped to understand others.

Communication fosters good relationships and establishes mutual understanding on different matters and issues toward the successful attainment of goals. Communication is said to be the creation and exchange of meaning (Nordquist, 2019). It is used to express the thoughts and ideas of an individual which are vital in our daily life and work. Communication helps us to connect with others and strengthen our relationships to achieve common goals. Based on the responses of the key informants, themes of communication include listening, non-verbal communication, sharing ideas, and responsibility and accountability.

Listening can be developed skills through the training program. Paying attention not only to the message but how it was said, which includes the use of words and tone, and the trainer's gestures are crucial. Becoming a better listener takes practice, but it will improve your ability to connect with other people and increase your capacity to retain information (Master Class, 2021). It encourages everyone to actively listen and stimulate understanding of one another. "Through an open forum, we were able to build communication among members for us to know one another better and the directions we want to go" (Key informant 1).

As the saying goes action speaks louder than words. The ability to understand and recognize nonverbal communication is considered helpful in every aspect of life. Key informant 5 stated that "Don't just rely on everything that is being said we have to look at how they act." Kelly (2021) explained that non-verbal cues are essential to everyday life. The key informants were able to perceive the mood or feeling or person without asking them. "I became very sensitive when it comes to my students' gestures or non-verbal" (Key informant 5).

Through brainstorming, they were able to share ideas in exploring a creative solution in a particular situation. "I was able to produce different ideas through brainstorming" (Key informant 1). Sharing ideas also enables the participants to receive feedback and criticism from others. Sharing information freely (Barnes, 2021) will lead to more ideas. Key informants 10 and 13 revealed that sharing ideas allows them to grow as a person "it was a big help to think, produce better ideas, and able to share it to others" and "it taught me to welcome new ideas to become a resourceful person."

Being responsible and accountable is vital in all aspects of life. For every performance, the members are expected to target the skills needed and work pleasantly among the group. Participants were able to establish these skills as testified by key informant 8 "to become responsible and accountable are the best things we've learned as members." Sergeeva (2021) believes that responsibility and accountability are vital for our reputation and how we are seen by others. Participants were able to establish a good reputation in their respective fields. "To have a great impact on everyone and even ourselves" (Key informant 3).

Collaboration allows all members of the group to work together while doing the assigned tasks toward the success of the goal. Stauffer (2020) describes the collaboration as important because whether students realize it or not, they'll probably work with other people for the rest

of their lives. Individuals are expected to work harmoniously among their co-workers and for the organization. It increases the productivity of the group or organization to achieve a common goal. Based on the responses of the key informants, themes of collaboration include teamwork, goal-oriented, artistic aptitude, and problem-solving.

Teamwork pertains to the individual skills of the members that when brought together and shared for a common goal will result in an advantage for the group towards effectiveness and efficiency. "We are there together as a solo artist, we are there as a team, and we are there because we have a great performance" (Key informant 3). Simon (2022) explained that teamwork it's more than just completing a task, it is the work that comes from people working together effectively. As mentioned by key informant 2 "collaboration is all about teamwork."

Being goal-oriented means setting targets and objectives. It is the willingness of the members to align with the group's objectives and to allocate time and energy towards a common goal. "We have one of us, we have one goal" (Key informant 4). This finding is connected to the article of Gaid (2021), you must be driven by a sense of passion and real desire toward your life goals which gives you the fuel to take those steps every day. Members worked with their passion and their love for their craft to achieve goals. As said by key informant 7 "most of the time we will not work alone for us to achieve our goals."

Everybody can dance, sing, and play different instruments, but not everyone can develop versatility, stage presence, a sense of rhythm, and gracefulness. Having an artistic aptitude means a person can produce an output that is pleasing to see or hear. According to the article of Glassdoor Team (2021), knowing your aptitudes and understanding how they influence your capabilities enables you to find a career that best suits your unique strengths to produce new concepts and ideas with aesthetic value. As disclosed by key informant 13 "it can provide new ideas for improvement and breakthrough for performances."

A good problem solver is essential because employers value people who can work through challenges on their own or as effective members of a team by defining the issues, brainstorming alternatives, sharing thoughts, and then making sound decisions (Peart, 2019). As cited by key informant 1 "the 4C's help me to solve problems I encountered at my workplace." The former members were able to foresee problem-solving to the situations that might happen which can affect the performance of the group. Moreover, resolving problems collaboratively has advantages compared to a single mind.

Therefore, the training program helped in the development of 21st-century learning and innovation skills among the former UC-CCP members. The attainment of the different soft skills from the training program contributes to the enhancement of the imagination and intelligence of student artists which plays a significant role in attaining success both in life and work.

Conclusions

Based on the findings presented, the following conclusions were formulated; the life and work skills of the former UC-CCP members were all fully attained and evident in their real-life activities and present workplaces, and the training program of UC-CCP resulted in the development of 21st-century skills that contribute to their better learning and innovation skills.

Grounded on the findings and conclusions, the following recommendations were formulated; a continuing quality improvement shall be made to ensure the development of life and work skills among the former members and UC-CCP shall sustain monitoring and evaluating the impact of the training program on 21st-century skills. In addition, a developmental training guideline shall take place for all the performing groups of the UC Center for Creative Productions.

Acknowledgment

References

Alford, C. (2022). The importance of self-confidence for your success. Catherin Alfrod. https://www.catherinealford.com/the-importance-of-self-confidence/Barnes, H. (2021). Importance of sharing ideas. *Harrison Barnes.* https://www.harrisonbarnes.com/wp-content/uploads/article_pdf/2290.pdf

Boddy-Evans, M. (2019). The theory of the right brain and left brain and its relevance to art. Liveaboutdotcom. https://www.liveabout.com/right-brain-left-brain-theory-art-2579156

Bogler, M. (2018). *How to improve collaboration, communication, creativity, and critical thinking in students.* Projectpals. https://www.projectpals.com/project-based-learning-blog/how-to-improve-collaboration-communication-creative-and-critical-thinking-in-students

Competency model - communicating industry's education and training needs. (2019). Department of Labor, U.S.A. https://www.careeronestop.org/competencymodel/BuildaModel/TAG.pdf

Crawford, B. (2021). *Philippine folk dance history.* LoveToKnow Media. https://dance.lovetoknow.com/Philippine_Folk_Dance_History

Doyle, A. (2021). *The importance of logical thinking in the workplace.* Careers. https://www.thebalancecareers.com/logical-thinking-definition-with-examples-2059690

Faleti, Y. (2017). *The importance of effective communication.* Stevenson University Online. https://www.stevenson.edu/online/about-us/news/importance-effective-communication

Fischer, B. (2022). *How to generate ideas.* Elmhurst University. https://www.elmhurst.edu/blog/how-to-generate-ideas/

Fleming, E. (2019). How do Philippine folk dances reflect Philippine culture and tradition? SidmartinBio. https://biosidmartin.com/how-do-philippine-folk-dances-reflect-philippine-culture-and-tradition/

Gaid, A. (2021). *21 Life goals to set for yourself (And actually achieve!).* Oberlo. https://www.oberlo.com.ph/blog/life-goals

Gaille, B. (2018). *9 Ways to make objective decisions.* Brandon Gaille Small Business & Marketing Advice. https://brandongaille.com/9-ways-to-make-objective-decisions/

Glassdoor Team. (2021). *How your aptitude can support your career.* Glassdoor. https://www.glassdoor.com/blog/guide/aptitudes/

Headmasters and Headmistresses Conference (HMC). (2021). *The British educational system.* HMC Project. https://www.hmc.org.uk/about-hmc/projects/the-british-education-system/

Henderson, T. (2017). *Why innovation is crucial to your organization's long-term success.* Forbes. https://www.forbes.com/sites/forbescoachescouncil/2017/05/08/why-innovation-is-crucial-to-your-organizations-long-term-success/?sh=1f1e73233098

Hudson-Searle, G. (2017). *Why we need to set high standards to be extraordinary?* Freedom After The Sharks. https://freedomafterthesharks.com/2017/03/06/why-we-need-to-set-high-standards-to-be-extraordinary/

Johnston, B. (2017). *Folk dancing keeps the country alive with culture.* Tehachapi News. https://www.tehachapinews.com/lifestyle/folk-dancing-keeps-the-country-alive-with-culture/article_ba4a9d90-95a3-11e7-84f4-979e3f562bd2.html

Kelly, B. (2021). *Non-verbal communication: Why it matters and how to do it well.* Peep Strategy. https://peepstrategy.com/non-verbal-communication/

Kleemola, K., Hyytinen, H., & Toom, A. (2021). Exploring the internal structure of a performance-based critical thinking assessment for new students in higher education, Assessment & Evaluation in Higher Education. 47:4, 556-569. *Taylor Francis Online.* https://doi.org/10.1080/02602938.2021.1946482

LilyWhite, S. (2021). *How to think critically – a guide to creative and critical thinking.* Future Learn. https://www.futurelearn.com/info/blog/how-to-think-critically

Lobell, K. (2018). *What is creativity? Defining the skill of the future.* Creative lives. https://www.creativelive.com/blog/what-is-creativity/

Master Class. (2021). *How to use active listening to improve your communication skills.* Master Class. https://www.masterclass.com/articles/how-to-use-active-listening-to-improve-your-communication-skills

May, M. (2018). *Basic life skills course facilitator's manual.* Ministry of Youth and Sport of the Republic of Azerbaijan. UNICEF Azerbaijan. February 2019.

McGowan, P. (2017). *Precise vs. accurate.* PS Audio. https://www.psaudio.com/pauls-posts/precise-vs-accurate/

Mercer, K. (2018). Cultivating and fostering creativity, communication, collaboration and critical thinking through the choreographic dance making: A dance curriculum for urban elementary students. University of Northern Colorado. https://digscholarship.unco.edu/theses/70/

National Improvement Hub. (2022). *Scottish Attainment Challenge.* https://education.gov.scot/improvement/learning-resources/scottish-attainment-challenge/

Nierenberg, C. (2017). *Knowing yourself: How to improve your understanding of others.* Live Science. https://www.livescience.com/59349-knowing-yourself-helps-your-understand-others.html

Nordquist, R. (2019). *What is communication? The art of communicating and how to use it effectively.* ThoughtCo. https://www.thoughtco.com/what-is-communication-1689877

Peart, N. (2019). *The 12 most important skills you need to succeed at work.* Forbes. https://www.forbes.com/sites/nataliapeart/2019/09/10/the-12-most-important-skills-you-need-to-succeed-at-work/?sh=487925651c6a&fbclid=IwAR1adIdtm163M2zd5HW_vwpOo4cWRlYgFEmXrGEKNAxrSSLGuAVgoeg4iM0

Quality Assurance Manual. (2020). *The University of the Cordilleras – Center for Creative Productions Manual.*

Sergeeva, I. (2021). *Responsibility for leaders: Back to the basics.* Better Up. https://www.betterup.com/blog/accountability-vs-responsibility-for-leaders-going-back-to-the-basics

Simon, B. (2022). *A winning combination: Collaborative teamwork equals teamwork and collaboration.* Smartsheet. https://www.smartsheet.com/collaborative-teamwork

Singh, M. (2019). The importance of performing arts for child development. *Hindustan Times*. https://www.hindustantimes.com/education/the-importance-of-performing-arts-for-child-development/story-ze66sFyEVAo3CWuRVtsR5J.html on September 10, 2021

Stauffer, B. (2020). *What are the 4C's of 21st-century skills?* Applied educational System. https://www.aeseducation.com/blog/four-cs-21st-century-skills

Sullivan, Patrick. (2018). Extra-curricular activities in English secondary schools: What are they? What do they offer participating students? How do they inform EP practice? https://www.researchgate.net/publication/327764414_Extra-curricular_activities_in_English_secondary_schools_What_are_they_What_do_they_offer_participating_students_How_do_they_inform_EP_practice

The Scientific World. (2019). Importance of life skills education -10 Essential life skills everyone should learn. https://www.scientificworldinfo.com/2019/12/essential-life-skills-everyone-should-learn.html

Virtual College. (2021). *What is personal effectiveness?* https://www.virtual-college.co.uk/resources/what-is-personal-effectiveness

Students' Perspectives of Attendance Taking and Student-Teacher Communication Via the ARS During the First Year of Emergency Remote Teaching

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

The move to emergency remote teaching (ERT) in 2020 due to the coronavirus pandemic forced instructors to seek ways of providing their course content remotely. It also compelled them to consider how they might carry out their standard non-content-related classroom practices of taking attendance and creating and maintaining student-teacher communication channels while distanced from students. In response to these latter needs, the multifaceted Attendance Record Sheet (ARS) was created (Rubrecht, 2020). With this single document, student attendance could be taken and communication with students could be fostered both remotely and consistently. Previous analyses of ARS use revealed it to have fulfilled its intended aims effectively, often beyond expectations (Rubrecht, 2021b, 2022b), yet students' perceptions of the weekly ARS and its various completion and submission requirements remained to be investigated. To this end, an online student questionnaire was administered at the end of the 2020 academic school year in order to gain information about students' views of the ARS and how they interacted with it. Results revealed that although some students acknowledged the sheet's shortcomings, they nevertheless regarded it highly, particularly because they understood its purpose and recognized the myriad benefits its use provided to all course participants. As a majority of students found the sheet to be clear and supportive to their learning, most expressed a desire to continue using it in future academic years should they be required to continue studying remotely, which ultimately was the case for many. Questionnaire results and pedagogical recommendations are presented and discussed.

Keywords: COVID-19, Coronavirus, Emergency Remote Teaching, Remote Teaching and Learning, Attendance, Communication, Japanese University

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Introduction

The World Health Organization's (WHO) official declaration on March 11, 2020, that the novel coronavirus COVID-19 outbreak was a pandemic prompted the closure of many educational institutions worldwide. As a result, emergency remote teaching (ERT) was initiated to protect the health and well-being of students, faculty, and staff. These closures brought about numerous disruptions to the normal processes and practices with which both instructors and students were familiar. Due to the declaration's timing, Japan's 2020 academic school year (hereafter, AY2020), which was scheduled to begin in April, was postponed to the second week of May so that all concerned parties — from students and instructors to parents and university IT departments — would have ample time to prepare for courses to be moved into an online-only educational environment.

For instructors at Japanese universities, the weeks-long postponement of AY2020's spring semester meant that there was time for them to move their course material online and become familiar with the tools they would use to conduct their classes remotely (e.g., Zoom). Not inconsequentially, this brief period also gave instructors the opportunity to consider and examine their previously standard classroom practices to determine if and how they might be altered to fit this new virtual educational environment.

Considering the newness of remote teaching and learning (RTL) brought on by the pandemic, the two standard non-content-related classroom practices that instructors needed to consider were (1) the taking of student attendance and (2) the creating and maintaining of student-teacher communication channels (STCCs). As explained elsewhere (Rubrecht, 2020), many instructors wondered if the practice of taking attendance (PTA) would be feasible when conducting classes in online spaces because pre-pandemic, PTA had been predicated on students' physical presence in a specific time and place (e.g., in a classroom with the instructor). During RTL, this conventional concept of attendance had to be reconsidered and reimagined. Indeed, the expansion of virtual education due to the COVID-19 pandemic required new, more flexible views about and measures of attendance (National Forum on Education Statistics, 2021).

In planning their remote courses, some instructors intended to take attendance in real time (e.g., over Zoom), but there was the non-trivial concern that students would not be adequately equipped with the appropriate technology to attend and participate as expected in online classes (see Bettinger & Loeb, 2017), either from the outset or consistently over time. This concern was particularly acute in Japan due to the country's historically poor rankings in information and communication technology (ICT) implementation in educational settings (Maita, 2020; Nae, 2020; O'Donoghue, 2020; OECD, 2020). In the end, many instructors simply abandoned PTA altogether during ERT, largely because it was viewed as subordinate to the task of providing lesson content online and overall course aims (Rubrecht, 2020).

Regarding STCCs, instructors would have endeavored to establish and continually foster them to reduce the transactional distance between them and their students (see Moore, 1993), address students' increased levels of anxiety, depression, and feelings of social isolation (Aguilera-Hermida, 2020; Department of Education, 2021), and aid them as they experienced technical problems and various disruptions to their learning (Peper et al., 2021) during RTL. Instructors relied heavily on LMS use (Chaka, 2020), with many creating discussion spaces so that students could ask questions and communicate with all course participants (Aljahromi, 2020; Gasell et al., 2022; Moreno et al., 2021), even during synchronous online classes

(Cooper, 2022; Majewska & Vereen, 2021). Likewise, videoconferencing applications like Zoom were utilized as instructors attempted to mimic as best they could the pedagogical procedures they had used previously in their traditional classroom-based teaching and learning environments (CBTLEs). However, communicating through videoconferencing applications has numerous drawbacks (see Massner, 2021, for an expansive overview), with students' opinions about using videoconferencing for lessons being mixed, both pre-pandemic and during RTL. While some have espoused positive views (Candarli & Yuksel, 2012), especially due to its flexibility (Wang et al., 2018) and because instructors can evince their caring and availability through this medium (Massner, 2021), others were considerably more negative regarding its use, as it can be perceived to provide an inferior learning experience which dampens motivation to learn (Serhan, 2020).

Even with the above-mentioned technology concerns aside, there were additional communication barriers to overcome. In not a few cases during RTL, students' webcams and microphones remained off during synchronous videoconferencing lessons, not only because remote students are reluctant to broadcast information about their private living environments (Wang et al., 2018) but also often because of university directives[1], with the unexpected result being that many synchronous lessons became passive one-sided affairs little different from asynchronous lessons.

Having realized from the outset the importance of taking attendance — both the relevance of its function in educational settings (see Rubrecht, 2022a) and students' comfortable familiarity with the practice after years of experiencing it in CBTLEs (Rubrecht, 2021a) — the instructor/researcher (hereafter, I/R) of the present study sought a means by which to simultaneously take attendance remotely and create and maintain STCCs in a way that would be simple, non-threatening, and receptive to students. To this end, the Attendance Record Sheet, or ARS, was constructed. Explained in detail elsewhere (Rubrecht, 2020), analyses of students' ARS submissions in AY2020 revealed that it fulfilled its intended dual purpose well (Rubrecht, 2021b, 2022b). Its use also exposed unexpected areas of difficulty experienced by Japanese university students (Rubrecht, 2022a).

Even so, there was one final area of ARS use that required exploration: that of students' opinions about this multifunctional document. Although research that explored Japanese university students' views of attendance at the university level both before and during RTL revealed them to be generally positive about the practice, particularly regarding the role it fulfills in educational settings (Rubrecht, 2021a), the students enrolled in AY2020 were never queried as to their views about attendance and attendance-taking methods prior to the commencement of RTL. Considering that (a) other instructors either used less burdensome forms of attendance (e.g., the clicking of a "Send Attendance" button on the university's learning management system, or LMS) or had abandoned PTA completely during RTL (Rubrecht, 2020) and (b) ARS submissions were to be completed and emailed to the I/R weekly[2], it remained unclear if and to what extent students were burdened by or took a disliking to this novel method of attendance taking and STCC opening. In short, although students were found to engage with the ARS in ways and to degrees that far surpassed

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[1] Many universities urged instructors to tell students to leave their webcams off to reduce internet bandwidth burdens.

[2] There were two main student requirements for ARS submission: (1) the renaming of each ARS according to what was termed the proper file renaming convention, or PFRC (see Rubrecht, 2022a), and (2) the completion of one specific mandatory section within the ARS itself (the ARS included additional non-mandatory sections; see below).

expectations (Rubrecht, 2021b), it was not yet known what they thought of it as an attendance-taking and STCC-promoting tool or how they viewed the many necessary requirements stipulated for ARS submission.

The current article presents details of analyses of the results of an online student questionnaire administered at the end of AY2020 (from December 2020 to January 2021) to students enrolled in the I/R's remote courses at three Japanese universities. After first presenting a brief literature review and explanations about attendance, STCCs, and the ARS, the article will detail the study's methodology, participants, and the responses to the questionnaire. The article will end with a discussion of the conclusions drawn from the research. Pedagogical insights drawn from the research and future research directions will end the paper.

Literature Review

Attendance

It may come as a surprise to many that the taking of student attendance is actually quite nuanced and not as straightforward as it may initially appear. Traditionally, the practice is based on the premise that students are to be in a particular physical space at a particular time (e.g., in a classroom when their instructor is there) to receive tutelage. If students fail to clear either of these prerequisites, then the instructor would mark their student rosters to indicate student absence.

Attendance at pre-tertiary levels has been touted to increase students' learning opportunities and, by extension, their course achievement (National Center for Education Statistics, 2009), but at the university level, research examining correlations between attendance and factors including students' comprehension of course content and academic achievement have found mixed results (e.g., Credé, Roch, & Kieszczynka, 2010; Devadoss & Foltz, 1996, as cited in Rocca, 2004; Marburger, 2006). Nevertheless, some researchers (e.g., Bijsmans, & Schakel, 2018) have found attendance to be one of the most important predictors of success in higher education, with others arguing that attendance is by far a clear determinant of both academic performance and attainment (Newman-Ford et al., 2008).

In preparation for ERT, the I/R explored the topic of attendance and research investigating it to gauge if its use in remote and virtual learning environments would outweigh its abandonment (Rubrecht, 2020). Although attendance typically tends to decrease over time in courses regardless of the teaching format (Brennan et al., 2019), RTL during AY2020 was clearly a special situation. Being unplanned, mandatory, and unfamiliar to most if not all course participants, there was concern that students' virtual "absences" would increase because of student anxiety, depression, and/or loneliness (Aguilera-Hermida, 2020; Peper et al. 2021). Frustration, confusion, and even course abandonment due to technological or other personal issues were also matters (Hagedorn et al., 2022), as was what was later to be termed "Zoom fatigue" (Massner, 2021; Nadler, 2020; Peper et al., 2021; Ramachandran, 2021). Consequently, in preparing for and designing his AY2020 lessons, the I/R decided that continuing PTA would likely prove beneficial, especially if it could be coupled in some way with STCC creation. In this way, the Attendance Record Sheet, or ARS, was born.

The ARS

The ARS has been explained at length elsewhere (see Rubrecht, 2020, 2021b, 2022b), but in brief, the original version of the sheet[3] was meant to cover all three areas of attendance, participation, and engagement (e.g., as an STCC) in a way comparable — though not wholly analogous — to that outlined by the National Forum on Education Statistics (2021). That is, via weekly email submission, the ARS was to:

(1) indicate student *attendance* (which means their being *present* in a course in which they are enrolled, whether virtually online or physically in a classroom);

(2) allow for *participation* in the course (or their involvement in the course via activities either directly or indirectly related to their schoolwork) by their (a) renaming their ARS files in accordance with the proper file renaming protocol, or PFRC (which involved both English and keyboarding skills; see Rubrecht, 2022a), (b) completing various sections within the ARS itself (see below), and (c) submitting the ARS within a specified time window; and

(3) allow for *engagement* in their education, as students were required to complete course tasks each week and reflect on those tasks as they completed their ARSs prior to submission.

The various sections on the ARS were "Boxes" in a table. The instructions for each were:

Box 1: "What did you learn in today's lesson (what was the topic)? Please summarize." Its purpose was for students to explain what they were to have (or ideally, what they actually had) engaged in and/or learned in their remote lessons that week. Box 1 completion was mandatory.

Box 2: "If something was fun or difficult about today's lesson, please explain." Its purpose was for students to reveal information about their remote lessons so that courses could be improved (e.g., by the I/R providing additional lesson explanations or modifying course activities).

Box 3: "If you need help with anything or if you want to tell me something, please write it here." Its purpose was for students to relay anything they wished to convey to their instructor, including calls for lesson assistance or questions or comments that were outside the scope of lesson content.

The ARS was constructed for several additional reasons. First, considering the state of ICT in Japan, as explained above, even the so-called "digital natives" (Prensky, 2001) of the current set of university students could not necessarily be expected to possess the digital skills required to effectively engage in RTL (see Gallardo-Echenique et al., 2015), especially during the early stages of the pandemic. As such, requiring the use of tried-and-true and familiar-yet-simple technology (e.g., email rather than unfamiliar software) to check attendance and create STCCs was thought to smooth students' transition to remote learning (see Rubrecht, 2022b, for reasons supporting email use; see also Morin, 2021). Second, using other attendance-taking methods (e.g., self-reporting via a Google Forms document or the click of a "Send Attendance" button in an LMS) would have been too akin to instructors' long-standing "it's just a warm body in a seat" lament, as they would have been inaccurate proxies for engagement and would not function as a means for the instructor to assess if students had

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[3] The ARS underwent periodic modification to increase its usability.

actually received or otherwise internalized the lesson material (National Forum on Education Statistics, 2021; see also Goodnough, 2020).

Third, a student failing to submit an ARS regularly (e.g., several weeks in a row) would indicate a "student of concern," thus spurring the I/R to contact that student to determine if they were experiencing problems or other learning obstacles (e.g., technological difficulties, mental health issues). Because the I/R could respond to students' Box 3 problems and questions in a timely manner (see Ferlazzo, 2022), thereby evincing an appreciation of their circumstances (Bozkurt et al., 2020), the transactional distance between the I/R and students could be reduced. Fourth, requiring students to submit an ARS weekly for attendance-taking purposes was also done in part to help students develop a weekly course routine. This was deemed important because students were no longer having to physically travel to campus to attend lectures, which normally alerts students to the courses to be attended that day. Without a routine, it was suspected that students learning remotely from home would lose track of time and either accidentally miss assignment deadlines (Chhetri, 2020; Morin, 2021) or procrastinate, the latter of which both increased with the advent of RTL due to the lure of and easy access to social media, online gaming, or various streaming services (Hawthorne-Castro, 2020, as cited in Iglesias-Pradas et al., 2021; Jones, 2020) and hindered academic achievement in online learning (Cormack et al., 2020; Kim & Nembhard, 2019). In short, the requirement of having students submit an ARS weekly during a specific window of time was meant to develop in students a persistence in positive academic behavior (see Weijers et al., 2021) via clear and consistent course content reception, consumption, and engagement.

Participants and Courses

The participants in the study were 77 students in different years of study enrolled full time at three Japanese universities in the Tokyo metropolitan area. They were volunteers from a pool of 144 students who had taken classes with the I/R across both remote semesters of AY2020. The students in this cohort were of differing majors (e.g., commerce, law, management) taking a variety of courses with the I/R (e.g., English language courses, lectures, seminars). Their TOEIC scores mostly ranged between 400 and 800. The courses for these non-English majors were taught predominantly in English, but Japanese was used on occasion when it was deemed necessary. All potential study participants were informed that (a) questionnaire completion was voluntary, (b) responses would not impact their final grades or standing at their university, (c) the questionnaire was for research purposes, and (d) their anonymity would be maintained.

Most of the I/R's AY2020 courses were taught in a flipped-classroom style because of uncertainty regarding students' ability to secure suitable and reliable technology (e.g., webcams, consistent internet access) and distraction-free spaces for course participation (Theodosiou & Corbin, 2020) during this exceptional academic year. Courses were taught via a mixture of synchronous and asynchronous lessons (i.e., via the use of Zoom and on-demand videos, respectively) in a way that allowed for varied content transmission, feedback, and active communication among course participants (Wilson & Stacey, 2004). The style of lesson engagement could change from week to week, and some lessons involved both synchronous and asynchronous instruction.

All the I/R's AY2020 students were instructed to submit an ARS each week of lessons. There were numerous requirements for ARS completion and submission:

- Students were to download the ARS template from the I/R's website in their choice of either Microsoft Word or PDF format.
- Being mandatory, completion of Box 1 primarily allowed the I/R to remotely assess the accuracy of student engagement (i.e., to check that students were engaging in the correct lesson content and activities each week). It also – and not insignificantly – allowed for learning reflection (Ambrose et al., 2010). Boxes 2 and 3 were not required but their completion was repeatedly encouraged as they aided in the development of student-teacher communication.
- Each ARS was to be completed in English, although Japanese was acceptable.
- ARS completion was to be done after lesson time for synchronous lessons or after assignment completion for asynchronous lessons.
- To aid the I/R's workflow (e.g., the downloading and organizing of students' many course documents), students were told that each ARS was to be renamed from the generic "Attendance Record Sheet (ARS)" file name to that which was in line with the PFRC (e.g., "Taro Tanaka Wednesday 1 May 13 ARS"). Students were provided with multiple explanations and examples of the PFRC (see Rubrecht, 2022a).
- Each ARS was to be submitted via email within a specific time window of time: after class time but before midnight on the day of the lesson (exceptions were allowed in special circumstances).
- Homework assignments (if any) were to be sent as attachments along with that week's ARS via a single email.

Methodology

At the end of AY2020, all students enrolled in the I/R's courses were asked to complete an online Google Forms questionnaire about the ARS. Information about the questionnaire and its link were provided through each university's LMS. The rationale for the questionnaire was explained via LMS announcements as well as over Zoom during lessons, and the voluntary nature of questionnaire completion and its purpose for research were reiterated.

The questionnaire, which was written in Japanese, asked questions on a range of topics, from student attendance to aspects of the ARS and ARS submission, including their own interaction with the document. Most questions were presented in a multiple-choice format (often on a Likert scale), but several were open-ended (often requests for reasons or explanations). Students were told that they could use either Japanese or English when answering the open-ended questions. All responses were put into a spreadsheet and tallied, though this was occasionally met with some difficulty for two reasons. First, due to the nature of open-ended questions, some students provided more than one categorizable response to individual questions[4]. Second, some open-ended responses acknowledged contrary stances to their multiple-choice selections. For instance, in numerous instances a student would select a *positive* multiple-choice option about a topic but then acknowledge and explain the *negative* aspects of that topic in their open-ended response. In the face of these difficulties, the I/R broke down each open-ended response into its smallest component parts and categorized each accordingly. Finally, it must be noted that not all students answered all questionnaire questions, and for the purposes of the current research, all questionnaire respondents are treated as members of a single cohort, that is, there was no breakdown of student participants in terms of their university, major, year of study, or gender.

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[4] A similar difficulty was experienced previously (see Rubrecht, 2021a).

Results

This section presents the results of responses to the questionnaire. Due to space limitations (a) questionnaire questions are simplified and (b) only the most commonly conveyed response categories are presented. Additionally, some percentage calculations evince rounding error.

[Q1]: Overall, what do you think of the ARS as an attendance-taking method?
- Very good: 32 (42%)
- Good: 32 (42%)
- Neither good nor bad: 11 (14%)
- Bad: 2 (3%)
- Very bad: 0 (0%)

[Q2]: What is your opinion of using the ARS for attendance-taking purposes compared to other attendance-taking methods your other instructors used?
- Much better: 17 (22%)
- Good: 34 (44%)
- Neither good nor bad: 20 (26%)
- Worse: 6 (8%)
- Much worse: 0 (0%)
- Other instructors did not take attendance this year: 0 (0%)

[Q3]: Why do you think so for [Q2]?
< Positive Responses >
- Can ask questions directly: 10
- Allows for course content reflection: 9
- Standardized/easy to complete: 8
- Usable (clear) method: 8
- Assures/proves attendance: 6
- Not always possible to join Zoom: 4
- Opportunity for interaction with teacher: 3
< Negative Responses >
- Requires more time/steps to complete: 6
- Using Zoom or LMS is easier: 4
- ARS unnecessary as homework is emailed: 1
- No confirmation of emailed ARS: 1
- ARS use means reduced Zoom participation: 1

[Q4]: The ARS was created in part to help students keep track of their learning and weekly assignments. How often did you fill in Box 1 with the assignment topic or with what was learned that week?
- Weekly without fail: 67 (87%)
- About once every two weeks: 4 (5%)
- About once a month: 1 (1%)
- Several times: 4 (5%)
- Not very often: 1 (1%)
- Never: 0 (0%)

[Q5]: How helpful was it to your learning or review of course material to look back on what you learned each week in order to fill in Box 1?

- Very helpful: 15 (19%)
- Helpful: 42 (55%)
- Neither helpful nor unhelpful: 15 (19%)
- Unhelpful: 5 (6%)
- Very unhelpful: 0 (0%)

[Q6]: The ARS was created in part to have students inform their instructor about what was fun or difficult about each week's lesson. How often did you fill in Box 2 with this information?

- Weekly without fail: 53 (69%)
- About once every two weeks: 8 (10%)
- About once a month: 4 (5%)
- Several times: 4 (5%)
- Not very often: 7 (9%)
- Never: 1 (1%)

[Q7]: Why (for [Q6])?
< Responses Written at Least Once a Month >
- To record my impressions of or reflect on each lesson: 13
- To share my thoughts/what I found difficult: 7
- I (mistakenly) thought it was required: 6
- The teacher should know students' reactions/feedback (e.g., about difficult areas): 5
< Responses Written Less Frequently Than Once a Month >
- Box 2 was not required: 2
- The teacher will solve problems over Zoom: 1
- Box completion was not fun: 1
- Too tired to complete: 1

[Q8]: Do you think this information (i.e., that which was either fun or difficult) is information that your instructor should know?

- Yes: 75 (97%)
- No: 2 (3%)

[Q9]: Why (for [Q8])?
< "Yes" Responses >
- Student assessments constantly required for future lesson improvement: 21
- Lesson adjustments/improvements useful for teachers and students: 21
- Increases teacher's comprehension of students' comprehension/progress/level: 9
- Online classes make measuring students' proficiency difficult: 3
- Teachers should know students' interests/opinions, especially during RTL: 3
< "No" Responses >
- Subjective impressions not useful for class content: 1
- Having fun is irrelevant when students must learn: 1

[Q10]: The ARS was created in part to provide students with weekly opportunities to ask questions or give comments to their instructor. How often did you use the ARS to ask questions or give comments?

- Weekly without fail: 17 (22%)
- About once every two weeks: 9 (12%)
- About once a month: 6 (8%)
- Several times: 24 (31%)
- Not very often: 16 (21%)
- Never: 5 (6%)

[Q11]: Did your instructor answer your question or reply to your comment?

- Yes: 61 (79%)
- No: 11 (14%)

[Q12]: If you answered "Yes," how satisfied were you with your instructor's answers or replies in general?

- Very: 46 (60%)
- Somewhat: 8 (10%)
- Sufficiently: 5 (6%)
- Not very: 0 (0%)
- Not at all: 0 (0%)
- No response: 18 (23%)

[Q13]: If you answered "No," why were you think that was?

- My comment did not require a reply: 4
- Instructor was busy: 2
- I did not ask many questions: 1

[Q14]: What did you think of the ARS as a teacher-student communication tool during remote teaching and learning?

- Very good: 30 (39%)
- Good: 32 (42%)
- Neither good nor bad: 12 (16%)
- Bad: 2 (3%)
- Very bad: 0 (%)
- No answer: 1 (1%)

[Q15]: If remote teaching and learning were to continue next year (AY2021), would you want your instructors to use the ARS?

- Yes: 68 (88%)
- No: 8 (10%)
- No answer: 1 (1%)

[Q16]: Why (for [Q15]'s answer)?
< "Yes" Responses >

- Can ask questions easily individually/directly: 13
- Good for remote communication from/with students: 11
- The ARS is easy to understand/use (for teacher and students): 11

- Clear/efficient for confirming/tracking attendance: 8
- The ARS allows for lesson material reflection: 7

< "No" Responses >

- Questions can be asked other ways: 4
- Other ways to take attendance preferred: 2
- Forgetting to submit an ARS equals an absence: 1
- ARS should only be necessary when students have questions: 1

[Q17]: What was the timing of your ARS submissions with respect to submission deadlines?

- Always before: 55 (71%)
- Often before: 18 (23%)
- Occasionally before: 3 (4%)
- Rarely before: 1 (1%)
- Always after: 0 (0%)

[Q18]: How much attention did you pay to ARS file renaming?

- Much: 71 (92%)
- Some: 6 (8%)
- A little: 0 (0%)
- None: 0 (0%)

[Q19]: If you could make changes to the ARS, what would you add or delete?

- ARS and weekly assignments should be just one document: 3
- Add a Box: degree of student comprehension of lesson content: 3
- Provide ARS receipt confirmation: 1
- Divide Box 3: question and comment boxes: 1
- Change Box 2: just "Lesson Impressions": 1
- Write important ARS instructions in Japanese: 1

[Q20] Please provide any impressions or opinions about the ARS if you have any.

- Good for attendance purposes: 12
- Useful for asking questions: 4
- Expressions of gratitude to the teacher: 4
- Helps students become more comfortable with the teacher: 1
- Useful for lesson review: 1
- Concern no ARS receipt confirmation: 1
- Satisfied with the current ARS: 1

Conclusions and Discussion

The purpose of the current research was to investigate students' perceptions of the ARS during AY2020, that is, it meant to determine what they thought of the ARS as an attendance-taking and STCC-promoting tool and, consequently, how they engaged with the document. Analyses of the responses provided above led to the following four determinations being made:

1. Students overall viewed the ARS positively, both as an attendance-taking method and as an STCC, though its various shortcomings were nevertheless apparent.

2. A vast majority of students were cognizant of the ARS' multifunctional nature, particularly as it worked as (a) an attendance-taking method, (b) a vehicle for weekly lesson reflection, and (c) a means for asking questions or giving comments directly — and privately — to their instructor.

3. Students engaged with the ARS well, as evinced from their claims about their timely submissions of the ARS as well as their renaming of the document weekly.

4. The ARS appeared to function so well that most study participants wished to continue using it in the event of continued RTL.

In short, the I/R created the ARS so that it may be used to multiple ends during RTL. In his personal and professional view, the ARS functioned well as intended, but its use came with some drawbacks. Even as the ARS's shortcomings are noted, particularly the time and energy costs it places on all users, including course instructors who utilize it (see Rubrecht, 2021c), it was nevertheless put to effective and fruitful use.

There are several final points worth discussing. First, as students' questionnaire responses were naturally made based on their own individual perspectives and circumstances, some of their comments and feedback could not be considered useful for ARS or lesson modification (e.g., students were not aware of their classmates' internet connectivity difficulties or lack of tech savviness). Second, students seemed appreciative of the ARS as an STCC, as the I/R endeavored to be timely with his responses to students' questions and comments and with lesson feedback. This mirrors results found elsewhere (e.g., Moreno et al., 2021) and is indicative of the crucial nature of the immediacy of instructor feedback during remote learning (Baker, 2004; Moreno et al., 2021). Third, as the I/R continued to teach courses remotely in AY2021 and in AY2022, the ARS was put to further use, with modifications made based on students' responses from this study. For instance, Box 3 was separated into question and comment Boxes, and a Box was made requesting information about the extent to which students comprehended lesson content, among other alterations.

Finally, the comments made by students for [Q11] that stated that the I/R did not answer questions or reply to comments they wrote in the ARS did not go unnoticed. While some students admitted that in some cases a reply was not warranted, the I/R made reading each ARS a priority, and if a question were posed, the I/R would, with near certainty, have answered it. Possible reasons for no replies from the I/R, in order of decreasing likelihood, include:

- Students asked rhetorical questions, thereby not warranting a response.
- The I/R determined a response to be unnecessary (e.g., "I learned something new today").
- Students' odd or unclear phrasing of questions in English meant that the I/R did not perceive them to be actual questions.
- With several thousand ARSs received in AY2020, the I/R, being human, may have accidentally overlooked several ARS questions.

In the end, having an informal channel of communication like the ARS was beneficial in producing positive effects, especially as adaptations were required in the move to ERT (see Iglesias-Pradas et al., 2021). As of this writing (i.e., the waning months of 2022), the coronavirus continues to disrupt people's lives both in Japan and elsewhere. It is hoped that instructors, upon learning about the positive benefits of ARS use, may take up the document or some version of it and use it for their own classes in the way they best see fit.

References

Aguilera-Hermida, A. P. (2020). College students' use and acceptance of emergency online learning due to COVID-19. *International Journal of Educational Research Open*, *1*. Article 100011. https://doi.org/10.1016/j.ijedro.2020.100011

Aljahromi, D. (2020). Towards the provision of effective interaction in post Covid-19 e-Learning contexts: Enhancing e-interactions on the LMS's discussion boards. *2020 Sixth International Conference on e-Learning*, 98–103. https://doi.org/10.1109/econf51404.2020.9385502

Ambrose, S. A., Bridges, M. W., D'iPietro, M., Lovett, M. C., & Norman, M. K. (2010). *How learning works: Seven research-based principles for smart teaching*. John Wiley & Sons. https://firstliteracy.org/wp-content/uploads/2015/07/How-Learning-Works.pdf

Baker, J. (2004). An investigation of relationships among instructor immediacy and affective and cognitive learning in the online classroom. *The Internet and Higher Education*, *7*(1), 1–13.

Bettinger, E., & Loeb, S. (2017). *Promises and pitfalls of online education*. Brookings. https://www.brookings.edu/research/promises-and-pitfalls-of-online-education/

Bijsmans, P., & Schakel, A. H. (2018). The impact of attendance on first–year study success in problem-based learning. *Higher Education*, *76*(5), 865–881. https://doi.org/10.1007/s10734-018-0243-4

Bozkurt, A., Jung, I., Xiao, F., Vladimirschi, V., Schuwer, R., Egorov, G., Lambert, S., Al-Freih, M., Pete, J., Olcott Jr., D., Rodes, V., Aranciaga, I., Bali, M., Alvarez Jr., A., Roberts, J., Pazurek, A., Raffaghelli, J. E., Panagiotou, N., Coëtlogon, P., Shahadu, S., Brown, M., Asino, T. I., Tumwesige, J., Reyes, T. R., Ipenza, E. B., Ossiannilsson, E., Bond, M., Belhamel, K., Irvine, V., Sharma, R. C., Adam, T., Janssen, B., Sklyarova, T., Olcott, N., Ambrosino, A., Lazou, C., Mocquet, B., Mano, M., & Paskevicius, M. (2020). A global outlook to the interruption of education due to COVID-19 Pandemic: Navigating in a time of uncertainty and crisis. *Asian Journal of Distance Education*, *15*(1), 1–126. https://doi.org/10.5281/zenodo.3878572

Brennan, A., Sharma, A., & Munguia, P. (2019). Diversity of online behaviors associated with physical attendance in lectures. *Journal of Learning Analytics*, *6*(1), 34–53. https://doi.org/10.18608/jla.2019.61.3

Candarli, D., & Yuksel, H. G. (2012). Students' perceptions of video-conferencing in the classrooms in higher education. *Procedia - Social and Behavioral Sciences, Cyprus International Conference on Educational Research*, *47*, 357–361. https://doi.org/10.1016/j.sbspro.2012.06.663

Chaka, C. (2020). *Higher education institutions and the use of online instruction and online tools and resources during the COVID-19 outbreak: An online review of selected U.S. and SA's universities*. Research Square. https://doi.org/https://doi.org/10.21203/rs.3.rs-61482/v1

Chhetri, C. (2020). "I lost track of things": Student experiences of remote learning in the Covid-19 pandemic. *SIGITE '20: The 21s Annual Conference on Information Technology Education*, 314–319. https://doi.org/10.1145/3368308.3415413

Cooper, A. D. (2022). Using the discussion board during your online synchronous class to engage students. *Marketing Education Review*, *32*(2), 1–4. https://doi.org/10.1080/10528008.2022.2062606

Cormack, S., Eagle, L., & Davies, M. (2020). A large-scale test of the relationship between procrastination and performance using learning analytics. *Assessment & Evaluation in Higher Education*, *45*(7), 1046–1059. https://doi.org/10.1080/02602938.2019.1705244

Credé, M., Roch, S. G., & Kieszczynka, U. M. (2010). Class attendance in college: A meta-analytic review of the relationship of class attendance with grades and student characteristics. *Review of Educational Research*, *80*(2), 272–295. https://doi.org/10.3102/0034654310362998

Department of Education. (2021). *Education in a pandemic: The disparate impacts of COVID-19 on America's students.* https://www2.ed.gov/about/offices/list/ocr/docs/20210608-impacts-of-covid19.pdf

Devadoss, S., & Foltz, J. (1996). Evaluation of factors influencing student class attendance and performance. *American Journal of Agricultural Economics*, *78*(3), 499–507. https://doi.org/https://doi.org/10.2307/1243268

Ferlazzo, L. (2022, May 5). *5 instructional strategies that worked for my classes this year.* larryferlazzo.edublogs.org. https://larryferlazzo.edublogs.org/2022/05/31/5-instructional-strategies-that-worked-for-my-classes-this-year/?fbclid=IwAR2KprhrCHL75k42UovPdpQrMfM5YSTI9jPQLxtCqoGciXhzanx78pOnjic

Gallardo-Echenique, E. E., Marqués-Molías, L., Bullen, M., & Strijbos, J.-W. (2015). Let's talk about digital learners in the digital era. *International Review of Research in Open and Distributed Learning*, *16*(3), 156–187. https://doi.org/10.19173/irrodl.v16i3.2196

Gasell, C., Lowenthal, P. R., Uribe-Flórez, L. J., & Ching, Y.-H. (2022). Interaction in asynchronous discussion boards: A campus-wide analysis to better understand regular and substantive interaction. *Education and Information Technologies*, *27*(3), 3421–3445. https://doi.org/10.1007/s10639-021-10745-3

Goodnough, A. (2020, September 22). *As schools go remote, finding 'lost' students gets harder.* The New York Times. https://www.nytimes.com/2020/09/22/us/schools-covid-attendance.html

Hagedorn, R. L., Wattick, R. A., & Olfert, M. D. (2022). "My entire world stopped": College students' psychosocial and academic frustrations during the COVID-19 pandemic. *Applied Research in Quality of Life*, *17*(2), 1069–1090. https://doi.org/10.1007/s11482-021-09948-0

Hawthorne-Castro, J. (2020, September 25). *COVID-19's impact on Millennial and Gen Z media habits — and how marketers should pivot.* targetmarketingmag https://www.targetmarketingmag.com/post/covid-19s-impact-media-habits-millennial-gen-z/

Iglesias-Pradas, S., Hernández-García, Á., Chaparro-Peláez, J., & Prieto, J. L. (2021). Emergency remote teaching and students' academic performance in higher education during the COVID-19 pandemic: A case study. *Computers in Human Behavior*, *119*, 106713. https://doi.org/10.1016/j.chb.2021.106713

Jones, K. (2020, April 7). *How COVID-19 has impacted media consumption, by generation.* Visual Capitalist. https://www.visualcapitalist.com/media-consumption-covid-19/

Kim, J.-E., & Nembhard, D. (2019). The impact of procrastination on engineering students' academic performance. *International Journal of Engineering Education*, *35*(4), 1008–1017. https://www.researchgate.net/publication/334729845

Maita, T. (2020, January 8). *世界で唯一、日本の子どものパソコン使用率が低下している [Japan is the only country in the world where the rate of computer use among children is declining].* Newsweek Japan. https://www.newsweekjapan.jp/stories/world/2020/01/post-92085.php

Majewska, A. A., & Vereen, E. (2021). Fostering student-student interactions in a first-year experience course taught online during the COVID-19 pandemic. *Journal of Microbiology & Biology Education*, *22*(1). https://doi.org/10.1128/jmbe.v22i1.2417

Marburger, D. R. (2006). Does mandatory attendance improve student performance? *The Journal of Economic Education*, *37*(2), 148–155. https://doi.org/10.3200/ JECE.37.2.148-155

Massner, C. K. (2021). The use of videoconferencing in higher education. In F. Pollák, J. Soviar, & R. Vavrek (Eds.), *Communication Management*. https://doi.org/10.5772/intechopen.99308

Moore, M. G. (1993). Theory of transactional distance. In D. Keegan (Ed.), *Theoretical principles of distance education* (pp. 22–38). Routledge.

Moreno, M. M. L., Rodrigo, M. M. T., Torres, J. M. R., Gaspar, T. J., & Agapito, J. L. (2021). Transactional distances during emergency remote teaching experiences. *Asia-Pacific Society for Computers in Education Proceedings of the 29th International Conference on Computers in Education*, 425–434.

Morin, A. (2021). *5 reasons students aren't engaging in distance learning.* Childmind. https://childmind.org/article/5-reasons-students-arent-engaging-in-distance-learning/

Nadler, R. (2020). Understanding "Zoom fatigue": Theorizing spatial dynamics as third skins in computer-mediated communication. *Computers and Composition*, *58*, 102613. https://doi.org/10.1016/j.compcom.2020.102613

Nae, N. (2020). Online learning during the pandemic: Where does Japan stand? *Euromentor Journal*, *XI*(2). https://www.researchgate.net/profile/Niculina-Nae/publication/342505298_ONLINE_LEARNING_DURING_THE_PANDEMIC_WHERE_DOES_JAPAN_STAND/links/5ef7f001458515505078af76/ONLINE-LEARNING-DURING-THE-PANDEMIC-WHERE-DOES-JAPAN-STAND.pdf

National Center for Education Statistics. (2009). *Every school day counts: The Forum Guide to collecting and using attendance data*. NCES 2009-804. https://nces.ed.gov/pubs2009/attendancedata/chapter1a.asp

National Forum on Education Statistics. (2021). *Forum Guide to Attendance, Participation, and Engagement Data in Virtual and Hybrid Learning Models (NFES2021058)*. U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Newman-Ford, L., Fitzgibbon, K., Lloyd, S., & Thomas, S. (2008). A large-scale investigation into the relationship between attendance and attainment: A study using an innovative, electronic attendance monitoring system. *Studies in Higher Education*, *33*(6), 699–717. https://doi.org/10.1080/03075070802457066

O'Donoghue, J. J. (2020, April 21). *In era of COVID-19, a shift to digital forms of teaching in Japan*. The Japan Times. https://www.japantimes.co.jp/news/2020/04/21/national/traditional-to-digital-teaching-coronavirus/

OECD. (2020). *A framework to guide an education response to the COVID-19 pandemic of 2020*. https://www.hm.ee/sites/default/files/framework_guide_v1_002_harward.pdf

Peper, E., Wilson, V., Martin, M., Rosegard, E., & Harvey, R. (2021). Avoid Zoom fatigue, be present and learn. *NeuroRegulation*, *8*(1), 47–56. https://doi.org/10.15540/nr.8.1.47

Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon*, *9*(5), 1–6. https://doi.org/10.1108/10748120110424816.

Ramachandran, V. (2021, February 23). *Stanford researchers identify four causes for 'Zoom fatigue' and their simple fixes*. Stanford. https://news.stanford.edu/2021/02/23/four-causes-zoom-fatigue-solutions/

Rocca, K. A. (2004). College student attendance: Impact of instructor immediacy and verbal aggression. *Communication Education*, *53*(2), 185–195. https://doi.org/10.10/03634520410001682447

Rubrecht, B. G. (2020). *Using ARS: Promoting teacher-student interaction at a distance*. In Teacher Journeys 2020, JALT. https://www.youtube.com/watch?v=e7DmIaiZpSs&feature=emb_logo&ab_channel=TeacherDevelopmentSIG

Rubrecht, B. G. (2021a). Student views of attendance at Japanese universities in the era of COVID-19: A preliminary look. *Osaka Conference on Education 2020*, 185–199. https://papers.iafor.org/submission59187/

Rubrecht, B. G. (2021b). Transforming teacher-student communication under COVID-19: Completing analyses of remote progress and information conveyance by students studying English as a foreign language at Japanese universities. *The 14th International Conference of Education, Research and Innovation*, 218–227. https://doi.org/10.21125/iceri.2021.0106

Rubrecht, B. G. (2021c). Using ARS: Promoting teacher-student interaction at a distance. *Explorations in Teacher Development*, *27*(2), 9–10. https://td.jalt.org/wp-content/uploads/2021/07/ETD-272.pdf

Rubrecht, B. G. (2022a). Examining the file renaming errors made by Japanese university EFL students during the first year of emergency remote teaching. *The IAFOR International Conference on Education 2022 - Hawaii 2022 Official Conference Proceedings*. https://doi.org/10.22492/issn.2189-1036.2022.11

Rubrecht, B. G. (2022b). Transforming teacher-student communication under COVID-19: Using the ARS to give students voice in remote Japanese university EFL courses–Part I. In *ISLS readings in language studies, Vol. 9: Engaging in critical language studies* (pp. 83–105). International Society for Language Studies, Inc.

Serhan, D. (2020). Transitioning from face-to-face to remote learning: Students' attitudes and perceptions of using Zoom during COVID-19 pandemic. *International Journal of Technology in Education and Science*, *4*(4), 335–342.

Theodosiou, N. A., & Corbin, J. D. (2020). Redesign your in-person course for online: Creating connections and promoting engagement for better learning. *Ecology and Evolution*, *10*(22), 12561–12572. https://doi.org/10.1002/ece3.6844

Wang, Q., Huang, C., & Quek, C. L. (2018). Students' perspectives on the design and implementation of a blended synchronous learning environment. *Australasian Journal of Educational Technology*, *34*(1), 1–13. https://doi.org/https://doi.org/10.14742/ajet.3404

Weijers, R. J., de Koning, B. B., & Paas, F. (2021). Nudging in education: from theory towards guidelines for successful implementation. *European Journal of Psychology of Education*, *36*(3), 883–902. https://doi.org/10.1007/s10212-020-00495-0

Wilson, G., & Stacey, E. (2004). Online interaction impacts on learning: Teaching the teachers to teach online. *Australasian Journal of Educational Technology*, *20*(1), 33–48.

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Reform and Practice of Project-Based Teaching Mode of Visual Communication Design Course in the Context of Application Transformation

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

Project-based learning, as a crucial component of the training objectives of applied undergraduate visual communication design talents, is the backbone and key to enhancing students' employability in light of the transformation and upgrading of the industrial structure of national and local economies. This article suggests reform strategies by interpreting the national strategy on "application transformation" and by appreciating and thoroughly analysing the issues with the visual communication design curriculum. It puts them into practice to serve as a guide for the creation of the visual communication curriculum's project-based teaching style. This essay starts with a change in how visual communication design is taught at higher education institutions. It talks about the unique project-based learning implementation strategy. To develop a cutting-edge project-based teaching approach, it is suggested to mix production and teaching, industry and teaching, and enterprise and teaching. The project-based teaching approach combines the ideas of production and instruction, industry and instruction, and enterprise and instruction to create a cutting-edge project-based teaching approach that will incorporate entrepreneurship education and practical operation in the course of experience and create a teaching mode that satisfies the demand for visual communication design talent in the new society. Ultimately, this will unite higher education and industrial development to play up better the features and functions of higher education institutions while also enabling us to establish a teaching model that fulfils the community's demands for visual communication design talent in the modern day.

Keywords: Applied Transformation, Visual Communication Design, Project-Based Teaching Model, Teaching Practice

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Introduction - Interpretation of the national policy on "application transformation"

In recent years, four documents at the national level have mentioned application transformation: first, the State Council's decision on May 2, 2014, to accelerate the development of modern vocational education, which made a strategic choice to guide several general undergraduate higher education schools to transform into application technology type higher education schools; Second, on June 16, 2014, six State Council ministries and commissions jointly created the Plan for the Construction of Modern Vocational Education System (2014-2020). "Type of Application Technology Higher Education Institutions Play a Vital Role in the System of Higher Education and Enjoy Parity with Other General Undergraduate Institutions, "which put forth a plan to aid in the transformation of undergraduate higher education institutions situated in areas serving industry and regional economic and social development; thirdly On October 21, 2015, the Ministries of Education, National Development and Reform Commission, and Finance released the "Guidance on guiding some local general undergraduate colleges and universities to transform to application type," which made a comprehensive plan to guide some local general undergraduate colleges and universities to transform to application type and proposed to determine the number of pilot colleges and universities to explore the idea. fundamental concepts and type placement; Fourth, the State Council published "Several Opinions on Deepening the Integration of Industry and Education" on December 19, 2017, outlining work plans that included developing top-tier, application-oriented undergraduate colleges and universities as a pilot project and improving the undergraduate application- and talent-training systems. Each of the four papers that relate to application-oriented schools and universities explicitly identifies the sort of university being discussed. The goal of the development is also explained in detail in the "Guiding Opinions on Guiding Some Local Ordinary Undergraduate Colleges and Universities to Transform into Application-Oriented" and the "Several Opinions on Deepening the Integration of Industry and Education," which present the opinions of different parties. The "Opinions on Deepening the Integration of Industry and Education" outlined specific requirements for the development of high-level applied undergraduate colleges and universities, including the creation and improvement of a training program that focuses primarily on developing applied talents in response to market demands. As can be seen from the foregoing, application transformation is a prescriptive requirement for the development goals of local undergraduate colleges and universities based on university classification and management systems in the context of national development strategy deployment at the macro level and ultimately turning to application-oriented universities.

The etymology of application means "to adapt to the needs for use" (Zou, 2015). Transformation refers to the change of the structure and operation model of things, mainly reflected in the changes in structure and form (Wang & Shan, 2006). The same is true for the application transformation of regional general undergraduate colleges and universities; in other words, the application transformation of regional public undergraduate colleges and universities can be viewed as a change in the nature of universities and a move toward application to address societal needs. This involves the development of universities' structural components, organisational structure, and direction of development. In short, it means that the type of university points to application-oriented. 2011, the new version of ISCED issued by UNESCO divides higher education into four levels: 5, 6, 7 and 8, and application-oriented universities belong to level 6. Germany divides universities into two types: traditional comprehensive universities and applied universities. The three categories of higher education in China include research, application, and vocational skills, according to the "Opinions on the Establishment of Higher Education Institutions in the Thirteenth Five-Year Plan" released by

the Ministry of Education on January 25, 2017. The conventional categories of university kinds in China include research universities, teaching and research universities, and teaching universities.

In addition, at some level, the transformation of universities is objective and cannot hold any prejudice and misunderstanding about applied transformation. As Burton R. Clark pointed out : "The transformation of universities has been mentioned at the top of the agenda of modern universities" (Clark, 2007). To better fulfil the demands of sociopolitical and economic growth and to follow the goal of applied universities, the universities themselves, certain local undergraduate institutions, have evolved into applied universities as China's higher education has progressed to the current day. Application transformation is not a superficial level of university-type transformation but a deeper level of the practical process of university ideal to reality. This means that application transformation must run the university in accordance with the law of internal development of higher education, respecting the university itself, adhering to the university's fundamentals, and realizing the internal development of the university itself, in addition to running the university in accordance with the law of social development to serve society and raise the student employment rate.

Dealing with the relationship between staying true to the fundamentals of the university and promoting applied transformation. As Mannheim said: "Rebuilding a society in flux is much like replacing the wheels of a train in motion, not like rebuilding a house on a new foundation" (Mannheim, 2013). The same is true for local undergraduate institutions in transition today, which need to adhere to the university's fundamentals and achieve the transformation and construction of the university type, which requires dealing with the relationship between applying transformation and adhering to the fundamentals of the university.

To do an excellent job in the development of the humanities and arts disciplines and the orientation of the application of the transformation of institutions to build humanities and arts disciplines can not be done by the traditional "pure" liberal arts model to run liberal arts, as far as possible with the application of the transformation of the direction of development. To do this requires efforts in two areas: First, the humanities and arts disciplines' growth directions should be changed to support regional social and economic development. Application transformation is not only in the direction of applied technology universities but also in the direction of teaching and service universities, innovative and entrepreneurial universities and so on. The initial stage of China's application transformation has a relatively narrow understanding of the application transformation that the application transformation is just the transformation to the application of technical universities, "in fact, 'applied technology university' and 'applied university' can not draw equal numbers" (Hou, 2015). A new kind of institution that places more emphasis on developing application-focused talent at the undergraduate level than research universities is known as an applied university. Suppose the application of transformation is only positioned in the direction of the development of applied technology universities, humanities and arts disciplines due to the need for more technology. In these conditions, implementing the development transformation into practice is difficult, but developing humanities and artistic disciplines to move the service's orientation toward local economic and social development is quite achievable and should be done. Transformation is used wherever it may benefit local economic and social advancement. Local universities, for instance, can support the community by doing regional economic, cultural, and think tank research; what is it if not applied transformation? Second, they should "choose those liberal arts majors close to natural sciences, technical sciences, engineering sciences, etc. as their targets" (Feng, Zou, Cao, & Chen, 1986). Suppose an institution transforms itself into a

technically oriented institution specialising in philosophy. In that case, it should focus on more than just studying philosophical principles but on developing sub-disciplines such as the philosophy of science and the philosophy of technology. In short, applied technology institutions hosting liberal arts majors should highlight the characteristics of applied technology institutions.

To sum up, on the one hand, we should actively promote the application of transformation and insist that the confidence and determination of the application of transformation should not be shaken. However, on the other hand, we should keep a clear head, be patient and adventurous, and adhere to the fundamentals of the university. What belongs to the fundamentals of the university must be supported. This is the applied transformation dialectic and the core of the higher education philosophy.

Issues with the established methods of teaching visual communication design

1. The teaching mode is unreasonable. Due to the application transformation, the traditional professional practice teaching process of visual communication design has not been able to keep up with the standards and requirements. As a result, it is necessary to reform the current professional practice of teaching visual communication design to bring it more in line with student needs and social development. The field of graphic communication design is vast. Consider that educators must impart to pupils the necessary theoretical information and provide practice exercises that are both clear and effective. Many novices would feel like they need assistance in that situation. A strong sense of spatial imagination is necessary for the conventional practical teaching of visual communication design. Many helpful teaching concepts can only be understood but need to be communicated, which inevitably increases the difficulty for students in the learning process. Additionally, to finish the practical teaching task on time, many teachers fail to take into account the students' mastery of the pertinent knowledge and instead focus solely on drawing practice. As a result, some students leave the last class not knowing how to design but only "drawing from the cat," which is contrary to the definition of the profession of visual communication design. This is not the goal of practical instruction.

2. Not reasonably applied to new media technology. New media technology improves the quality of professional practice teaching visual communication design. Although many educators and students are unaware of the benefits of new media technology and utilise it for their own amusement, this has to change. New media technologies - catechism, micro-lessons, and flipped classrooms - can show students abstract content in vivid animations, which reduces the requirement for students' spatial imagination, minimises the difficulty of learning the content, enhances the effectiveness of classroom instruction and student learning by assisting students in better understanding the subject matter. This improves student comprehension of the lesson material, the standard of classroom instruction, and the effectiveness of student learning.

3. Between theoretical instruction and real-world application, there is a gap. Academic teaching is a service for practical application. The goal of theoretical instruction can only be effectively served when students' theoretical knowledge can be appropriately matched with practical application. According to recent studies on the practical teaching of visual communication design, the gap between academic instruction and real-world application is more problematic; in the actual process of creation, many theories are not used, or sometimes in the process of design, many of the knowledge used has not been learned. On the one hand,

the experimental operation process will be impacted by the gap between theoretical education and practical application, which is detrimental to the efficient advancement of the relevant task; On the other hand, it also instils in children the idea that the theoretical information they gain is pointless, which is bad for their ability to study.

4. There has to be a revision to how practical teaching courses are organised. Designing for visual communication should adhere to both theoretical and practical standards. However, in the actual teaching course layout, the theory courses have significantly longer class periods than the practical ones, which prevents students from naturally integrating their theoretical learning with practical instruction. By arranging more practical methods, students can better grasp theoretical knowledge and improve their practical skills more quickly.

5. Course content arrangement is not reasonable. To complete the teaching task on time, some teachers arrange the class contents haphazardly so that many students have to learn some more difficult content before they can learn the relevant basic knowledge, which increases the burden on students' learning and does not conform to the teaching law of moving from simple to complex and progressive. We know that for beginners, designing a high level of work is a very time-consuming and laborious process, and the requirements for beginners' basic skills are very high; if the teacher from the beginning of the lecture takes complicated drawing cases to students, it will undoubtedly affect the students' enthusiasm for learning, causing them a great learning force.

6. The teaching process must include developing pupils' capacity for autonomous invention. In order to fully utilise students' potential for independent design and maximise their future growth, the teaching process must incorporate the development of their capacity for independent creativity. Although studying, learning and understanding the essence of others' works in the early stages of configuration is necessary, over-reliance on others' methods can sap students' desire to design independently.

Examining how project-based learning may be improved in courses on visual communication design

The project has taken on a project-based teaching reform of our visual communication curriculum with the following particular revisions in response to how this study interprets national policy and the issues in the current visual communication design curriculum.

1. **Construct a reasonable curriculum system**

The curriculum should be skewed since the visual communication design course cultivates specialised abilities. Since the course's orientation is clear, it is necessary for professional teachers to have a thorough understanding of students' overall training plans when creating the syllabus, particularly the coherence and continuity of the courses taken before and after the course in visual communication design, in order to set the course's content reasonably and create a system for teaching it. The visual communication design course uses minor graphic design instances, such as book design, online design, electronic publishing design, etc., as teaching objects based on the current situation at our institution. Despite the fact that the course material is organised from simple to complicated and shallow to deep, it is easier to begin developing since these contents are more relevant to the major's pupils. The course in visual communication design is practical and has a solid connection to society. In order to give students more opportunities to acquire professional knowledge, the school invites graphic

designers, well-known designers in the domestic visual communication design industry, and professors from renowned universities in the field to give lectures and introduce the most recent development trends in the field of visual communication design. Additionally, we send students on field visits to examine excellent examples of visual communication design.

2. Increasing the quality of teachers' instruction and encouraging the development of dual-teacher instructors

The field of visual communication design is continually changing, necessitating that educators raise the bar on their instruction and refresh their expertise, particularly in the area of practical skills. To allow students to engage, experienced teachers might undertake in their leisure time visual communication design projects or research projects related to visual communication design. Students should first become interested in learning visual communication design during the teaching process. After completing a set of programming tasks, students can be encouraged to become more collaborative, which will increase communication between them and aid in the program's successful implementation. The evaluation program should enable students to become more independent thinkers, help them hone their design abilities, and motivate them to submit better ideas. Teachers can also guide students in making full use of internet tools to locate reliable data and acquire design materials. They might also recommend to pupils some reliable design reference books. Our school's teachers have recently improved their practical hands-on ability and teaching level through the in-depth development of activities like on-the-job practice, on-the-job training, and school-enterprise cooperation, combined with the actual visual communication design projects. They have also established a "double-teacher" teaching team with top-notch technology so that it can contribute more significantly to teamwork, scientific research, and instruction (Kang, 2011).

3. Modifying instructional strategies, incorporating building practice with competition projects, and introducing project-based learning

With "Milan Design Week," "Student Advertising Design Competition," and other national university students' visual communication design competition projects as our starting point, we adopt the project case teaching methodology. This method combines various skill competitions and practical training projects. The students will learn to report their design solutions, so they can gradually master the ability of visual communication design in terms of planar composition, effect drawing and presentation of visual communication design solutions. Secondly, through school-enterprise cooperation, students will be able to experience the actual projects and develop their perception of visual communication design through on-site visits to visual communication design companies and printing factories. To ensure that students have enough time to engage in social practice to grow their professional knowledge and abilities, a matching plan is developed each semester in line with the teaching arrangement. Finally, students are urged to take an active role in the project's design, engage in role-playing activities that put them in each student's actual role, visit the project site with them to explain the project's environment and the A party's requirements, and then have each group present their work in class while each student explains their design and engages in discussion with the others. The instructor will offer suggestions for improvement.

Conclusion

In conclusion, the project-based teaching reform has produced specific findings for the future growth of the visual communication design professional direction to establish the groundwork, taking into account the real-world circumstances of our school and the teaching reform study of the course. This teaching reform's primary objectives are to improve teachers' levels of instruction, enlarge the curriculum, implement "project-based" learning based on actual visual communication design cases, foster students' ability to express themselves creatively in a comprehensive way, experiment with various teaching methods, and strengthen the links between theoretical and practical teaching. We also strengthen the depth of teaching through the preparation of teaching materials, reference books, the creation of pertinent courseware, and animation in order to improve students' mastery of visual communication design theory, deepen their understanding of the discipline of visual communication design, broaden their horizons, and cultivate their independent learning ability, theoretical thinking ability, and critical learning ability in practice. Students can build their complete abilities in visual communication design in a leapfrog fashion under the direction of the "project-based" teaching approach, allowing them to adjust to their profession more quickly after graduation.

Acknowledgements

References

Clark, B. R. (2007). *Building an Entrepreneurial University - A Pathway to Organizational Transformation.* (C. Wang, Trans.) Beijing: People's Education Press.

Feng, X., Zou, S., Cao, A., & Chen, H. (1986, 07). Guiding Principles for the Arts in Science and Engineering Institutions. *Higher Education Research* (07), pp. 17-23.

Hou, C. (2015, 8 13). An applied university is not the same as a university of applied technology. *People's Daily* , p. 18.

Kang, X. (2011). Exploring the Teaching Reform of Landscape Planning and Design Course. *Anhui Agronomy Bulletin* (24), pp. 115-117.

Mannheim, K. (2013). *Man and Society in An Age of Reconstruction.* (L. Zhang, Trans.) Beijing: Beijing United Publishing Company.

Wang, F., & Shan, Z. (2006). A Pilot Study on the Transformation of Teacher Education in the United States. *Educational Research* (1), pp. 80-85.

Zou, X. (2015). Analysis of the concept of "applied" in higher education. *Modern education forum* (4), pp. 2-8.

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A Study on Chinese Fashion Design Students' Perceptions on Sustainable Practices Throughout the Lifecycle of Clothing Products

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

Fashion departments of higher education institutions currently play a decisive role in promoting sustainable development as centers of cultivating fashion design talents towards the rapid increase of environmental issues that caused by the fashion and textile industry. Through both quantitative and qualitative approaches, we aim to determine the perceptions of fashion design students regarding sustainability practices throughout the lifecycle of clothing products within the context of Chinese fashion design higher education in sustainability. An online survey is conducted to ascertain Chinese fashion design students' perceptions (due to their varied sustainable educational backgrounds), self-learning channels on sustainable practices throughout the lifecycle of clothing products, and open-ended questions related to sustainability knowledge application for 60 student participants from three Chinese universities with different statuses of sustainable education respectively (University A has constructed a sustainability related curriculum and has designed relevant design projects; University B has not constructed sustainability related curriculums, but has designed a relevant design project; University C has not constructed sustainability related curriculums and has not designed relevant design projects). Data analysis is conducted by using non-parametric test and Chi-square test. The findings show that, as compared to students from universities B and C, university A students showed significantly higher perception levels, used more self-learning channels with books and journals, and were able to apply relevant knowledge to fashion design more effectively. Therefore, the findings from this study will provide insights into educators' perceptions of integrating sustainability into higher education of fashion design in China.

Keywords: Fashion Design Higher Education in Sustainability, Student Perceptions, Sustainable Practices, Lifecycle of Clothing Products

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1. Introduction

As one of the largest textile manufacturers, consumers and exporters in the world (Hongyu, 2018), China has experienced a rapid increase in environmental issues caused by the fashion and textile industry (Zhang et al., 2020). China is now in urgent need of design talents to cope with the sustainable development of the fashion industry. Sustainable development could benefit from design talents shaping production practices and influencing consumption patterns (Hur & Cassidy, 2019). In such a context, fashion departments of higher education institutions are crucial in cultivating talents that contribute to sustainable development in the fashion industry (Yáñez et al., 2019). However, the development of sustainable fashion design education in Chinese universities is obstructed by a lack of fashion sustainability development curriculum, a disconnect between theoretical consciousness and practical action among educators, and the imperfection of relevant policies (Tao & Wang, 2020). Meanwhile, even though a large number of online and offline resources, including books, journals and newspapers, as well as websites, social media tools such as Sina Weibo, Bilibili, WeChat Official Account, and Tik Tok (Rahman & Chen, 2020), are available to students, fashion design students from universities still lack a systematic and comprehensive understanding of sustainable practice (Tao & Wang, 2020), resulting in many graduates being unable to find sustainable design jobs (Palomo-Lovinski et al., 2019). Although many Chinese educators' research involves the strategies of sustainable fashion design (Wang & Wang, 2018; Liu et al., 2019; Wu & He, 2004), limited research has been conducted regarding Chinese fashion design students' perceptions of sustainable practices. In the same way as China, many other countries are considering implementing sustainable education in higher education institutions (Ceulemans et al., 2015a; Lozano et al., 2015; Yáñez et al., 2019). This study explores the perceptions of Chinese fashion design students regarding sustainable practices throughout the lifecycle of clothing products, and it provides educators and education policy makers with insights into perceptions of integrating sustainability into higher education in fashion design. The specific research questions addressed in this study are:

RQ 1)   How is the comparison of Chinese fashion design students' perceptions on sustainable practices throughout the lifecycle of clothing products among universities with different status of fashion design higher education in sustainability?

RQ 2)   How is the comparison of the self-learning channels used by Chinese fashion design students for acquiring knowledge of sustainable practices throughout the lifecycle of clothing products?

2. Literature Review

2.1 The Current Status of Chinese Fashion Design Higher Education in Sustainability

According to statistics in 2021, there were 3012 higher education institutions (including undergraduate education institutions, junior college education institutions and adult education institutions) in China (GMW, 2022), and 1097 undergraduate institutions among them offered fashion design programs (creditsailing, 2022). Although there are no statistics regarding how many fashion design institutions have established sustainability curriculums, Tao and Wang (2020) and Liu et al. (2019) indicated that sustainability is still in its infancy in Chinese fashion design education. In the context of the rapid development of the social economy, the excessive consumption of resources and the deterioration of the environment (Liu et al., 2019), more and more fashion departments of Chinese higher education institutions are paying more attention to the sustainability of clothing products (Tao& Wang, 2020; Huang &

Vicander, 2016; Yang, 2019). However, there are still many obstacles to the development of sustainable education in fashion design institutions, including a lack of fashion sustainable development curriculum construction, a disconnect between theoretical awareness and practical action among educators, and an imperfect policy framework (Tao & Wang, 2020). Similarly, Zheng and Zhang (2017) found that university faculty members prioritize research over teaching. Additionally, the complexity of clothing products throughout their lifecycles endows sustainability with multiple attributes in this field (Black, 2008; Koo & Ma, 2019) and enables higher education to face various challenges. In addition to China, many other countries are also exploring the full implementation of sustainable education in their higher education institutions (Ceulemans et al., 2015a; Lozano et al., 2015; Yáñez et al., 2019).

2.2 Sustainable Practices Throughout the Lifecycle of Clothing Products

As clothing products progress through their lifecycle, they pass through various stages including design, production (raw materials, fibres, and garments), distribution, consumption (procurement, use and maintenance) and end-of-life (Lou & Cao, 2019; Gwilt, 2014; Moorhouse & Moorhouse, 2017; Wiedemann et al., 2020). Each stage of the clothing lifecycle creates environmental impacts significantly (Lou & Cao, 2019).

Based on Gwilt (2014)'s model of garment life cycle and the previous studies (Fletcher, 2014; Lou & Cao, 2019; Khan & Islam, 2015; Hiller Connell & Kozar, 2012; Allwood, Laursen, de Rodriguez & Bocken, 2006; Goworek, 2011), the lifecycle of clothing products takes place in five main phases which are design, production, distribution, consumption and end-of-life. Table 1 shows the specific sustainable practices throughout the lifecycle of clothing product under each phase.

5 phases	Sustainable practices throughout the lifecycle of clothing product
Design	Design for zero waste
	Design for durability
	Design for multifunction, modularity and disassembly
	Design for empathy and well-being
Production	Low-impact materials and mono-materials use
	Organic/ recycle material use
	Restricted use of animal fur
	To control water use
	To control toxic chemical/ heavy metals use
	Efficient use of materials and resources
	Ethical and fair-trade production
	Environmentally friendly printing and dyeing
Distribution	Service for need
	To minimize transportation
	To reduce/re-use packaging
	To engage local communities

Consumption	Rational purchase
	To purchase second-hand clothing products
	Efficient garment use and to avoid waste
	To reduce/re-use packaging during use phase
	Appropriate care
	To control water use for laundry/ electricity use for drying
End-of-life	To repair a garment when it has an issue
	Re-use/recycling/ upcycling/ remanufacturing
	To dispose unwanted clothing through appropriate approaches

Table 1: Sustainable practices throughout the lifecycle of clothing product under 5 main phases

3. Method

3.1 Data collection

This study utilizes both quantitative and qualitative approaches to ensure a specific investigation of the current perceptions of Chinese fashion design students toward sustainable practices in fashion design (SPIFD). In July 2022, the period of the end of an academic year, sixty fashion design student participants in their third and fourth year participated in an anonymous online survey. Table 2 shows the demographic information of the student participants. Students were informed that their responses would be used in research and that they could withdraw their individual data from the study. Apart from demographic questions, a five-point Likert scale was used to measure respondents' level of perception of each item (statement) relating to sustainable practices throughout the 5-stage lifecycle of clothing products based on Table 1. Answers ranged from one indicating 'strongly disagree' to five indicating 'strongly agree'. In order to determine the current status of self-learning channels and potential differences among student participants from three universities, multiple choice questions were also conducted regarding books, journals, newspapers, TV programs, websites, and social media tools. At the end of the questionnaire, we conducted two open-ended questions: 1) How do you apply sustainability knowledge to fashion design as a designer? 2) How do you apply sustainability knowledge to clothing usage as a consumer?"

Despite the three universities' location in northern China, they have different approaches to sustainable fashion design in their curriculums. University A has established option course related to SPIFD, and has created sustainable fashion design projects (SFDPs) in the core courses for second-year and third-year students. University B has not established any courses related to SPIFD, but has created a clothing upcycling project for the third-year students. University C has not established any courses related to SPIFD and has not created any SFDPs in courses.

		Number	**Percentage (%)**
Gender	Male	16	26.7
	Female	44	73.3
University Groups	University A	20	33.3
	University B	20	33.3
	University C	20	33.3
Year	Three	30	50.0
	Four	30	50.0

Table 2: On the demographics of survey respondents

3.2 Date Analysis

Quantitative data from the survey were analyzed using IBM SPSS (Version 28). It is appropriate to use non-parametric tests to compare students' perceptions between three universities when the data are not normally distributed (Foster, 1998). Meanwhile, Chi-square test is used to examine the comparison of learning channels used by Chinese fashion design students for acquiring knowledge of sustainable practices throughout the lifecycle of clothing products among three universities.

4. Results

4.1 Quantitative results

4.1.1 Validity and Reliability

A reliability test has shown that Cronbach's Alpha value is 0.958 (above 0.70), which is acceptable. The KMO measure of sampling adequacy is 0.837, and Chi-square value of Bartlett's sphericity test was 1353.862 ($p<0.01$), indicating a good relationship between the items of the scale.

4.1.2 The comparison of Chinese fashion design students' perceptions on sustainable practices throughout the lifecycle of clothing products among three universities

Non-parametric test is used to compare students' perceptions on sustainable practices throughout the lifecycle of clothing products among three universities. Kruskal Wallis test was administered to determine whether Chinese fashion design students' perceptions differ across three universities based on the mean value of students' agreement on each item at each stage of the lifecycle. As shown in Table 3, students' perceptions are significantly different among three universities. University A had the highest level of perceptions whereas University C had the lowest level (except at the end-of-life phase). Therefore, the Mann-Whitney U test with a Bonferroni correction for pairwise group comparison was used to determine the specific differences among three universities. As shown in Table 4, significant differences were found between university A and B as well as university A and C in terms of the stages of design, production, distribution, consumption and end-of-life. Accordingly, at all five stages, university A had a higher perception level than universities B and C respectively. In addition, no differences were found between university C and university B at any of the five stages.

Variable	*P*	*H*	Mean rank University A	Mean rank University B	Mean rank University C
Design	<0.001	23.360	45.68	24.93	20.90
Production	<0.001	24.102	46.13	22.73	22.65
Distribution	<0.001	18.643	44.18	24.23	23.10
Consumption	<0.001	15.314	42.90	24.95	23.65
End-of-life	<0.001	15.113	42.58	22.83	26.10

Table 3: Students' perceptions of sustainability throughout
the five-stage lifecycle of universities

Phase	Group	Median 50 (25, 75)
Design	University A	4.50 (4.00, 4.75) a
	University B	3.50 (2.31, 3.94) b
	University C	3.25 (2.50, 3.50) b
Production	University A	4.50 (4.16, 4.75) a
	University B	3.82 (2.31, 4.10) b
	University C	3.57 (3.03, 4.00) b
Distribution	University A	4.50 (4.00, 5.00) a
	University B	3.38 (2.81, 4.19) b
	University C	3.50 (3.00, 3.94) b
Consumption	University A	4.42 (4.00, 5.00) a
	University B	3.83 (2.67, 4.17) b
	University C	3.50 (3.00, 4.00) b
End-of-life	University A	4.84 (4.33, 5.00) a
	University B	3.67 (3.00, 4.33) b
	University C	3.88 (3.17, 4.59) b

Table 4: The differences in students' perceptions of sustainability throughout
the five-stage lifecycle among universities A, B and C

Note: Each subscript letter denotes a subset of one stage of lifecycle which do not differ significantly
from each other at the 0.05 level.

4.1.3 The comparison of the self-learning channels used by Chinese fashion design students for acquiring knowledge of sustainable practices throughout the lifecycle of clothing products among three universities

A Chi-square test was conducted to test the comparison of the self-learning channels for acquiring knowledge of sustainable practices throughout the lifecycle of clothing products among three universities. The self-learning channels of books and journals show significant differences among the three universities.

First, the results indicated a significant difference between the students from three universities in the self-learning channel of books for acquiring knowledge of sustainable practices throughout the lifecycle of clothing products (Chi-square = 9.617, P < 0.01). In the

following step, the Bonferroni test was used for pairwise comparison. As shown in Table 5, significant differences were found between university A and B on the self-learning channel of books, which indicates that students at university A choose books as their self-learning channels for acquiring sustainable practices is significantly more than students at university B; significant differences were also found between university A and C on the self-learning channel of books, which indicates that students at university A choose books as their self-learning channels for acquiring knowledge of sustainable practices is significantly more than students at university C. In addition, no differences were found between university C and university B on self-learning channel of books.

	Books			
	Yes	**No**	**Chi-square**	***P***
University A	18_a 47.4%	2_a 9.1%		
University B	11_b 28.9%	9_b 40.9%	9.617	0.008
University C	9_b 23.7%	11_b 50.0%		

Table 5: Chi-square test on the self-learning channel of books

Note: Each subscript letter denotes a subset of Books categories whose column proportions do not differ significantly from each other at the 0.05 level.

Second, the results indicated a significant difference between the students from three universities in the self-learning channel of journals for acquiring knowledge of sustainable practices throughout the lifecycle of clothing products (Chi-square = 12.480, P < 0.01). In the following step, the Bonferroni test was used for pairwise comparison. As shown in Table 6, significant differences were found between university A and B on the self-learning channel of journals, which indicates that students at university A choose journals as their self-learning channels for acquiring knowledge of sustainable practices is significantly more than students at university B; significant differences were also found between university A and C on the self-learning channel of journals, which indicates that students at university A choose journals as their self-learning channels for acquiring knowledge of sustainable practices is significantly more than students at university C. In addition, no differences were found between university C and university B on self-learning channel of journals.

	Journals			
	Yes	**No**	**Chi-square**	***P***
University A	18_a 51.4%	2_a 8.0%		
University B	9_b 25.7%	11_b 44.0%	12.480	0.002
University C	8_b 22.9%	12_b 48.0%		

Table 6: Chi-square test on the learning channel of journals

Note: Each subscript letter denotes a subset of Journals categories whose column proportions do not differ significantly from each other at the 0.05 level.

4.2 Qualitative results

Student respondents answered two open-ended questions in the survey: how do they apply sustainability knowledge to fashion design as a designer, how do you apply sustainability knowledge to clothing usage as a consumer. Since open-ended questions were not mandatory, eight respondents chose not to answer them. Among the 52 responses, for sustainable knowledge in clothing design application, most of the responses focused on up-cycling design with old materials, and few responses involved plant dyeing, multi-functional design, zero-waste pattern cutting, specific sustainable fabric use. Meanwhile, most respondents mentioned that they applied sustainable knowledge to clothing usage by reducing the amount of clothing purchase and disposing of unwanted clothing by donating, reselling, and using recycling boxes, and few pointed out how laundry can be used to reduce resource consumption, reuse clothing packaging, repurpose unwanted clothing, limit fast fashion brand items, and avoid animal fur or leather. In the responses to sustainable knowledge in clothing design application, students from university A provided more specific answers with professional terms: *'I have used recycled PET material, organic cotton and organic linen in my design collections'* (A_resp12). *'With Chinese knot buttons replacing resin buttons and zippers, the garment is particularly easy to dispose of with mono-materials'* (A_resp18). One response from university A also applied a design concept of environmental protection: *'I created the concept of harmonious coexistence between human and nature for my design collection, which advocated environmental protection through slogan elements, nature materials, and simple shapes'* (A_resp 04). Meanwhile, those from universities B and C provided less-specific answers, *'I have rebuilt a new garment with an old garment'* (B_resp 09) *and 'I reuse fabric'* (C_resp 16)*.* In addition, one student from University B provided incorrect information: *'I use natural fabric as a sustainable material to replace chemical fiber fabric'* (B_resp 19). In terms of sustainable knowledge in clothing use applications, all three universities provided unique answers, such as: *'I collect and reuse clothing packaging and reuse them' (A_resp 05). 'I wash the dark and light color clothing items separately, and wash the wool items by hand at low temperature and lay them flat to dry'* (B_resp 04). *'I use cloth bags instead of leather bags, and I never use animal leather products'* (C_resp 11).

5. Discussion

Based on the results of the non-parametric test, there are significant differences in three-university students' perceptions of sustainable practices throughout the lifecycle of clothing products. First, the perception level of university A was significantly higher than the perception level of university C at all five stages, which indicated that compared with the university that had not established curriculum on SPIFD and had not created SFDPs, the university had established curriculum on SPIFD and created SFDPs which could significantly improve the perception of sustainable practices throughout the lifecycle of clothing products among students. Second, the perception level of university A was significantly higher than the perception level of universities B at all five stages, which indicated that, compared with the university that had not established curriculum on SPIFD but had created one sustainable fashion design project, the university had established curriculum on SPIFD and created SFDPs which could significantly improve the perception of sustainable practices throughout the lifecycle of clothing products among students. Third, university B, however, did not have a higher perception level than university C at all five stages. This indicates that the university didn't succeed in improving students' perception of sustainable practices even though it had created one sustainable fashion design project when compared with the university with a curriculum and multiple projects. Therefore, the primary educational responsibility of fashion

departments of higher education institutions is to develop curriculum on SPIFD to promote student perception. Although SFDPs could have a relative impact on promoting students' perception of specific sustainable practices, a curriculum is required to improve students' perception as basic support, since SFDPs aim to cultivate students' capability to apply knowledge of certain sustainable practices at specific stages of the entire lifecycle of clothing products. Holistic comprehensiveness of sustainable practices throughout the entire lifecycle of clothing products cannot be achieved by creating SFDPs alone.

The results of Chi-square indicate that among the six types of self-learning channels for acquiring knowledge of sustainable practices throughout the lifecycle of clothing products, students from three universities showed significant differences in books and journals, while newspapers, TV programs, websites, and social media tools did not show significant differences. Students at university A used significantly more self-learning channels of books and journals than students at university B and C. This could be interpreted as newspapers, TV programs, websites, and social media tools serve as common self-learning channels for students at all the three universities, while books and journals serve as significant self-learning channels for universities that have established curriculums and created SFDPs. As part of the curriculum or projects, reference books and journal articles would be provided, and students would be expected to read them when completing course components. Meanwhile, students at University B were not encouraged to read books or journals during their project, and they were probably more focused on developing practical skills.

According to the results of open-ended questions, students from three universities showed equal performance with both general and specific responses to the question regarding sustainable knowledge in clothing use applications (as consumers). When it comes to sustainable knowledge in fashion design applications (as designers), however, University A students performed relatively well with more specific answers using professional terms. Consequently, the relatively outstanding performance of students from University A with more specific answers with professional terms can be interpreted as showing that University A students have the ability to apply relevant knowledge through design through the study of curriculum and multiple projects. In contrast, students from University B and University C who did not take a curriculum and did not participate in multiple project studies were only able to understand non-specific sustainable design practices. Therefore, a curriculum and multiple projects were found to be important.

6. Conclusion

This exploratory study provides insights into the perceptions of Chinese fashion design students for educators and education policy makers on sustainable practices throughout the lifecycle of clothing products through comparing the perceptions of sustainable practices and self-learning channels of students at three universities with different statuses of fashion design. The findings show that, among students at the university who took courses related to SPIFD and projects, the perception level was significantly higher than those of students at the university who completed only one project without courses and those who did not take both c and projects together. Also, students at the university with both curriculum and projects used significantly more self-learning channels through books and journals than students at the university with a project but no courses as well as students without both courses and projects. Furthermore, students at the university with both a curriculum and projects are better able to utilize specific sustainable knowledge in fashion design than students without both courses and projects. Therefore, the primary educational responsibility of fashion departments of

higher education institutions is to develop curriculum on SPIFD to promote student perception. The multiple SFDPs could be created to support curriculum learning by cultivation of both practical skills and theoretical skills. Additionally, students should also be encouraged to read books or journals as part of their self-learning during courses and projects in order to gain a more comprehensive understanding of sustainable practices throughout the lifecycle of clothing products.

There are several limitations to our study. First, considering the limited sample size, the survey cannot represent the perceptions of all Chinese fashion design students, and comparison results may differ depending on students' level of capability. Second, students' perceptions were based on self-evaluation, which could lead to subjectivity and mistakes. Third, the comparison of perceptions of specific sustainable practices at different phases of the clothing lifecycle was not further explored. Further research needs to include a larger sample size with a more diverse range of educational attainment regarding sustainable practices throughout the lifecycle of clothing products. Survey questionnaires that capture more objective information, such as knowledge of sustainable practice in fashion design, will be developed for obtaining more objective results. Furthermore, specific sustainable practices on each phase of clothing lifecycle will be systematically compared among educational institutions to obtain more detailed and specific insights.

Acknowledgements

Reference

Allwood, J. M., Laursen, S. E., de Rodriguez, C. M., & Bocken, N. M. (2006). *Well Dressed? The Present and Future Sustainability of clothing and Textiles in the United Kingdom*. Cambridge, UK: University of Cambridge, Institute for Manufacturing.

Armstrong, C., & LeHew, M. (2014). Barriers and Mechanisms for the Integration of Sustainability in Textile and Apparel Education: Stories from the Front Line. *Fashion Practice*, *6*(1), 59–85.

Ceulemans, K., Lozano, R., & Alonso-Almeida, M. (2015). Sustainability reporting in higher education: interconnecting the reporting process and organisational change management for sustainability. *Sustainability, 7*(7), 8881-8903.

Creditsailing, 2022. Which Universities in China Offer the Programmes of Fashion Design? Creditsailing.com. http://www.creditsailing.com/GaoKaoZSZY/2686829.html.

Fletcher, K. (2014). *Sustainable Fashion and Textiles: Design Journeys*. London: Routledge.

Foster, J. J. (1998). *Data Analysis Using SPSS for Windows.* London: SAGE Publication.

Grundmeier, A. M. (2017). Why Education Can Foster Sustainability in the Fashion Market. *IOP Conference Series: Materials Science and Engineering*, *254*(22), 6–12.

Guangmingwang, 2022. There Are Nearly 300 million Students in Schools and 3012 Universities Across the Country. GMW.cn. https://m.gmw.cn/baijia/2022-03/01/1302825390.html

Gwilt, A. (2014). *A Practical Guide to Sustainable Fashion*. London: Fairchild Publications.

Goworek, H. (2011). Social and Environmental Sustainability in the Clothing Industry: A Case Study of a Fair Trade Retailer. *Social Responsibility Journal, 7*(1), 74–86.

Hiller Connell, K. Y., & Kozar, J. M. (2012). Social Normative Influence: An Exploratory Study Investigating Its Effectiveness in Increasing Engagement in Sustainable Apparel-purchasing Behaviors. *Journal of Global Fashion Marketing, 3* (4), 172–179.

Huang, R., & Vicander, R. (2016). How Can University Education Cultivate Talents for the Future: Based on the Analysis of the Austainable Development education Model of Swedish Environment and Development Research Center. *Modern University Education,2016* (2), 14–19 (in Chinese).

Hur, E., & Cassidy, T. (2019). Perceptions and attitudes towards sustainable fashion design: challenges and opportunities for implementing sustainability in fashion. *International Journal of Fashion Design, Technology and Education, 12*(2), 208-217.

Koo, S., & Ma, Y. J. (2019). Environmentally responsible apparel consumption and convertible dresses. *Journal of the Korean Society of Clothing and Textiles, 43*(3), 327–348.

Khan, M. M. R., & Islam, M. M. (2015). Materials and manufacturing environmental sustainability evaluation of apparel product: Knitted T-shirt case study. *Textiles and Clothing Sustainability, 1*(1), 1–12.

Liu, L., Tang, Y., Bellavitis, A.D., & Shen, L. (2019). Research on the development of sustainable fashion design. *Wool Textile Journal, 47*(10), 94–99 (in Chinese).

Lou, X., & Cao, H. (2019). A comparison between consumer and industry perspectives on sustainable practices throughout the apparel product lifecycle. *International Journal of Fashion Design, Technology and Education*, *12*(2), 149–157.

Lozano, R., Ceulemans, K., Alonso-Almeida, M., Huisingh, D., Lozano, F. J., Waas, T., ... & Hugé, J. (2015). A review of commitment and implementation of sustainable development in higher education: results from a worldwide survey. *Journal of cleaner production, 108*, 1-18.

Moorhouse, D., & Moorhouse, D. (2017). Sustainable Design: Circular Economy in Fashion and Textiles. *Design Journal, 20* (sup1), 1948–1959.

Osmud, R., Fung, B.C.M. & Chen, Z. 2020. Young Chinese Consumers' Choice between Product-Related and Sustainable Cues-the Effects of Gender Differences and Consumer Innovativeness. *Sustainability (*Switzerland) 12 (9): 1–23.

Palomo-Lovinski, N., Copeland, L., & Kim, J. (2019). Perceptions of sustainability curriculum in US fashion academia. *International Journal of Fashion Design, Technology and Education*, *12*(3), 364–373.

Tao, H., & Wang, Y. (2020). Research on the problems and education strategy of fashion sustainable development in China. *Fashion Guide*, 9 (3), 45–51 (in Chinese).

Wang, X, & Wang, Y. (2018). Study on the Sustainable Design Strategies in Apparel Design. *Apparel Engineering*, 2018 (4), 80–83 (in Chinese).

Wiedemann, S.G., Biggs, L., Nebel, B., Bauch, K., Laitala, K., Klepp, I.G., Swan, P.G. & Watson, K. Environmental impacts associated with the production, use, and end-of-life of a woollen garment. *Int. J. Life Cycle Assess*. 2020 (25), 1486–1499.

Wu, C. & He, X (2004). The concept and strategy of clothing green design. *SILK, 2004*(5), 8–10 (in Chinese).

Yáñez, S., Uruburu, Á., Moreno, A., & Lumbreras, J. (2019). The sustainability report as an essential tool for the holistic and strategic vision of higher education institutions. *Journal of Cleaner Production*, *207*, 57–66.

Yang, Z. 2030 Oriented Sustainable Development Education Goals and China's Action Strategies. *Global Education. 48*(6), 12-23 (in Chinese).

Zhang, L., Wu, T., Liu, S., Jiang, S., Wu, H., & Yang, J. (2020). Consumers' clothing disposal behaviors in Nanjing, China. *Journal of Cleaner Production*, *276*, 123184.

Zheng, A., & Zhang, D. (2017) On Morality Building for Postgraduate Supervisors: Based on Survey of 12 Universities Involving 1,496 Teachers and Students. *Journal of Graduate Education, 40*(4):30-35 (in Chinese).

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Exploring Destination Imagination Alumni Perceptions of 21st-Century Skills and Workforce Readiness

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Abstract

Rapid changes in technology and globalization have altered traditional demands on workplace competency requirements. This transition requires that graduates are proficient in a wider variety of 21st-century skills including creativity and innovation than in the past. The purpose of this qualitative study was to explore how Destination Imagination alumni perceived that 21st-century skills learned as part of academic extracurricular experiences informed their early career readiness. The study was grounded on the 3 constructs found in Rojewski and Hill's career-technical and workforce education framework: work ethic skills, ability to be innovative, and career navigation. Using a basic qualitative methodology, I explored the perceptions of 11 Destination Imagination alumni through semi-structured interviews. Participants were sourced from a randomized global sample of early career employed adults, who had participated on Destination Imagination teams for 3 or more years. The interview data were analyzed through two cycles of emergent coding based on the 3 constructs. The key finding was that alumni perceived their Destination Imagination experiences developed a wide variety of skills desired by employers and necessary for successful entry into the workforce. Participants recalled and described specific skills including teamwork, communication, innovation, critical thinking, creative problem-solving, initiative, decision-making, time management, emotional intelligence, and lifelong learning. The results of this study may offer insights into ways that administrators and educators might design enriched academic extracurricular activities intended to enhance much-needed 21st-century skills, thereby improving the performance expectation gap between graduates and employers.

Keywords: Destination Imagination, Extracurricular Activities, 21st-Century Skills, Workforce Readiness

Introduction

The future of work continues to change rapidly due to technological innovation and globalization (Penprase, 2018). Such rapid changes require new graduates to arrive prepared for work, with 21st-century skills and competencies to meet these challenges (Makulova et al., 2015). However, research from around the world reveals that employers across various industries perceive a significant gap between their expectations and graduate performance (Abbas & Sagsan, 2019; Kunz & de Jager, 2019; Triyono et al., 2018). To address this problem employers, educators, and students agree that the lack of 21st-century skills may be augmented through participation in various extracurricular activities (ECAs) (Nuijten et al., 2017; Pinto & Ramalheira, 2017).

In this study, I sought to gather evidence of ways that this expectation performance gap might be narrowed. I used a basic qualitative methodology to interview 11 Destination Imagination (DI) alumni. By gathering rich, thick descriptions of alumni perspectives, I sought to understand how DI alumni viewed any influence their experiences in DI may have had on their workplace skill level.

Literature Review

21st-Century Skills

At the turn of this century, as globalization and emerging technologies began to alter the workplace, businesses required their workforce to develop additional skills beyond those valued in the past (Penprase, 2018). As a result of this awareness, a diverse range of stakeholders, including international government agencies, private sector businesses, philanthropic organizations, media groups, and educational institutions, began to identify and define key competencies required to satisfy these emerging needs. Consequentially, many frameworks have been developed over the past 20 years describing the nature and scope of 21st-century skills. The term 21st-century skills refers to the core competencies of knowledge, skills, attitudes, and character traits required for success in the information age of the 21st century (Partnership for 21st-Century Learning, 2001; Rojewski & Hill, 2014; Voogt & Roblin, 2012). The frameworks cover all aspects of teaching and learning from the skills themselves, such as creativity, communication, digital literacy, initiative, and citizenship; to describing ideal learning environments, teacher training, pedagogy, assessment, and administration.

Psychological Safety and Emotional Intelligence

Two important 21st-century skills emerged from reviewing the research, that are not typically recognized in the 21st-century skill frameworks. These are psychological safety and emotional intelligence. Psychological safety relates to, but is more than, teamwork and collaboration. Described as a mental state developed in a social environment where "a shared beliefs held by members of a team that the team is safe for interpersonal risk-taking," and "a sense of confidence that the team will not embarrass, reject, or punish someone for speaking up ... that stems from mutual respect and trust among team members" (Edmondson, 1999, p. 354). The development of successful teams relies on an individual's ability to build trust, to build mutual respect, to admit mistakes, and jointly accept failure (Edmondson, 1999; Duhigg, 2016).

Emotional intelligence is described as a 21st-century skill involving "a cross-section of interrelated emotional and social competencies and skills that determine how effectively we understand and express ourselves, understand others and relate with them, and cope with daily demands" (Bar-On, 2006, p14). It involves skills such as self-awareness, flexibility, empathy, and stress tolerance. Some of these skills appear independently in 21st-century frameworks, however, both psychological safety and emotional intelligence are generally neglected in 21st-century skill frameworks. These two concepts are included in a deeper discussion related to data emerging from this study.

Workforce Readiness

Workforce readiness is defined as the preparation of K-12 students as they transition to college and employment (Malin et al., 2017). Although we are well into the 21st-century, skills such as those listed in the frameworks remain necessary for successful transition to the workforce and are still neglected in many educational intuitions. Rapid technological advances continue to create constant change across many industries, and therefore it is increasingly important that secondary and postsecondary education enables graduates to stay current and prepare students for future jobs that do not yet exist (Rojewski & Hill, 2017).

Employer Views of Graduate Skills

A summary of current research shows that employers value a variety of 21st-century skills in the workplace, placing a high importance on soft skills in particular (Pazil & Razak, 2019; Stewart et al., 2016). However, on the whole, employers perceive a significant performance expectation gap between their needs and graduate abilities (Brown, 2019; Pazil & Razak, 2019). Some of this discrepancy is industry and location dependent (Makulova et al., 2015) and employers and academics agree that clear communication is vital when describing industry requirements to academic institutions (Baird & Parayitam, 2017; Low et al., 2016). Employers, academics, and graduates each perceive that skills can be strengthened by a variety of internships and activities (Alshare & Sewailem, 2018; Jackson et al., 2016). This leaves a gap, however, in understanding the perceptions of ECA alumni and activities they may deem helpful as they enter the workforce. An increased understanding of these issues may inform educators, administrators, and parents regarding the future development of ECA experiences focused on promoting student career readiness and success.

Academic Extracurricular Activities and 21st-Century Skills

In a review of empirical studies from the past 5 years, I explored 21st-century skills developed through participation in ECAs, how the skills transferred to support graduates' early careers, and employers' perspectives on graduate career readiness. Specific ECAs were related to science and engineering, international activities, experiential activities, and performance-based activities. Participants in these studies included students still active in a variety of ECAs (Eguchi, 2016; Fondo & Jacobetty, 2019; Sahin et al., 2014), teachers and mentors (Cushing et al., 2019; Mirra & Pietrzak, 2017), and parents of students (Batubara & Maniam, 2019; Behnke et al., 2019). Students of all ages described a wide range of 21st-century skills to which they ascribed skill development through participation in various academic ECAs. Researchers concluded that participation in ECAs nurtured skills vital for career success in the changing workplace (Ozis et al., 2018) and acknowledged that the type of program influenced the specific skills learned (Chan, 2016). However, this body of research leaves a gap regarding alumni reflections on their ECA experiences and how alumni

regard the impact of those experiences on their entry into the workforce. There is no prior research into alum perceived outcomes of participation in DI.

Destination Imagination

This study specifically focuses on alumni of the DI program. DI is a global educational nonprofit, volunteer-led organization. DI focuses on small groups of students exploring STEAM (Science, Technology, Engineering, Arts, and Mathematics) through creative problem-solving activities. Involving more than 150,000 students annually from kindergarten through to college, DI operates across the United States and 30 countries throughout the world. The organization defines its mission statement as to "engage participants in project-based challenges that are designed to build confidence, develop creativity, critical thinking, communication, and teamwork skills" (DI, 2022). Thus, the focus of DI is targeted on 21st-century skill development, and I wanted to explore whether alumni found it a valuable program to develop vital skills necessary for career success.

The DI program consists of independent teams of up to seven members, facilitated by adult team managers (TMs). TMs are trained as project managers who steer students towards developing teamwork, learning new skills, and creatively solving problems. A core DI principle known as *No Interference* makes clear that TMs may not interfere with the decision-making process of the team nor guide their solution in any way. This concept of *No Interference* is the major tenet of DI precisely because it is rare for students, especially so young, to experience such autonomy. The learning made possible through such student-led projects contributes powerfully to increased 21st-century skill development.

The program consists of two types of challenges: Instant Challenges (IC) and Team Challenges. ICs are short, five-minute, creative problem-solving activities that may be construction or performance based. Teams practice solving several different challenges every week to prepare for an undisclosed challenge at a tournament in competition with other teams. The other half of the program is a Team Challenge, in which the students choose one challenge from six STEAM-based categories: scientific, technical, engineering, fine arts, improvisation, and service learning. Teams choose one challenge then develop a solution over four months and present their solution in an eight-minute performance at a tournament.

Methodology

Framework

The conceptual framework used to ground this qualitative study was the career-technical and workforce education (CTWE) framework (Rojewski & Hill, 2017). Based on 21st-century skills, the framework consists of three constructs: work ethic, innovation, and career navigation. The table below lists specific skills as organized in the framework.

Construct	Skills Identified by Rojewski and Hill
Work Ethic	Communication, collaboration, interpersonal and personal skills, e.g., dependability, initiative, perceptiveness, honesty, appreciativeness, conscientiousness, likeability, and enthusiasm
Innovation	Creativity, problem-solving, higher-order thinking, entrepreneurship, and the ability to use technology in novel ways
Career Navigation	Life-long learning, understanding technology, ability to work in nonlinear and discontinuous work environments, ability to self-start, coping-behaviors, and taking initiative

Table 1: 21st-Century Skills in the Career-Technical and Workforce Education Framework (Rojewski & Hill, 2017).

Purpose and Research Questions

The purpose of this basic qualitative study was to explore how DI alumni perceived the 21st-century skills they learned through their DI experiences informed their early careers and workforce readiness. The central research question echoes this purpose, asking, how do DI alumni perceive the 21st-century skills they learned through their DI experiences informed their early career readiness and workforce readiness? Three related sub-questions were guided by the three constructs in the framework. How do DI alumni perceive their DI experiences informed their work ethic skills, the ability to be innovative, and career navigation?

Using purposeful sampling I invited information-rich cases (Burkholder et al., 2016) from a randomized global DI alumni database of 16,000 alumni. Inclusion in the study was limited to adults, who had participated in at least 3 years of DI as team members and were in the workforce for between 6 months and 4 years. Participants were offered a $10 Amazon gift voucher for participating.

Participation in the study occurred in three cascading stages. An initial email invitation led to an informed consent form, and in turn to a demographic questionnaire. I then scheduled and conducted 11 semi-structured interviews providing rich, thick descriptive data on participants' perceptions (Ravitch & Carl, 2016). Interviews were conducted on Zoom and audio recorded with permission. This method of data collection was the most practical choice because participants were geographically distant from me. I asked seven questions during interviews that lasted 45 to 60 minutes each. I transcribed the recordings using Kaltura and emailed the transcriptions to participants for member checking.

Consideration was given to ensure that this study was ethically managed. Questions were field tested by university mentors, and transcripts were member-checked by participants. Participants' details were de-identified to assure confidentiality. This methodology was of low risk to participants and data was backed up on flash drives.

Data Analysis

I coded in two cycles (Saldaña, 2016) using Microsoft Word, and Excel to store and organize data, and the software program Dedoose, to help me organize data during the analysis phase. Based on 312 participant excerpts I identified 32 specific skills that participants described

and sorted them under each construct: work ethic, innovation, and career navigation. The following three figures provide a clear visual of the skills that participants identified as learning in DI.

Figure 1: Work Ethic Skills

Figure 2: Innovation Skills

Figure 3: Career Navigation Skills

Results

Findings from the Central Research Question showed that Destination Imagination alumni described experiences that supported a variety of skills desired by employers in the workplace. In support of prior research, the richness and depth of these discussions demonstrate that participants benefit enormously from such extracurricular activities. And as previous authors have noted, the results can be unexpected and long-lasting. However, prior to this study, few researchers have attempted to tap into alumni perspectives, a useful approach considering that young adults entering the workforce offer reflections on the applications of their learning.

The key findings indicated that DI alumni perceived that their DI experiences helped develop specific 21st-century skills related to the work ethic construct. These skills include teamwork, communication, presentation skills, project management, and emotional intelligence (see Figure 1). Participants were able to identify specific skills and describe how they applied them in various work situations. Specifically, these skills included delegation, valuing others, goal setting, accepting criticism, risk-taking, belonging, bouncing back from failure, written and spoken communication, ability to listen, conflict resolution, self-confidence, problem analysis, optimization, prioritization, humility, flexibility, research, and working to deadlines.

DI alumni participants perceived that their DI experiences informed their ability to be innovative and creative (see Figure 2) by teaching them how to solve problems creatively, think critically and quickly, to use a variety of building tools, develop spatial reasoning, and to learn by doing. Participants explained how through DI they developed perseverance and the willingness to rework products several times until they are satisfied. They learned to view problems from different perspectives, to think "on their feet" and "out of the box" to create something unique and novel. They explained that they valued these skills and felt that these skills gave them an advantage over peers in their workplace.

Additionally, alumni articulated that participation in DI helped them gain admission to college, secure jobs, and keep jobs (see Figure 3). Participants described experiences that they felt, not only increased their awareness of different careers, developed their interest in STEM fields, and influenced their career paths, but also enriched their personal lives. Further, DI alumni perceived that they developed a variety of skills that supported their career readiness and helped them keep their jobs, such as initiative, life-long learning, curiosity, self-reflection, goal setting, and ownership.

Discussion

Figure 4 contains a table of quotes from participants to illustrate each code and provide some insight into the depth of reflection that emerged through these interview conversations. They support participants' convictions that DI had helped develop their early career and workforce readiness. Participant 1 said, "I don't think I'd be as good at my job, as I am currently, without the skills that DI gave me." Participant 6 explained, "Destination Imagination taught me that the answer is there, you just have to go get it, or create it on your own. It's a way of thinking." This quote reflects perseverance and a belief that there is a solution to every problem and a growth mindset that it can be accomplished.

Emotional intelligence is rarely mentioned in the 21st-century skills frameworks. It encompasses personal traits such as humility, flexibility, and the ability to 'read others' emotions, skills which are vital to career success. Participant 2 shared that a skill she learned in DI was that "things constantly change, and you have to adapt on the spot," speaking about the need for flexibility. Participant 3 discussed the need for humility when working with others as she recognized that, "sharing the credit is a big thing."

A second, rarely discussed, 21st-century competency emerged from these discussions, that of psychological safety. This relates to how comfortable individuals feel in a team, a sense of belonging, and mutual respect. The ability to take risks without fear of embarrassment or criticism, and yet still take ownership for their own mistakes and learn from them, ultimately increasing the team's success. This statement from participant 10 speaks to the psychological safety effect of working in close teams, mentioned earlier, that gives students confidence, and a sense of belonging and success. "Destination Imagination gave me a stronger sense of belonging and improved my confidence ... It gave me purpose, responsibility, and lifelong friends." This set of skills, vital to successful teamwork seems to be engendered through DI teams.

Construct	Child Code	Sub-Code	Exemplar Excerpt for the Code
Work Ethic	Teamwork		"You work with a team in DI ... it's one of the awesome things that prepared me for working with people" (P11) "Valuing everybody's contribution" (P5)
		Psychological Safety	"Not being afraid to pull someone else in and ask for help" (P9) "Always you can improve, take the criticism and run with it, don't get offended by it" (P11) "Failure was really valuable; we were still really proud" (P6)
	Communication		"[DI] helped my writing, strengthen how I explain something" (P2) "Being more concise in what I'm saying" (P1)
		Conflict Resolution	"Dealing with people who have different opinions and be able to clear headedly pick out which solution is going to be the best for the problem" (P11)
		Listening	"DI definitely teaches you ... when you need to listen" (8)
	Project Management		"Being able to delegate those different pieces out to different people and find ways to take giant tasks and make them sizable, starting with DI for me" (P6)
		Decision making	"We had to research different things" (P8) "how they prioritize what they thought" (P8) "how can they optimize their solutions" (P11)
		Time Management	"You don't have all the time in the world ... this is going to get done" (P3)
	Presentation		"Talking to adults and showing off your best stuff ... showcase yourself, to get that job" (P7)
		Confidence	[DI was] "super instrumental in bringing me out of my shell when I was a kid" (P9)
	Emotional Intelligence		"Social interaction with other people, you have a lot of different personalities, and that is definitely something that comes up in DI" (P2)
		Flexibility	"Things constantly change, and you have to adapt on the spot" (P2)
		Humility	"Sharing the credit is a big thing" (P3)
Innovation	Creativity		"DI helped me an incredible amount just fostering that outside-the-box, creative thinking" (P11). "It's more valuable if you can make something your own" (P6)
	Problem-solving		"Creative problem-solving, which is pretty much what DI is" (P11)
		Tools	Learning to sew, paint, pulleys, hot glue, staple gun, power tools, Python, Sign Language, Excel
		Trial & Error	"I'm going to take what I have and make it better for version 2 ... You realize you're going to have to keep revising stuff until it gets perfect" (P3) "Fast thinking that what Instant Challenges instills" (P1) "Having to build everything completely from scratch ... actually build things with their hands" (P5) "In order to make anything you have to have a picture in your head" (P11)
	Critical thinking		"A lot of the critical thinking skills [I learned doing] ... Instant Challenges and even doing the Central Challenge has really helped me being an engineer" (P5)
Career Navigation	Life-Long Learning		"I have to continuously work to always be the best version of myself" (P11)
		Curiosity	"I would definitely say a craving for learning is what DI has given me" (P7) "When I want to learn something new I'll sign myself up for it, and that comes from DI" (P6)
		Perseverance	"I you really want something to happen you have to campaign really hard for it" (P6)
		Reflection	"I'm very introspective ... reflecting on how certain experiences have affected me, and maybe that's attributable to DI" (P9)
		Ownership	"I saw all of my students rise to the occasion because they had ownership and that's what DI gives students" (P6)
	Initiative		"My advisors compliment me that I take initiative on a lot of stuff, and I do my own projects without necessarily asking first" (P2)
Career Choice	Directly Influenced		"A lot of the whole reason that I believe I'm an engineer is because of DI" (P5)
	Nourished		"I've always been an engineering focused person ... but I will say that DI really nourished that" (P11)
	Pivot		"DI let me trust that I was Ok not knowing what I wanted to do [as a career]" (P6)

Figure 4: Code Tree with Participant Quotes

One of the fundamental tenets of the Destination Imagination program is non-interference. Adults can teach skills and can foster a safe environment where psychological safety can thrive, but they may not interfere with decisions the team makes, as described in the DI section above. This belief in student ownership of their own work, and trust that children are capable seems to be a productive method of developing many different 21st-century skills required for the changing workforce.

Limitations

Time is always a limitation in any study and Covid-19 pandemic restrictions may have altered participant accessibility to the study. The somewhat self-selecting nature of the participant pool, randomized from a database of 1,600 DI alumni to which they voluntarily submitted their names, may suggest that this list of individuals had favorable DI experiences. A further limitation of this study may be that, of the eleven participants, only two were male participants, potentially lacking alternative perspectives.

Future Research

Further study into how employers perceive the skillsets of DI alumni compared to non-DI alumni may provide information to stakeholders to strengthen student support and broaden experiential learning programs. A second avenue of research might be to capture the views of team managers and parents of DI participants as they perceive the benefits of the program. Third, these alumni perceived that participation in DI helped them gain admission to college, secure jobs, and keep jobs. Participants described an engaging, motivating ECA environment that helped them navigate the challenges between school, college, and career. More research needs to be undertaken into documenting ways that these basic tenets of DI, as described by participants in this study, including ownership, independence, and psychological safety, might be extended into more mainstream education.

Implications

The potential social implications of the study may include raising administrator, educator, and parental awareness of the influence of academic ECAs to improve the performance expectation gap between graduates and employers. Such insights may inform innovative instruction by reinforcing practices or extending thinking into creative ways to develop much-needed 21st-century skills, knowledge, and abilities.

Conclusion

The alumni in this study described numerous experiences from their time in DI teams that supported the development of skills desired by employers and necessary for successful entry into the workforce. Participants specifically described skills including teamwork, written and spoken communication, conflict resolution, listening skills, decision-making, time management, confidence, flexibility, humility, creativity, problem-solving, spatial reasoning, critical thinking, curiosity, perseverance, reflection, ownership, resilience, and life-long learning.

Acknowledgments

References

Abbas, J., & Sagsan, M. (2019). Identification of key employability attributes and evaluation of university graduates' performance: Instrument development and validation. *Higher Education, Skills, and Work-Based Learning*, *10*(3). https://doi.org/10.1108/HESWBL-06-2019-0075

Alshare, K., & Sewailem, M. F. (2018). A gap analysis of business student's skills in the 21st century: A case study of Qatar. *Academy of Educational Leadership Journal*, *22*(1). https://www.abacademies.org/journals.html

Baird, A. M., & Parayitam, S. (2017). Are employers dissatisfied with college graduates? An empirical examination. *International Journal of Arts & Sciences*, *10*(1), 151–168. http://www.universitypublications.net/ijas/1001/html/H7V829.xml

Batubara, J., & Maniam, S. (2019). Enhancing creativity through musical drama for children with special needs (Down Syndrome) in education of disabled children. *Musical Education*, *2*, 166–177. https://doi.org/10.17674/1997-0854.2019.2.166-177

Behnke, A. O., Bodenhamer, A., McDonald, T., & Robledo, M. (2019). The impact of the Juntos Program: A qualitative evaluation. *Hispanic Journal of Behavioral Sciences*, *41*(1), 63–84. https://doi.org/10.1177/0739986318820486

Brown, W. (2019). Guiding the path: Identified skills for educating the next generation of workers. *Journal of Education for Business*, *94*(6), 400–407. https://doi.org/10.1080/08832323.2018.1541854

Burkholder, G., Cox, K., & Crawford, L. (2016). *The scholar-practitioner's guide to research design*. Laureate Publishing, Inc.

Chan, Y.-K. (2016). Investigating the relationship among extracurricular activities, learning approach and academic outcomes: A case study. *Active Learning in Higher Education*, *17*(3), 223–233. https://doi.org/10.1177/1469787416654795

Cushing, D. F., Pennings, M., Willox, D., Gomez, R., Dyson, C., & Coombs, C. (2019). Measuring intangible outcomes can be problematic: The challenge of assessing learning during international short-term study experiences. *Active Learning in Higher Education*, *20*(3), 203–217. https://doi.org/10.1177/1469787417732259

Destination Imagination. (2022). *Destination Imagination.* https://www.destinationimagination.org/

Duhigg, (2016). What Google learned from it's quest to build the perfect team. New *York Times Magazine.* https://www.nytimes.com/2016/02/28/magazine/what-google-learned-from-its-quest-to-build-the-perfect-team.html

Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, *44*(2), 350–383. https://doi.org/10.2307/2666999

Eguchi, A. (2016). RoboCupJunior for promoting STEM education, 21st century skills, and technological advancement through robotics competition. *Robotics and Autonomous Systems*, *75*, 692–699. https://doi.org/10.1016/j.robot.2015.05.013

Fondo, M., & Jacobetty, P. (2019). The lights and shadows of intercultural exchange projects for 21st-century skills development: Analysis and comparison of two online case studies. In A. Plutino, K. Borthwick, & E. C. Corradini, *New educational landscapes: Innovative perspectives in language learning and technology* (1st ed., pp. 63–69). Research Publishing. https://doi.org/10.14705/rpnet.2019.36.957

Jackson, K., Lower, C. L., & Rudman, W. J. (2016). The crossroads between workforce and education. *Perspectives in Health Information Management*, *13*. https://perspectives.ahima.org/

Kunz, R., & de Jager, H. (2019). Performance of newly employed trainee accountants in Gauteng, South Africa, versus the skills expectations of employers: How big is the gap? *Industry and Higher Education*, *33*(5), 340–349. https://doi.org/10.1177/0950422219845999

Low, M., Botes, V., De La Rue, D., & Allen, J. (2016). Accounting employers' expectations—The ideal accounting graduates. *E-Journal of Business Education and Scholarship of Teaching*, *10*(1), 36–57. https://hdl.handle.net/10289/11434

Makulova, A. T., Alimzhanova, G. M., Bekturganova, Z. M., Umirzakova, Z. A., Makulova, L. T., & Karymbayeva, K. M. (2015). Theory and practice of competency-based approach in education. *International Education Studies*, *8*(8). https://doi.org/10.5539/ies.v8n8p183

Malin, J. R., Bragg, D., & Hackmann, D. G. (2017). College and career readiness and the Every Student Succeeds Act. *Educational Administration Quarterly*, *53*(5), 809–838. https://doi.org/10.1177/0013161X17714845

Mirra, N., & Pietrzak, G. (2017). An undeniable force: Supporting urban middle school students as scholars and citizens through debate. *Voices from the Middle*, *24*(3), 20–24. https://www2.ncte.org/resources/journals/voices-from-the-middle/

Nuijten, M. P. J., Poell, R. F., & Alfes, K. (2017). Extracurricular activities of Dutch university students and their effect on employment opportunities as perceived by both students and organizations. *International Journal of Selection and Assessment*, *25*(4), 360–370. https://doi.org/10.1111/ijsa.12190

Ozis, F., Pektas, A. O., Akca, M., & DeVoss, D. A. (2018). How to shape attitudes toward STEM careers: The search for the most impactful extracurricular clubs. *Journal of Pre-College Engineering Education Research*, *8*(1). https://doi.org/10.7771/2157-9288.1192

Partnership for 21st-century skills. (2001). *P21 framework definitions*. http://www.battelleforkids.org/networks/p21

Pazil, A., & Razak, C. (2019). Perspectives of Asian employers on graduates' soft skills: A systematic review. *Universal Journal of Educational Research*, *7*(11), 2397–2405. https://doi.org/10.13189/ujer.2019.071117

Penprase, B. E. (2018). The fourth industrial revolution and higher education. In N. W. Gleason (Ed.), *Higher education in the era of the fourth industrial revolution* (pp. 207–229). Springer. https://doi.org/10.1007/978-981-13-0194-0_9

Pinto, L., & Ramalheira, D. C. (2017). Perceived employability of business graduates: The effect of academic performance and extracurricular activities. *Journal of Vocational Behavior*, *99*, 165–178. https://doi.org/10.1016/j.jvb.2017.01.005

Ravitch, S., & Carl, N. (2016). *Qualitative research: Bridging the conceptual, theoretical, and methodological.* SAGE.

Rojewski, J. W., & Hill, R. B. (2014). Positioning research and practice in career and technical education: A framework for college and career preparation in the 21st century. *Career & Technical Education Research*, *39*(2), 137–150. https://doi.org/10.5328/cter39.2.137

Rojewski, J. W., & Hill, R. B. (2017). A framework for 21st century career-technical and workforce education curricula. *Peabody Journal of Education*, *92*(2), 180–191. https://doi.org/10.1080/0161956X.2017.1302211

Sahin, A., Ayar, M., & Adiguzel, T. (2014). STEM related after-school program activities and associated outcomes on student learning. *Educational Sciences: Theory & Practice*, *14*(1), 309–322. https://doi.org/10.12738/estp.2014.1.1876

Saldaña, J. (2016). *The coding manual for qualitative researchers (3rd ed.).* SAGE.

Stewart, C., Wall, A., & Marciniec, S. (2016). Mixed signals: Do college graduates have the soft skills that employers want? *Competition Forum*, *14*(2), 276–281.

Voogt, J., & Roblin, N. (2012). A comparative analysis of international frameworks for 21st century competencies: Implications for national curriculum policies. *Journal of Curriculum Studies*, *44*(3), 299–321. https://doi.org/10.1080/00220272.2012.668938

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The Lived Online Education Experiences and the E-Competencies of the Teacher Education Institutions

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract
The sudden shift into online education has greatly affected the Teacher Education Institutions (TEIs) since they were forced to move to the virtual classroom without preparations. Thus, using concurrent nested mixed-method research, this study investigated the lived experiences of 59 teachers of the 4 TEIs in their conduct of online learning. An open-ended questionnaire was used to gather data on the respondents' lived experiences. Also empirically studied was the level of knowledge and extent of competence of 64 teachers on professional responsibility, digital pedagogy, community building, learner engagement, digital citizenship, diverse instruction, and assessment and measurement. Correlation between level of knowledge and extent of competence on the e-competencies was also determined using Pearson's correlation coefficient. The status of the TEIs, the support they provided to their teachers, and their solutions to the problems were also investigated using an open-ended questionnaire. The teachers' lived experiences were of diverse themes, mostly positive, showing that they were eventually able to cope with. They also had good level of knowledge and moderately high extent of competence. However, their level of knowledge and the extent of their competence were not significantly correlated. In addition, the four TEIs adjusted to the needs of the time, showed support to their faculty, and created contextualized solutions to the challenges of online learning.

Keywords: Lived Experiences, Online Education, E-Competencies, Support, Leadership

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Introduction

As technology advances, there is a need for the field of learning to make some adjustments. Gone are the days when students learned only inside the "brick-and-mortar" school. With the advancement of technology, there have been changes affecting the field of teaching-learning. At the onset of the pandemic, every 'brick-and-mortar' institution was forced to adopt the online mode of learning. As nation after nation mandated everyone to stay at home, every field of learning was forced to deliver the lessons to the students through technology. CHED COVID Advisory No. 5 and No. 6 declared the suspension of classes in all levels starting March 14, 2020 (CHED, 2020). Thus, regardless of qualifications, teachers and school administrators were mandated to facilitate online learning.

Teachers are among the vulnerable workforces in the implementation of online classes since teaching online is far different from the traditional teaching. According to Tavakol (2012), teaching online transfers knowledge from a teacher to a student without face-to-face interaction through various ICT media. Many of the teachers in the traditional classroom find online teaching difficult. In fact, Softic (2018) emphasized that the increasing number of tools and technologies make teachers fail because they cannot cope with all the updates, cannot acquire knowledge about these technologies, and do not know how to use them in teaching. Some teachers consider technology an obstacle to their profession (Lu, 2018). The new environment of knowledge transfer made the teachers face various experiences, both positive and negative. For instance, Roblyer et al. (2009) stated that 75% of the traditional teachers who taught online claimed that they felt that their experiences helped them improve their face-to-face teaching. Teachers also consider the new modality as a chance to show creativity and exert more effort for themselves and their students (Rosanes, 2020). Moreover, in the Study by Klein (2022), he mentioned Mr. Distefano, a kindergarten teacher. The latter initially struggled with technology but exerted effort to navigate it and found out later that it was wonderful. In addition, De Vries (2021) found online teaching to be fun, especially during breakout rooms. Isla (2020) also considered online teaching advantageous as the teacher does not need to travel from home to school. In addition, Frazer et al. (2017) revealed that teachers perceived facilitating learning, connecting with students, being amicable, sharing experiences, establishing reciprocated comfort, and responding to the needs of the learners as effective online practices. However, the study by Moralista and Oducado (2020) and Chin et al. (2022) discovered more disadvantages than advantages of online learning. In his Study, Clark (2016) discovered that teachers had a hard time finding out whether there was authentic learning on the students' part or none. Moreover, Kamal and Illiyan (2021) noted a teacher-respondent who had difficulty making students answer questions. Also, Selvaraj et al. (2021) discovered that 95% of the teacher-respondents did not find satisfaction in online classes. The teachers were dissatisfied may be because their skills were inadequate for online teaching (Chin, 2020). Comas-Quinn (2011), on the other hand, found that as regards teachers' experience in the use of online tools, the evaluation was dependent on the functions of the tools giving a higher rate to tools used for peer collaboration and information sharing. Many of them also experienced technological and technical problems. For instance, in the Study of Selvaraj et al. (2021), 44% of the teachers had a problem with connectivity.

Hence, the transmission of information using ICT demands competencies from the educators (Awouters & Jans, 2009). Kola and Sunday (2015) emphasized the importance of the qualification of teachers in any system of education. Aside from the seven domains referring to the specific dimensions of teacher practice presented in DepEd Order No. 42, series 2017, online teachers need to acquire additional skills. Tu et al. (2003) in De Cagne and Walters

(2009) said that current pedagogical skills plus a good grasp of the characteristics of virtual education and its learners, the structure of courses online, and various online teaching techniques are a must in online teaching. Sun and Chen (2016) also underlined the importance of giving attention to the connection between "cognitive and teaching presences" to establish the most commendable methods and techniques for virtual teaching.

Furthermore, Gulbahar and Kalelioglu (2015) believed that virtual education's success lies in the competencies of online teachers. Valencia-Molina et al. (2016) emphasized the needed competencies for the 21st century. Williams (2003) in Gulbahar and Kalelioglu (2015) identified communication and instruction, instruction and learning, management and administration, and use of technology as the essential e-competencies teachers should acquire. Guasch et al. (2010) presented design/planning, social, instructive, technological, and management as the necessary e-competencies. Furthermore, Arinto (2013) identified content development, design of learning activities, teaching strategies, and assessment as the proposed skills to be developed for online teaching. Adnan (2018) also said that online learning of greater quality requires focusing on the demand to pay attention to "changing roles, competencies and additional skillsets of prospective online instructors." Also, Zweig and Stafford (2016) discovered a need for the virtual educator to undergo supplemental education to become more effective to the students, especially in the areas where traditional and online classrooms differ. Unfortunately, teachers are not well-trained and not well-prepared to teach in higher education (Palloff & Pratt, 2013; Albrahim, 2020). The Study of Zweig and Stafford (2016) also documented inadequacy in formulating online lessons given in "preservice education," even though virtual teachers handled more than two million students. Also, teachers in the Study of Ma et al. (2021) experienced burnout because of the low academic performance of students. Yuksel (2019) also said that online teachers should possess instructional, technical, and technological expertise. However, in their study, Wang et al. (2019) found that the online teaching competencies of the eighty-nine Chinese beginning online instructors required improvement, especially in preparation and assessment. Carril et al. (2013) also found that the 166 faculty participants were also low in the aspect of assessment. However, they had the highest proficiency in content drafting. In short, e-competencies means not only the professional and instructional skills of the teachers but also their technical and technological expertise.

In this study, the aforementioned e-competencies were compiled based on the National Standards for Quality Online Teaching 2019 (QM Quality Matters and Virtual Learning Leadership Alliance, 2020) as follows: **Professional responsibilities**, **Digital pedagogy, Community building**, **Learner engagement**, **Digital citizenship**, **Diverse instruction**, **Assessment and measurement**, and **Instructional design**.

Like teachers, school administrators also play a very important role in implementing online learning. They must be knowledgeable and skillful to succeed in their online programs (Rupp, 2016). Beaudoin (2003) emphasized that "effective distance education leadership" can draw the line between victory and defeat during challenging times. Furthermore, Tipple (2010) found that leading the part-time online faculty is essential for distance education universities to succeed. In addition, Barefield et al. (2013) emphasized the important role of leadership in delivering sufficient and suitable support for online learning success. There is also a change in the role of the school administrators from being the manager to being an initiator to the part-time online teachers. There is a need for the school administrators to trust their online faculty in delivering the service to the students. Also, a "high degree of trust, empathy, empowerment, and mentorship" is important to work together effectively online

(Kayworth & Leidner, 2001; Rupp, 2016). Tipple (2010) concluded that changing leadership style from being just the manager to leading by modeling, inspirationally motivating, intellectually stimulating, supporting, and mentoring the followers is crucial in achieving the institutional vision. The demands posed by online learning also need school administrators who can assist the faculty achieve collective and individual work (Hershey & Johnson, 2008). However, the sudden declaration of holding classes online (CHED, 2020) caught the school administrators off-guard. They were not ready to implement online learning (Aytac, 2020; Asio et al., 2020). Thus, the new mode of leading their faculty and staff tested them as they embarked on a new mode of leading their faculty and staff. The administrators were challenged to find ways to continue to deliver the goods at their best quality despite the circumstances. Lorenzetti (2021) argued that distance learning leaders must always manage technology and student access challenges. Education leaders were forced to immediately create contextual answers (Reimers et al., 2020). However, addressing the challenges of e-learning cannot be done overnight because even those who have been doing e-learning before the pandemic have not perfected their turf yet. In fact, Leem and Lim (2007) found that most large universities and colleges in Korea did not provide a significant "support system" to their faculty and learners. This statement contradicts Barefield and Meyer's (2013) findings in their study on the importance of faculty and student support systems and meticulous preparation. However, Bautista Jr. et al. (2021) discovered that the government adequately supported Filipino teachers.

Because of the urgency of the need to conduct classes online, schools deployed their teachers from the traditional classroom into the online realm of teaching and learning, where everyone did the tasks in a trial-and-error method (Burgess & Sievertsen, 2020). Because school administrators were not ready, they did not train the teachers, and the decision to go online was sudden. They did not also evaluate the teachers' competencies in the conduct of online classes. Strauss (2020) admitted that teachers in the sudden online classes were also deployed in a new environment. In addition, Brooks and Grajek (2020) claimed that teachers were not ready to deliver their lessons through a virtual classroom. Because of these dilemmas, this study was conducted.

Nonetheless, unlike the other studies where schools had established online classes, this study investigated the lived experiences and e-competencies of the teachers who responded to the sudden shift from traditional to online.

Furthermore, this study investigated the reactions of the TEIs in Baguio City and La Trinidad, Benguet, and the measures they had taken to address the challenges posed by the sudden implementation of online learning, given the urgency of the matter, unlike the mentioned studies where online learning had already been in place when they were conducted.

This study will help school administration design a program on e-competencies to be incorporated into the existing curriculum of Teacher Education and draft a separate e-competencies training program for their current faculty. Furthermore, the result will also serve as an eye-opener for the teachers on the need to be updated in their competencies. In addition, the results of this research will encourage the researcher and other writers to write materials on developing e-competencies both for seasoned teachers and new ones.

Research Paradigm

The lived experiences of the teachers in the four Teacher Education Institutions (TEIs), the level of their knowledge in e-competencies, the extent of their competence in the e-competencies, the correlation between the level of knowledge and the extent of competence in the e-competencies, the status of the TEIs, the support provided by the TEIs to the teachers and the solutions of the TEIs to the challenges to online education are the outputs of this study. These outputs were established by creating the questionnaires based on the Competencies of Online Teaching. Included in the questionnaire were open-ended questions to gather data on the lived experiences of the teachers and the administrators of the TEIs. Then the questionnaires were tested for reliability before it was distributed to the respondents. Interviews (in-person and virtual) were also conducted. Data were then analyzed and organized. These are encapsulated in the paradigm that follows.

Figure 1: *The Paradigm of the Study*

INPUT	PROCESS	OUTPUT
• **Competencies for Online Teaching** • **Questions on lived experiences of teachers, status of the TEIs, support given to the teachers and measures undertaken by the TEIs**	• **Creation of Questionnaires** • **Reliability and Validity Testing of Questionnaire** • **Floating of Questionnaire** • **Retrieval of Questionnaire** • **Collating the results** • **Conduct of the interview** • **Analyzing the results according to theme**	• **level of knowledge on e-competencies and the extent of e-competencies of the teachers in TEIs** • **lived experiences of the teachers in TEIs** • **status of the universities** • **supports given to the teachers** • **measures undertaken by the universities**

Statement of the Problem and Hypotheses

This study aimed to investigate the e-competencies and the lived experiences of the teachers of the Teacher Education Institutions (TEIs) in the universities in Baguio City and La Trinidad. This study specifically sought to answer the following questions:

1. What are the teachers' lived experiences in their conduct of online classes?
2. What is the level of the teachers' knowledge in the following areas of e-competencies during the implementation of online classes?
   a. professional responsibilities
   b. digital pedagogy
   c. community building
   d. learner engagement
   e. digital citizenship

       f. diverse instruction
       g. assessment and measurement
       h. instructional design

3. To what extent are the teachers competent in the following e-competencies during the implementation of online classes?
       a. professional responsibilities
       b. digital pedagogy
       c. community building
       d. learner engagement
       e. digital citizenship
       f. diverse instruction
       g. assessment and measurement
       h. instructional design

    3.1 Is there a significant correlation between the teachers' level of knowledge on e-competencies and the extent of their e-competencies?

    Hypothesis: There is no significant correlation between the teachers' level of knowledge of e-competencies and the extent of their competence in the e-competencies.

4. What is the status of the TEI in the conduct of online classes?
5. What support is provided by the TEIs to their teachers?
6. How has the TEI been addressing the challenges in conducting online classes?

Conclusion

Based on the findings, the following conclusions were drawn.

The teachers' lived experiences with online education were positively and negatively diverse. However, their positive experiences with online education were more evident, showing that they could eventually adjust to the demands of online education given sufficient time and training.

The level of knowledge of the teachers on e-competencies was good. Thus, they were aware of what was required to deliver their content online effectively.

The extent of competence of the teachers on the e-competencies was moderately high, showing that the teachers were adequately competent to effectively accomplish their tasks in delivering content to their students online.

However, though the teachers had good knowledge of e-competence and moderately high-level extent of competence, knowledge and competence had no significant correlation. Thus, the teachers' understanding of the e-competencies did not have anything to do with how competent they were in performing their tasks as online educators.

The TEIs were able to meet the initial demands of online education since they could adjust, implement new learning modalities, and subscribe to appropriate LMS.

Since the TEIs provided their teachers with professional development, a flexible work set-up, minimal financial assistance, and emotional and psychological support, it can be concluded that they cared and encouraged their faculty despite their inadequacies in providing financial aid for electric and internet fees.

The TEIs successfully hurdled the challenges they faced to meet the demands of online education as seen in their exercise of flexibility, effort to reach out virtually, insurance of the availability of content materials and guideline manuals, and employment of virtual internships as immediate solutions.

References

Awouters, V. & Jans, S. (2009). E-learning competencies for teachers in secondary and higher education. *International Journal of Emerging Technologies Learning,* 4, 58.

Barefield, A. C., & Meyer, J. D. (2013). Leadership's role in support of online academic programs: implementing an administrative support matrix. *Perspectives in Health Information Management*, 10 (Winter), 1f.

Clark, R. C., & Mayer, R. E. (2016). *E-learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning.* John Wiley & Sons.

Comas-Quinn, A. (2011). Learning to teach online or learning to become an online teacher: an exploration of teachers' experiences in a blended learning course. *ReCALL*, 23(03), pp. 218–232.

De Cagne, J.C. & Walters, K. (2009). Online teaching experience: A qualitative metasynthesis (QMS). *MERLOT Journal of Online Learning and Teaching,* 5(4), 586.

Dooley, K. J. (1997). A complex adaptive systems model of organization change. *Nonlinear Dynamics, Psychology, and Life Sciences*, 1(1), 69-97.

Giorgi, A. (2009). *The descriptive phenomenological method in psychology*. Duquesne University Press.

Guasch, T, Alvarez, I., & Espasa, A. (2010). University teacher competencies in a virtual teaching/learning environment: Analysis of a teacher training experience. *Teaching and Teacher Education*, 26, 199-206.

Gulbahar, Y. & Kalelioglu F. (2015). Competencies of e-instructors: how to qualify and guarantee sustainability. *Contemporary Education Technology*, 6(2), 140.

Hersey, P., Blanchard, K.H., Johnson, D.E. (2008). *Management of Organizational Behavior. Leading Human Resources, 9th Edition*. Prentice Hall.

Hogg, M., & Vaughan, G. (2005). *Social Psychology* (4th edition). Prentice-Hall.

Hossieni, A. & Khalili, S. (2011). Explanation of creativity in postmodern educational ideas. *Procedia Social and Behavioral Sciences,* 15, 1307.

Kayworth, T.R., Leidner, D.E. (2001). Leadership effectiveness in Global Virtual Teams. *Journal of Management Information Systems, 18 (3), 7-40.*

Mitleton-Kelly, E. (2003). Ten principles of complexity and enabling infrastructures In E. Mitleton-Kelly (Ed.), Complex *Adaptive Systems Complex systems and evolutionary perspectives on organizations: The application of complexity theory to organizations. Advanced series in management* (pp. 2350). Elsevier Science Ltd.

Moustakas, C. (1994). *Phenomenological research methods*. Sage.

Palloff, R. M. & Pratt, K. (2013). *Lessons from the virtual classroom: The realities of online teaching* (2ⁿᵈ ed). Jossey-Bass.

Roblyer, M.D., Porter, M., Bielefeldt, T., & Donaldson, M. (2009). Teaching online made me a better teacher: Studying the impact of virtual course experiences on teacher's face-to-face practice. *Journal of Computing in Teacher Education,* 5 (4), 121.

Smith, J., Flowers, P., & Larkin, M. (2009). *Interpretative phenomenological analysis: Theory, method and research*. Sage.

Tavakol, M. (2012). Virtual applications and real problem: Education and Higher Education in Iran. *Journal of Social and Development Sciences* 3(5), pp. 152–60.

Valencia-Molina, T., Serna-Collazos, A., Ochoa-Angrino, S., Caicedo-Tamayo, A.M., Montes-Gonzales, J. A., & Chavez- Vescance, J.D. (2016). *ICT standards and competencies from the pedagogical dimension: A perspective from levels of ICT adoption in teachers' education practice.* Multimedios.

Yuksel, I. (2009). Instructor competencies for online courses. *Procedia – Social and Behavioral Sciences,* 1 (1), 1729.

Zweig, J. S. & Stafford, E. T. (2016). Training for online teachers to support student success: Themes from a survey administered to teachers in four online learning programs. *Journal of Online Learning Research,* 2 (4), 412.

Unpublished Material

Rupp, N. K. (2016). Online learning and effective leadership: The importance of relationship building and culture, Doctor of Philosophy (PhD), dissertation. *Educ Foundations & Leadership, Old Dominion University.* Doctor of Philosophy (PhD), dissertation.

Electronic and Online Sources

Adnan, M. (2018). *Professional development in the transition to online teaching: The voice of entrant online instructors. ReCall,* 30 (1), conclusion page. https://www.cambridge.org/core/journals/recall/article/professional-development-in-the-transition-to-online-teaching-the-voice-of-entrant-online-instructors/0CD7B562DAC0C25BD00490597AC3EEE4/core-reader

Albrahim, F. (2020, January). Online teaching skills and competencies. *TOJET*, 19 (1). https://files.eric.ed.gov/fulltext/EJ1239983.pdf

Alvarez, A. (2020). The phenomenon of learning at a distance through emergency remote teaching amidst the pandemic crisis. *Asian Journal of Distance Education,* 15 (1), 144-153. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://files.eric.ed.gov/fulltext/EJ1289949.pdf

Amimo, S. A. (2021). From the classroom into virtual learning environments: Essential knowledge, competences, skills and pedagogical strategies for the 21st century teacher education in Kenya. In M.J. Hernandez-Serrano (Ed.), *Teacher Education in the 21st Century* (chapter 5). https://doi.org/10.5772/intechopen.96950

Anderson, B. (n.d.). Great leaders are flexible. *Sigma. https://www.sigmaassessmentsystems.com/flexible-leader/*

Arinto, P. B. (2013). A framework for developing competencies in open and distance e-learning. http://www.irrodl.org/index.php/irrodl/article/view/1393/2433

Asio, J. M. & Bayucca, S. (2021). Spearheading education during the COVID-19 rife: Administrators' level of digital competence and schools' readiness on distance learning. *Journal of Pedagogical Sociology and Psychology*, 3 (1), http://www.doi.org/10.33902/JPSP.2021364728

Aytac, T. (2020). The problems and opinions of school administrators during COVID-19 pandemic: a qualitative study from Turkey. *European Journal of Educational Sciences* (December 2020 edition), 7 (4). URL:http://dx.doi.org/10.19044/ejes.v7no4a5

Bautista Jr., A. P, Bleza, D. G., Buhain, C. B., & Balibrea, D. M. (2021). School support received and the challenges encountered in distance learning education by Filipino teachers during the COVID-19 pandemic. *International Journal of Learning, Teaching and Educational Research,* 20 (6). https://www.ijlter.org/index.php/ijlter/article/view/3

Brooks, C. & Grajek, S. (2020, Mar 12). Faculty readiness to begin fully remote teaching. *Educause Review.* https://er.educause.edu/blogs/2020/3/faculty-readiness-to-begin-fully-remote-teaching

Beaudoin, M. F. (2003). Distance education leadership for the new century. Online Journal of Distance Learning Administration, 6(2). http://www.westga.edu/~distance/ojdla/summer62/beaudoin62.html

Burgess, S. & Sievertsen, H.H. (2020, April 1). Schools, skills, and learning: The impact of COVID-19 on education. https://voxeu.org/article/impact-covid-19-education

Carril, P.C.M., Sanmamed, M. G., & Selles, N. H. (2013). Pedagogical roles and competencies of university teachers practicing in the e-learning environment. http://www.irrodl.org/index.php/irrodl/article/view/1477/2586

Chin, J. M – C., et al. (2020). Perspectives on the Barriers to and needs of teachers' professional development in the Philippines during COVID-19. *Sustainability*, 14, 470. https://doi.org/10.3390/su14010470

Clark, C. A. (2016). The experience of teaching online secondary Sciences. UNLV Theses, Dissertations, Professional Papers, and Capstones. 2655. https://digitalscholarship.unlv.edu/thesesdissertations/2655.

Commission on Higher Education. (2020, March 7). CHED COVID advisory No. 5. https://ched.gov.ph/wpcontent/uploads/CHED-HEI-COVID 19-Advisory_No.5_15Mar2020.pdf

Commission on Higher Education. (2020, April 13). CHED COVID advisory No. 5. https://ched.gov.ph/wp-content/uploads/CHED-HEI-COVID-19-Advisory_No.5_15Mar2020.pdf

Dani, V. (2019, Jan 30). Is online education better than traditional education? *Education Technology.* https://kitaboo.com/is-online-education-better-than-traditional-education/.

Department of Education. (2017). National adoption of the Philippine Professional Standards for Teachers. https://www.deped.gov.ph/wp-content/uploads/2017/08/DO_s2017_042-1.pdf

Dev, WP-. (2018, Jul 12). The importance of virtual communication. *VAConnect. https://vaconnect.co.za/the-importance-of-virtual-communication/*

De Vries, T. J. (2021, April 14). The pandemic that has forced teachers to go online. Zooming in on tips for online teaching. *Frontiers in Education. https://doi.org/10.3389/feduc.2021.647445*

Dignan, L. (2020, March 22). Online learning gets its moment due to COVID-19 pandemic: here's how education will change. https://www.zdnet.com/article/online-learning-gets-its-moment-due-to-covid-19-pandemic-heres-how-education-will-change/

El Said, G. (2021). How did the Covid-19 pandemic affect higher education learning experience? An empirical investigation of learners' academic performance at a university in a developing country. *Advances in Human-Computer Interaction. https://doi.org/10.1155/2021/6649524*

Frazer, C., Sullivan, D.H., Weatherspoon, D. & Hussey, L. (2017). Faculty perceptions of online teaching effectiveness and indicators of quality. *Nursing Research and Practice.* https://www.hindawi.com/journals/nrp/2017/9374189/

Fidan, T. & Balci, A. (2017). Managing schools as complex adaptive systems: A strategic perspective. *International Electronic Journal of Elementary Education,* 10(1). DOI: 10.26822/iejee.2017131883

Howley, C. (2012). Readiness for change. *ICF International.* file:///C:/Users/Ramos%20Team/Documents/PERSONAL/FINAL%20DEFENSE/ED535400%20(1).pdf

Isla, R. (2020, Sept 17). The pros and cons of online learning in the Philippines. *MoneySmart*. https://www.moneysmart.ph/articles/the-pros-and-cons-of-online-learning-in-the-philippines-moneysmart-2020/

Kamal, T. & Illiyan, A. (2021). School teachers' perception and challenges towards online teaching during COVID-19 pandemic in India: an econometric analysis. *Asian Association of Open Universities Journal,* 16 (3). https://www.emerald.com/insight/content/doi/10.1108/AAOUJ-10-2021-0122/full/html

Klein, A. (2022, Mar 8). Teachers are transferring their new virtual teaching skills to in-person instruction. *EducationWeek. https://www.edweek.org/technology/teachers-are-transferring-their-new-virtual-teaching-skills-to-in-person-instruction/2022/03*

Koehler, M.J.,Mishra, P., Kereluik, K., Shin, T.S. & Graham, C.R.(2014). The technological pedagogical content knowledge framework. *Handbook of Research on Educational Communications and Technology: Fourth Edition. https://www.scopus.com/record/display.uri?eid=2-s2.0-85009102305&origin=inward&txGid=bbdd4a83077756654197ab844d01edd9&featureToggles=FEATURE_NEW_DOC_DETAILS_EXPORT:1*

Kola, A. & Sunday, O. (2015). A review of teachers' qualifications and its implication on students' academic achievement in Nigerian Schools. *International Journal of Research and Information. https://www.researchgate.net/publication/280238391_A_Review_of_Teachers'_Qualifications_and_Its_Implication_on_Students'_Academic_Achievement_in_Nigerian_Schools*

Leem, J., & Lim, B. (2007). The current status of e-learning and strategies to enhance educational competitiveness in Korean Higher Education. *The International Review of Research in Open and Distributed Learning*, *8*(1). http://www.irrodl.org/index.php/irrodl/article/view/380/790

Lorenzetti, J. P. (2021, July 22). Distance education administrators face unique challenges. *Faculty Focus. https://www.facultyfocus.com/articles/online-education/distance-education-administrators-face-unique-challenges/*

Lü, L. (2018, July 6). Teacher, teaching, and technology: The changed and unchanged. *International Education Studies*, 11(8), 39-47. DOI:10.5539/ies.v11n8p39

MA. K., Chutiyami, M., Zhang, Y., & Nicoll, S. (2021). Online teaching self-efficacy during COVID-19: Changes, its associated factors and moderators. *Education and Information Technologies,* 26. https://doi.org/10.1007/s10639-021-10486-3

McCarthy, N. (2020, March 26). COVID-19's staggering impact on global education. The World Economic Forum COVID Action Platform. https://www.weforum.org/agenda/2020/03/infographic-covid19-coronavirus-impact-global-education-health-schools/

Moralista, R., Oducado, R. M. F. (2020). Faculty perception toward online education in a state college in the Philippines during the Coronavirus Disease 19 (Covid-19) pandemic. *Universal Journal of Educational Research*, 8 (10), pp. 4736 - 4742, 2020. DOI: 10.13189/ujer.2020.081044

Moreno, R., & Mayer, R. (2007). Interactive multimodal learning environments. Educational Psychology Review, 19(3), 309-326.Moralista, R. B. & Oducado, R. M. (2020). Faculty perception toward online education in a state college in the Philippines during the coronavirus disease 19 (COVID-19) pandemic. *Universal Journal of Educational Research*, 8(10): 4736-4742. DOI: 10.13189/ujer.2020.081044

Mota, F. P. B. &, Cilento, I. (2020). Competence for internet use: Integrating knowledge, skills, and attitudes. *ScienceDirect.* *https://www.sciencedirect.com/science/article/pii/S266655732030001X*

Nistal, A.A., Van Dooren, W., Verschaffel, L. (2012) Flexibility in problem solving: Analysis and improvement. In: Seel N.M. (eds) *Encyclopedia of the Sciences of Learnin*g. https://doi.org/10.1007/978-1-4419-1428-6_540

Özüdoğru, G. (2021). Problems faced in distance education during Covid-19 pandemic. *Participatory Educational Research (PER)*, 8(4), 321-333. http://dx.doi.org/10.17275/per.21.92.8.4

Palliser School Division. (n.d.). Inclusive Education Philosophy. https://www.pallisersd.ab.ca/inclusive-education/inclusive-education-philosophy

QM Quality Matters and Virtual Learning Leadership Alliance. (2020). National Standards for Quality Online Teaching. https://www.nsqol.org/the-standards/quality-online-teaching/

Reimers, F. Schleicher, A., Saavedra, J., & Tuominen, S. (2020). Supporting the continuation of teaching and learning during the COVID-19 pandemic. *OECD.* http://www.oecd.org/education/Supporting-the-continuation-of-teaching-and-learning-during-the-COVID-19-pandemic.pdf

Rosanes, M. (2020, Apr 25). Ten ways teachers are adapting to remote classrooms. *The Educator. https://www.theeducatoronline.com/k12/news/ten-ways-teachers-are-adapting-to-remote-classrooms/271071*

Selvaraj, A., Radhin, V., Ka, N. Benson, N. & Mathew, A. J. (2021). Effect of pandemic-based online education on teaching and learning system. *International Journal of Educational Development*, 85. https://doi.org/10.1016/j.ijedudev.2021.102444

Softic, S. K. (2018, Oct). Teachers' digital competencies for e-learning. 10th *EDEN Research Workshop Proceedings*. 1679-1454-1-PB.pdf

Stoller, E. (2014, Jun 5). The business of Higher education. *Inside Higher Ed. https://www.insidehighered.com/blogs/student-affairs-and-technology/business-higher-education*

Strauss, V. (2020, Apr 8). A veteran teacher has "a mini covid-19 meltdown" – and realizes that less is more with online learning. *The Washington Post* [internet]. https://www.washingtonpost.com/education/2020/04/08/veteran-teacher-has-mini-covid-19-educator-meltdown-realizes-that-less-is-more-with-online-learning/

Sun, A., & Chen, X. (2016). Online education and its effective practice: A research review. *Journal of Information Technology Education: Research*, 15, 157-190.http://www.informingscience.org/Publications/3502

Terrell, S. R. (2012). Mixed-Methods Research Methodologies. *The Qualitative Report.* file:///C:/Users/Ramos%20Team/Downloads/EJ973044.pdf

Tipple, R. (2010). Effective leadership of online adjunct faculty. Online Journal of Distance Learning Administration, 13(1). http://www.westga.edu/~distance/ojdla/ spring131/tipple131.html

Tobias, J. (2021, Feb 9). What Filipino educators learned from a year of online teaching. *PhilStar Global. https://www.philstar.com/lifestyle/2021/02/09/2075057/what-filipino-educators-learned-year-online-teaching*

Tobin, J. (2014). Management and leadership issues for school building leaders. *NCPEA International Journal of Educational Leadership Preparation,* 9 (1). file:///C:/Users/Ramos%20Team/Downloads/EJ1024110.pdf

UNESCO (2017). A guide for ensuring inclusion and equity in education. *UNESCO Digital Library. https://unesdoc.unesco.org/ark:/48223/pf0000248254*

UNESCO. (2020). COVID-19 education response webinar supporting teachers to maintain continuity of learning during school closures. https://unesdoc.unesco.org/ark:/48223/pf0000373248

Wang, Y., Wang, Y., Stein, D., Liu, Q., and Chen, C. (2019). Examining Chinese beginning online instructors' competencies in teaching online base on Activity Theory. *Journal of Computer Education,* 6, abstract. https://link.springer.com/article/10.1007/s40692-019-00140-w

Wheeler, K. (2020, Jan 29). The pedagogy of John Dewey: a summary. https://www.teachthought.com/learning/pedagogy-john-dewey-summary/

Yew, K. (2020, Mar 24). Towards an educational philosophy for the twenty-first century classroom. https://www.encyclopedia.com/education/applied-and-social-sciences-magazines/towards-educational-philosophy-twenty-first-century-classroom

The Influence of Service Quality of an Academic Promotion and Registration Office on Student Satisfaction at a Thai University

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

The research had two aims: 1) to study the service quality of the Academic Promotion and Registration Office (APRO) and student satisfaction levels at a Thai university and 2) to study the influence of personal traits and APRO service quality that affected the happiness of university students. The population was 15,519 Ubon Ratchathani University students in Thailand, and the sample was a total of 400 students from the Business School, Liberal Arts Faculty, Science Faculty and Engineering Faculty. The research instrument was a questionnaire with a confidence coefficient of 0.95. The statistics used in the research were frequency, percentage, mean, standard deviation and multiple regression analysis. The results demonstrated that the service quality level was high. The top-ranked service qualities were assurance, reliability, responsiveness, empathy, and tangible. Student satisfaction was at an high level, with the top-ranked characteristics of service being administration, registration and technology. The age, faculty, and service quality had a statistically significant effect on student satisfaction. Moreover, the top-ranked effect sizes were responsiveness to student needs, student faculty, tangibility, reliability, age, assurance and empathy. Furthermore, student traits and service quality accounted for 63% of the variance in student satisfaction. Therefore, it was recommended that the Ubon Ratchathani University should continuously improve the quality of the APRO services in all aspects, especially in the areas of responsiveness and tangibility. Furthermore, it needs to reduce the differences between faculty and age to increase student satisfaction in its services, especially its convenience, speed, accuracy and use of modern technology.

Keywords: Service Quality, Student Satisfaction, Higher Education, Academic Promotion and Registration Office

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Introduction

Higher education institutions have focused more recently on student satisfaction because measuring a school's effectiveness to the set of students' expectations is essential in this highly competitive market. The ability to determine the factors affecting it can enhance competitive advantage in the education business market. Over the past decade, higher education institutions increasingly realize that they are part of the educational service industry. Educational quality is an essential factor that attracts and reminds students who want to achieve higher education. The educational institution's system is effective, and the administration and Academic Promotion and Registration Office (APRO) in the University is willing to provide support in teaching and learning. This office promotes and supports academic operations, serves process learning quality services, and encourages more incoming vivid and talented students. To make services advanced and effective, the knowledge of students' expectations, academic preferences, and service quality about the educational environment should be constantly updated by leaders of the institution (Palacio, Meneses, & Perez, 2002). They are improving the quality and effectiveness of investment in education. Evaluation of the work of higher education institutions plays an essential role by quality assurance mechanisms in helping education and training institutions and policymakers meet today's challenges and develop a quality higher education system (European Commission, 2015).

Due to the increased pressure of the competition in the education service industry, student satisfaction has gained increasing focus in higher education institutions. It is an essential measure of school effectiveness in the set of students' expectations. (Sahin, 2014) Student satisfaction has been considered a core factor in literature or success (Sahin, 2014; Ravindran *et al.*, 2012; Sumaedi *et al.*, 2012), because it can affect students' trust in the institution. Furthermore, the satisfied student can persuade new students by engaging in an affirmative word–of–mouth connection to inform their friends, and this positive word-of-mouth transmission may return the previous students to take some further programs or courses in their university. Sumaedi *et al.* (2012) assessed management education students' expectations, perception, and satisfaction with services experienced across categories of institutions and six dimensions of quality factors, namely location, academics, infrastructure, image, cost and personnel, and overall satisfaction. Student perception significantly differed across four institution categories. All five factors, excluding cost, significantly influenced student satisfaction. The ASEAN University Network (AUN) (2020) recognizes the importance of quality in higher education and the need to develop a full quality assurance system in ASEAN to raise academic standards and enhance teaching, research, and service among its member universities. Eight criteria of quality factors have been identified, namely Expected Learning Outcomes, Program Structure and Content, Teaching and Learning Approach, Student Assessment, Academic Staff, Student Support Services, Facilities and Infrastructure, and Output and Outcomes, and they emphasize the need to obtain feedback and make improvements for embarking on educational quality assurance activities. So, student support services such as the APRO at all universities is vital to make university and programs succeed in meeting the expectation of the AUN quality in higher education.

Ubon Ratchathani University (UBU) in the Mekong Sub-Region of Thailand (close to Laos and Cambodia) aims to provide educational opportunities for the people of North-East Thailand, specifically the provinces of Amnat Charoen, Mukdahan, Nakhon Phanom, Sakon Nakhon, Si Sa Ket, Yasothon, and Ubon Ratchathani. Moreover, UBU's educational administration is to create graduates who demonstrate moral consciousness and

responsibility. Therefore, they will be able to work and find the good jobs with student proficiency, continuously self-develop, and keep pace with changes in the labor world, adhering to being a good human in society. So, UBU should have good facilities such as the library, student center, canteen, sports courts, swimming pool, public transportation, and especially the APRO to support its students.

The APRO at universities is an important agency that supports teaching and learning. It is responsible for promoting and supporting academic operations following the university's direction: under the strategic policy outlined during the COVID-19 pandemic. In the past, there has been a multidimensional change in the Bureau of Academic Promotion, so APRO has reshaped the work process in the past year that focuses on providing online services by applying technological innovations to meet the needs of students. The roles and responsibilities of the Registry include: 1. Promote and support academics to ensure that the university's educational management meets the benchmarks; 2. It provides information on education, academic work, as well as University registration and processing work aimed at increasing student satisfaction; 3. Apply information technology and develop innovation for management and service excellence; 4. Curriculum management and teaching and learning arrangements; 5. Promote the drive for academic services and nurture arts and culture integrated with teaching and learning; 6. Personnel quality development; 7. Develop a modern student registration system; and 8. Development of academic service systems and registration work.

According to an interview conducted with fourth-year students and staff of Ubon Ratchathani Business School, Ubon Ratchathani University in 2021 found that its APRO worked in the past under the restrictions of the current COVID-19 pandemic. As a result, there were frequent problems and complaints from students, such as problems with the registration system, unstable systems, and persistent website crashes. In addition, the enrollment system was delayed because students scrambled to register—these forced students to sleep late to start registering at midnight and there was a limited staff. The problem of document drop-offs was common. When staff communicated with students, some words could be more easily understood. The system of access to it was too complicated. Some steps required access to 2 layers, not 4-5 layers, which is not necessary. The teaching assessment system for some professors was so prone to result in personal exposure. How much security is in place for students? The location of the Academic Promotion Office and the registration office on campus is not convenient for students and there should be a sign indicating their location. The Learning Management System (LMS) is unstable and difficult to access, critical to teaching and learning quality. Hence, the author was interested in studying the quality of service provided by the APRO at UBU. What are the current student satisfaction and service quality levels and what service quality factors affect student satisfaction? The rationale for this research was to guide the improvement of the learning system of UBU to be effective and to work effectively to help support higher education to progress and be successful in the future.

Objectives of the Study

The two objectives of this research were: 1) to study the service quality of the APRO and the level of student satisfaction; and 2) to study the influence of personal traits and service quality of the APRO that affect the happiness of UBU students.

Literature Review

Conceptualization of Service Quality and Satisfaction in higher education

Student satisfaction is an essential qualitative indicator for higher educational institutes. Measures of student satisfaction demonstrate what are the critical factors for meeting students' needs. This research focuses on the service quality of the APRO affecting student Satisfaction at UBU. Because the world has changed rapidly in the past three years, especially with the COVID-19 pandemic, people have had to use technology instead of face-to-face, economics changed, and people's behaviors have changed. Higher education has to adapt itself to service students more efficiently, because schools' income comes from students and higher education has customer-oriented students. In addition, the positive relationship between student satisfaction and service quality, student retention, and the student graduation rate are significant (Khosravi, *et al.*, 2013). Many universities have incorporated some measure of satisfaction in their marketing, campaigns, planning process, and enrolment initiative (Elliott & Shin, 2002). As a measure of the student experiences such as service quality of program, teaching approach, service office, and student satisfaction is an essential indicator for colleges, and universities (Khosravi, *et al.*, 2013). The assessment of student views and satisfaction is necessity as institutions of higher education are challenged by a climate of decreased funding, demand organization accountability, and increased competition for students' selection of their school.

Satisfaction plays a significant role in determining the originality and accuracy of a system, especially the educational system, as the higher the level of happiness, the higher will be the level of students' grooming there, skill development, course knowledge, and mentality. The best factor that affects student satisfaction university is service quality. Service quality is vital for universities to remain competitive and developing. Higher educational institutions place a more excellent value on creating activities to meet learners' perceptions and expectations and ensure satisfaction. Student satisfaction is significant in determining service quality at universities. Higher institutions must build a stronger bond with students to have a competitive edge by providing value for service delivery. Universities are responsible for the graduates and dissemination of knowledge for the socioeconomic benefit of society. In addition, higher education can contribute to the development and growth of every economy.

Different researchers and different fields have given service quality different meanings. Parasuraman, *et al.* (1994) define service quality as a gap between customers' expectations and perceptions of performance. Juran (1988) stated that it is fitness for the intended use; it could still be seen as conforming to requirements or one that satisfies the customer. Quality in business organizations refers to an administrative attitude that addresses policy formation or a comprehensive organizational system based on positive essential organizational changes. Perceived quality is defined as one's explanation for the value of a product or service (Zammuto, *et al.*, 1996).

The first and most accepted conceptualization of service quality was based on the earlier work of Parasuraman, Zeithaml & Berry (1994). This group of authors was the first to devise a measurement scale for service quality, known as the SERVQUAL L scale. This scale was developed based on their conceptualization of service quality as the gap between expectation (E) and perception (P). The theory argued that in trying to determine service quality, customers compare their prior expectations to the actual perception of the service they receive. If the perception is equal to or more than expectation, then service quality is set to be

satisfactory. If not, then it is unsatisfactory. The SERVQUAL scale contains 22 items captured from 5 dimensions: reliability, assurance, tangibility, empathy, and responsiveness (RATER). This scale is still widely used in the field of service quality.

Abdullah and Kasmi (2021) studied the effect of quality of service on customer satisfaction. The research objectives were: (1) Knowing how much influence the dimension of service quality generates, including tangible, reliable, responsiveness, assurance, and empathy on customer satisfaction in PT. Bosowa Berlian Motor (Mitsubishi) Makassar; and (2) Knowing the most dominant factors affects the dimension of service quality to customer satisfaction. The descriptive analysis tested the truth of a hypothesis that collects data on the ground to predict and explain the relationship or influence of one variable on other variables. One hundred respondents were customers at PT. Bosowa Berlian Motor (Mitsubishi). The results showed that the variables of physical evidence, reliability, responsiveness, assurance, and empathy simultaneously positively affect customer satisfaction in PT. Bosowa Berlian Motor (Mitsubishi) Makassar.

Twum & Peprah (2020) studied the impact of service quality on students' satisfaction at the School of Business, Valley View University, Ghana. The key objective of the research is to assess students' satisfaction with the services provided. A cross-sectional and questionnaire survey involving 100 students was conducted using the SERVQUAL Model of five Service Quality dimensions, including tangibles, reliability, responsiveness, empathy, and assurance. The statistics employed were mean, standard deviation, and regression analyses. The study's results stated that the service quality of warranty, tangible, and responsiveness provided at the School of Business was very satisfactory. However, empathy was only at a moderate level. The data indicated that students had high expectations of services provided at the School of Business. It has also been confirmed that students' satisfaction can be 100% accounted for by service quality dimensions: Assurance, Tangible, Responsiveness, Reliability, and Empathy. The study suggests that the School of Business attends to students' expectations by providing for individual needs to solve students' unique challenges.

Malik, Danish & Usman (2010) studied the impact of service quality on students' satisfaction in higher education institutes in the Punjab, Pakistan. The research objective is to analyze the effect of different quality services on student satisfaction in higher educational institutes of a significant division of Punjab province, Pakistan. Both public and private sector institutes are included in this study. Data were collected from 240 students of business courses either enrolled in a master's program or graduate program in provincially chartered universities of the Gujranwala region. The sample comprised both male and female students in equal ratios. The results show that students are overall satisfied with services of Tangibility, Assurance, Reliability, and Empathy but need more confidence with parking facilities, computer labs, cafeteria services, and complaint handling system. So, five service quality dimensions are studied to be included in the analysis model.

Hishamuddin Fitri Abu Hasan, *et al.* (2008) studied service quality and student Satisfaction in a case study of private higher education institutions. This study investigates the association between service quality dimensions, tangibility, responsiveness, reliability, assurance, empathy, and student satisfaction. In addition, this study also examines critical factors in service quality dimensions that contribute most to student satisfaction. The study was conducted using a set of questionnaires to 200 Bachelor's students from two private higher education institutions. The results show that $R^2=0.475$ (adjusted $R^2=0.46$), meaning that 47.5% of the variance in students' satisfaction is explained by the five dimensions provided

in the output. The F statistics produced (F=29.102) are significant at 0.000. From this result, tangibility (unstandardized coefficients B is 0.175 at the sign. T = 0.104), responsiveness (unstandardized coefficients B is -0.004 at the sign. T= 0.972), and reliability (unstandardized coefficients B is -0.151 at the sign. T= 0.244) are not significantly related with satisfaction. The results show that two dimensions (empathy and assurance) are consistently more significant than the other dimensions (age, tangibility, responsiveness, and reliability). Compassion and commitment are the two critical factors that contribute most to students' satisfaction. Assurance (unstandardized coefficient B is 0.406 at the sign. T= 0.001) and empathy (unstandardized coefficient B is 0.498 at the sign. T= 0.000) are significantly related to satisfaction.

This paper's author (2019) undertook a factor analysis of students' perceived service quality in higher education. A questionnaire collected data from 499 senior bachelor's degree students studying business in the Faculty of Management Science at UBU. The reliability of the questionnaire was 0.94. Descriptive statistics and the CFA second-order model from MPLUS were in this study. The results showed that the observed set of data or the student satisfaction with service quality in FMS fit the factor theory model. The most significant factor was the service quality of instruction. All correlations among the six main factors for student satisfaction with service quality were statistically significant. The items of the six factors had validity values ranging from high to very high. The highest factor loading to the smallest factor loading values for the student satisfaction of service quality were for instruction, measurement, and assessment, qualitative aspects of the lecturers, preparation for professional practice, program content, and supervision, respectively.

So, an exploratory research study of the service quality office in the university, such as the APRO at UBU demonstrated that this office is an essential agency that supports teaching and learning. Especially during the COVID-19 pandemic, it is responsible for announcing, promoting, and supporting academic operations following the university's direction under the strategic policy outlined. This paper focuses on the UBU's APRO service quality which affects student satisfaction, using five factors: (1) Student Characteristics, (2) Tangible, (3) Reliability, (4) Responsibility, and (5) Empathy. It relates service quality to Assurance and Student Satisfaction, including such features as: 1) Process Satisfaction, 2) Service Features, 3) Technology and 4) Administration System. Students view academic recommendations as an important needed service of the APRO in the university. Figure 1 illustrates the research conceptual framework of this study.

Figure 1: Model of the effect of APRO's service quality on student satisfaction of students at UBU

Research Methodology

This research aimed to identify the service quality affecting student satisfaction at the APRO at UBU, using multiple regression analysis. The university has ten faculties, including the faculty of science, faculty of agriculture, faculty of engineering, faculty of liberal arts, faculty of pharmaceutical science, Ubon Ratchathani Business School, faculty of nursing, college of medicine and public health, applied art and architecture, law faculty, and faculty of political science. In this research, the population was 15,519 students of UBU selected through cluster random sampling separated into two fields, the science field and the social science field and then a simple random sampling method selected two faculties from each area, including UBU Business School, Liberal Arts Faculty, Science Faculty, and Engineering Faculty, and 100 students of each faculty responded. Four hundred students completed and returned the questionnaires in the second semester of 2021. This research was conducted with a survey questionnaire as the research instrument. Students perceived service quality of the UBU APRO factors include tangible, reliable, responsible, empathy, and assurance and student satisfaction of the APRO at UBU included: 1) Process Satisfaction 2) Service Features 3) Technology and 4) Administration System. A total of 40 items were constructed to form the questionnaire. The statements requested the students to measure their satisfaction with each faculty and university education program with perceived service quality through five-point Likert scales ranging from very dissatisfied to very satisfied. The scoring system and the scaled response for verbal explanation in and correlation interpretation are illustrated in Tables 1 and 2 below:

Table 1: Scoring System Table criterion from Twum & Peprah (2020)

Numeric Scale	Numerical Likert Scale Average Weight	Scaled Response
5	4.6 – 5.0	Extremely Satisfied
4	3.6 – 4.5	Very Satisfied
3	2.6 – 3.5	Moderately Satisfied
2	1.6 – 2.5	Slightly Satisfied
1	0.00 – 1.5	Not at all or Little Satisfied

Table 2: Absolute Magnitude of the Observed Correlation Coefficient and Interpretation

Absolute Magnitude of Correlation Coefficient	Interpretation
0.80 – 1.00	Very Strong Correlation
0.60 – 0.80	Strong Correlation
0.40 – 0.60	Moderate Correlation
0.20 – 0.40	Slightly Correlation
0.00 – 0.20	Not at all or tiny Correlation

Table 3 contains the descriptive statistics of UBU students' demographic characteristics. Two thirds of the respondents were female and one third were male. The age of students ranged from 18 – 23 years old. Regarding the study year, most were fourth-year students (35.5%), and later, they were second-year students (28.5%). The remaining respondents had been studying for more than 4 years (21.8%). They came from 4 faculties, including the Business School, Liberal Arts Faculty, Science Faculty, and Engineering Faculty, and 100 students were from each faculty.

Table 3: The Descriptive Statistics of Students' Demographic Characteristics

Gender	Number	Percentage (%)
Female	267	66.8
Male	133	33.3
Total	**400**	**100**
Age		
18 years old	16	4.0
19 years old	55	13.8
20 years old	107	26.8
21 years old	92	23.0
22 years old	111	27.8
23 years old	19	4.8
Total	**400**	**100**
Year		
1	39	9.8
2	114	28.5
3	98	24.5
4	142	35.5
5	7	1.8
Total	**400**	**100.0**
Faculty		
Business School	100	25.0
Engineering	100	25.0
Science	100	25.0
Liberal Art	100	25.0
Total	**400**	**100.0**

Table 4: Student's Perceptions of Service Quality of Each Dimension

Service Quality	Mean	SD	Level
Tangible	3.54	0.89	Moderate
Reliability	3.85	0.71	Very Satisfied
Responsiveness	3.69	0.75	Very Satisfied
Assurance	3.74	0.86	Very Satisfied
Empathy	3.64	0.78	Very Satisfied
Total	**3.70**	**0.52**	Very Satisfied

Table 4 indicates the levels of service quality satisfaction. The mean of students' perceptions of service quality and standard deviation shows that the five dimensions of the SERVQUAL model of the APRO of UBU were tangible, reliability, responsiveness, assurance, and empathy. Among the dimension of service quality, reliability ranked highest (M = 3.85, SD = 0.71), followed by assurance (M = 3.74, SD = 0.86), responsiveness (M = 3.69, SD = 0.75), empathy (M = 3.64, SD = 0.78), with tangible averaging the lowest (M = 3.54, SD = 0.89. In the totality of service quality, the students of UBU were very satisfied with in-service quality of the academic promotion and registration office (M = 3.70, SD = 0.52). And each service quality dimension was at the intermediate level. For example, the results of Empathy infer that the students were delighted and felt as the staff of APRO was willing to solve the student's problems, the staff provided compassionate service, and the team used proper, polite speech, with the lowest score when compared with other dimensions. The details of each component item are shown in Tables 5 – 8.

Table 5: Students' Perceptions of Service Quality of Tangible

Tangible	Mean	SD	Level
1. APRO has a property and adequate seating capacity.	3.51	0.838	Moderate
2. APRO has prepared supplies for service (e.g., pens, pencils, etc.).	3.47	0.898	Moderate
3. APRO staff have good human relations beaming and have a good personality.	3.62	0.882	Very Satisfied
4. APRO staff Providing services/solving problems to students immediately who come in contact.	3.57	0.929	Moderate
Total	**3.54**	**0.89**	**Moderate**

Table 5 includes the answers to the Tangible service quality questions. The mean of students' perception and standard deviation shows the four items of the Tangible of the APRO of UBU. APRO staff had good human relations beaming, and a good personality ranked highest (M = 3.62, SD = 0.88) with a very satisfied, followed by APRO staff providing services/solving problems to students immediately when students come in contact (M = 3.57, SD = 0.93), APRO has a property and adequate seating capacity (M = 3.69, SD = 0.75), and APRO has prepared supplies for service (e.g., pens, pencils) averaging the lowest (M = 3.47, SD = 0.90). In the totality of Tangible, the students of UBU were moderately intangible of the academic promotion and registration office (M = 3.54, SD = 0.89).

Table 6: Student's Perception of Service Quality of Reliability

Reliability	Mean	SD	Level
1. APRO Staff informs a notification when an error is founded.	3.72	0.91	Very Satisfied
2. The APRO system has a step-by-step approval process.	3.81	0.98	Very Satisfied
3. The service recipient's information is not disclosed to personal information.	3.90	0.88	Very Satisfied
4. APRO staff use polite gestures and expressions.	3.86	0.85	Very Satisfied
5. When you ask questions or problems with APRO, you get information that meets your needs and can use the information.	3.96	0.82	Very Satisfied
Total	**3.85**	**0.71**	Very Satisfied

Table 6 indicates the answers to the Reliability service quality questions. The mean of students' perception and standard deviation shows the five items of the Reliability of the APRO of UBU University. When you ask questions or problems with APRO, you get information that meets your needs and can use the information ranked highest (M = 3.96, SD = 0.82) with a very satisfied, followed by The service recipient's data is not disclosed to personal details (M = 3.90, SD = 0.88), APRO staff use polite gestures and expressions (M = 3.86, SD = 0.85), the APRO system has a step-by-step approval process (M = 3.81, SD = 0.98) and APRO Staff informs a notification when an error is founded averaging the lowest (M = 3.72, SD = 0.91). In the totality of Reliability, the students of UBU University were delighted with the reliability of the APRO (M = 3.85, SD = 0.71).

Table 7: Student's Perception of Service Quality of Responsiveness

Responsiveness	Mean	SD	Level
1. APRO is convenient and easy to access.	3.82	0.92	Very Satisfied
2. APRO staff is always ready to serve.	3.65	0.95	Very Satisfied
3. APRO staff provide fast and timely service.	3.53	0.89	Moderate
4. APRO staff provide equal service without discrimination.	3.77	0.91	Very Satisfied
Total	**3.69**	**0.75**	Very Satisfied

Table 7 contains the answers to the Responsiveness service quality questions. The mean of students' perception and standard deviation includes the four items of the APRO's Responsiveness to UBU's students. APRO was found to be convenient and easy to access, which was ranked highest (M = 3.82, SD = 0.92) with a very satisfied, followed by APRO staff providing equal service without discrimination (M = 3.77, SD = 0.91), APRO staff is always ready to serve (M = 3.65, SD = 0.95). APRO staff provide fast and timely service averaging the lowest (M = 3.53, SD = 0.89) with a moderate level. In the totality of Responsiveness, the students of UBU were very satisfied with the Responsiveness of the academic promotion and registration office (M = 3.69, SD = 0.75).

Table 8: Student's Perception of Service Quality of Assurance

Assurance	Mean	SD	Level
1. APRO staff complete their work on time and following requirements.	3.73	0.97	Very Satisfied
2. APRO staff can help or guide students properly.	3.69	0.99	Very Satisfied
3. APRO staff provides services, methods, and procedures that are clear and able to work.	3.78	1.00	Very Satisfied
4. APRO staff can build confidence in the information and recommendations to help you use it for its intended purpose.	3.76	0.97	Very Satisfied
Total	**3.74**	**0.86**	Very Satisfied

Table 8 contains the answers to the Assurance service quality questions. The mean of students' perception and standard deviation showed that the four items of the APRO Assurance. APRO staff provided services, methods, and procedures that were clear and able to work, ranked highest (M = 3.78, SD = 1.00) with a very satisfied, followed by APRO staff can build confidence in the information and recommendations to help you use it for its intended purpose (M = 3.76, SD = 0.97), APRO staff complete their work on time and following requirements (M = 3.73, SD = 0.97). APRO staff can help or guide students properly, averaging the lowest (M = 3.69, SD = 0.99) with a very satisfying level. In the totality of Assurance, the UBU students were delighted with the Assurance of the academic promotion and registration office (M = 3.74, SD = 0.86).

Table 9: Student's Perception of Service Quality of Empathy

Empathy	Mean	SD	Level
1. APRO staff provide compassionate service and understand the feelings of students.	3.56	0.93	Moderate
2. APRO staff willingly listen to students' problems or inquiries.	3.58	0.86	Moderate
3. APRO staff use proper, polite speech.	3.72	0.93	Very Satisfied
4. APRO staff Service is committed to consulting.	3.70	0.91	Very Satisfied
Total	**3.64**	**0.78**	Very Satisfied

Table 9 includes the answers to the Empathy service quality questions. The mean of students' perception and standard deviation shows the four items of the APRO Empathy items. APRO staff used proper, polite speech, ranked highest (M = 3.72, SD = 0.93) with a very satisfied rating, followed by APRO staff Service is committed to consulting (M = 3.70, SD = 0.91), APRO staff willingly listen to students' problems or inquiries (M = 3.58, SD = 0.86). APRO staff provide compassionate service and understand the feelings of students averaging the lowest (M = 3.56, SD = 0.93) with a moderate level. In the totality of Assurance, the students were delighted with the Assurance of the APRO (M = 3.64, SD = 0.78).

Table 10: Student's Perception of Student Satisfaction

Student Satisfaction	Mean	SD	Level
Process	3.67	0.71	Very Satisfied
Officer	3.72	0.68	Very Satisfied
Technology	3.62	0.71	Very Satisfied
Administration System	3.69	0.68	Very Satisfied
Total	**3.67**	**0.52**	Very Satisfied

Table 10 illustrates the answers of the student satisfaction questions. The mean of students' perception of student satisfaction with the APRO of UBU and the standard deviation show the four dimensions: Process, Officer, Technology, and Administration System. Among the dimension of student satisfaction, officer ranked highest (M = 3.72, SD = 0.68), followed by Process (M = 3.67, SD = 0.71), Administration System (M = 3.69, SD = 0.68), and Technology averaging the lowest (M = 3.62, SD = 0.71). In totality, the students were delighted with the service process, officer, technology, and administration system of the academic promotion and registration office (M = 3.67, SD = 0.52).

Analysis and Findings

The data analysis was done with the help of SPSS version 23. The overall reliability of the data, using Cronbach's Alpha coefficient, was recorded at 0.95, and the number of items was 40. Internally inconsistent items were sequentially deleted, maximizing the scales' reliability at 0.70 (Sekaran and Bougie, 2010). Table 11: illustrates that Cronbach's coefficient alphas were acceptable (i.e., exceeding 0.7); this indicates that the measurement instruments were excellent and reliable.

Table 11: Cronbach's Alpha Coefficient Reliability

indicators	Alpha	N of Items
Service Quality	0.95	20
Student Satisfaction	0.95	20
Total	0.95	40

The descriptive analysis shows the demographic characteristics of the UBU students Only 5% of the data contained missing responses.

Table 12: Correlation Results between Service Quality of Academic Promotion and
Registration Office and Student Satisfaction

Correlations					
Variables	**Tangible**	**Reliability**	**Responsiveness**	**Assurance**	**Empathy**
Reliability	.590**				
Responsiveness	.421**	.421**			
Assurance	.307**	.307**	.271**		
Empathy	.309**	.309**	.365**	.235**	
Student Satisfaction	**.617**	**.617**	**.599**	**.545**	**.722**

Table 12 contains the results of the correlation analysis between service quality and student satisfaction, and found that all indicators of service quality were related to student satisfaction at the statistically significant level of 0.01. By descending relationship size order, student satisfaction was associated with a high and moderate level of empathy of the APRO (r = .722), reliability (r = .617) and tangible (r = .617), responsiveness (r = .599) and assurance (r = .545), all correlations significant at the .01 level. In addition, the correlation values between indicators of service quality ranged from 0.271 - 0.59 < 0.80, being low and moderate levels. Therefore, there was no problem with the independent variables correlated with other's predictors at a very high level. They did not have a multicollinearity problem; all service quality indicators and student satisfaction were suitable for further analysis in multiple linear regression equations.

Multiple Linear Regression Analysis Results

The results of multiple linear regression analysis by entering method from Table 13 showed that the test of variance analysis of the combined model found that the values of F = 221.549, $p < 0.01$ that the predictive variables can explain the variance of student satisfaction with the UBU APRO with statistical significance at the level of 0.01.

Table 13: Results of Variance Analysis

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	87.721	8	10.965	221.549	<.001[b]
Residual	19.352	391	0.049		
Total	107.073	399			

Table 14 shows the results of the multiple linear regression analysis (MRA) summary model found that the value of R = 0.808. The correlations between the independent variables and students' satisfaction with the UBU APRO were very high. The adjusted prediction coefficient R^2 was equal to 0.634, indicating that the independent variables can jointly explain the variance of student satisfaction by 63.4 % and the other 36.6 % as an influence from other variables that were not included in the model.

Table 14: The Multiple Regression Analysis (MRA) Summary Model

Model	R	R²	Adjusted R²
1	.808	0.653	0.634

Both primary variables had a tolerance higher than 0.19 and a VIF value of less than 5.3 (Wiratchai, 2012), which passed the criteria that the independent variable must not be related to one another at a very high level. Interpret the regression coefficient from strongest to smallest impact as follows:

Responsiveness with the regression coefficient (Beta) equaled 0.23, meaning that the APRO's responsiveness increased by one standard unit.   Students' satisfaction with the educational advancement and registration office increased by 0.23 standard units, whereas other independent variables were constant values.

Faculty had a regression coefficient (Beta) equal to - 0.19, meaning that faculty students changed from other faculties to business schools. Student satisfaction with the academic promotion and registration office decreased by 0.19 standard units, where other independent variables were constant values.

Tangible had a regression coefficient (Beta) equal to 0.15, meaning that the APRO had a tangible increase by one standard unit. Therefore, student satisfaction with the academic promotion and registration office increased by 0.15 standard units, where other independent variables were constant values.

Assurance had a regression coefficient (Beta) equal to 0.145, meaning that the APRO had an assurance increase by one standard unit. Therefore, student satisfaction with the APRO increased by 0.145 standard units, where other independent variables were constant values.

Age had a regression coefficient (Beta) equal to 0.143, meaning that if the age of a student increased by one standard unit, student satisfaction with the academic promotion and registration office increased by 0.143 standard units, where other independent variables were constant values.

Reliability had a regression coefficient (Beta) equal to 0.128, meaning that the APRO increased its reliability by one standard unit. Therefore, student satisfaction with the educational advancement and registration office increased by 0.128 standard units, where other independent variables were constant values.

Empathy had a regression coefficient (Beta) equal to 0.112, meaning that the APRO increased empathy by one standard unit. Therefore, student satisfaction with the academic promotion and registration office increased by 0.112 standard units, where other independent variables were constant values.

Other independent variables did not affect student satisfaction with the UBU educational advancement and registration office.

Table 15: The Multiple Regression Analysis (MRA) Results

Coefficients								
Variables		**B**	**S. E.**	**Beta**	**t**	**Sig.**	**Toler.**	**VIF**
Student Characteristics	(Constant)	**1.041**	0.205		5.08	**0.000****		
	Gender	-0.014	0.043	-0.013	-0.34	0.738	0.919	1.089
	Age	**0.097**	0.037	0.143	2.60	**0.010****	0.487	2.055
	Year	-0.049	0.027	-0.078	-1.85	0.066	0.828	1.207
	Faculty	**-0.130**	0.028	-0.192	-4.57	**0.000****	0.828	1.208
Services Quality	Tangible	**0.170**	0.058	0.150	2.65	**0.008****	0.490	2.042
	Reliability	**0.125**	0.053	0.128	2.37	**0.018***	0.506	1.976
	Responsiveness	**0.211**	0.051	0.231	4.14	**0.000****	0.473	2.116
	Assurance	**0.127**	0.048	0.145	2.64	**0.009****	0.490	2.042
	Empathy	**0.073**	0.035	0.112	2.12	**0.035***	0.521	1.919
R=0.808, R²=0.653, R²(Adjusted) = 0.634, SEE=0.316, F=,34.151, Sig=0.000								
* Significance at 0.05 level, **Significance at 0.01 level								

The equations to predict customer satisfaction can show as follow:

Raw Score Equation (B):

Student Satisfaction = 1.04**+ 0.21**(Responsiveness) -0.13**(Faculty) +0.17**(Tangible)
         + 0.13**(Assurance) + 0.13** (Reliability) + 0.09** (Age) + 0.7*(Empathy)

Standardized Score Equations (β or Beta):

Student Satisfaction = 0.23**(Responsiveness) -0.19**(Faculty) +0.15**(Tangible)
         + 0.145**(Assurance) + 0.14**(Age) + 0.12**(Reliability) + 0.11*(Empathy)

The summary of the research hypothesis testing is shown in Table 16.

Table 16: Summary of Research Hypothesis Testing

Hypothesis	Test Results
H₁: Student Characteristics (faculty, age) influenced student satisfaction with Academic Promotion and Registration Office at Ubon Ratchathani University.	Accepted
H₂: Service quality (tangible, responsiveness, assurance, reliability, empathy) influenced student satisfaction to Academic Promotion and Registration Office at Ubon Ratchathani University.	Accepted

Discussion and Conclusions

The multiple linear regression analyses found that predictive variables explained a significant amount of the variance of student satisfaction of the APRO at UBU with a statistical significance level of 0.01. The value of R = 0.808 meant that the various correlations of two main group predictors, including student characteristics and APRO service quality, were related to student satisfaction at a very high level. The adjusted prediction coefficient R^2 was equal to 0.634. This indicated that the two group predictor variables accounted for 63.4% of the variance in UBU student satisfaction, while other variables not included in the model influenced 36.6% of the variance in student satisfaction.

These results were considered to be the main findings which confirmed the research objectives of the study. The results of the present study indicate that factors affecting student satisfaction were APRO service quality, whose five dimensions of significance influenced student satisfaction, and student characteristics also influenced student satisfaction. These factors were, from the highest level of satisfaction to the lowest influence level of satisfaction, responsiveness, faculty, tangible, assurance, age, reliability, and empathy, respectively. Evidence from this study demonstrated that the most satisfied students viewed responsiveness, tangible, assurance, reliability, and empathy as essential services. Items that had the highest scores relating directly to five dimensions were:

> "APRO is convenient and easy to access";
> "APRO staff have good human relations beaming, and have a good personality";
> "APRO staff provide services, methods, and procedures that are clear and able to work";
> "When you ask questions or problems with APRO, you get information that meets your needs and can use the information"; and
> "APRO staff use proper, polite speech".

Twum & Peprah, 2020); Abdullah and Kasmi (2021) and the National Research report of Noel-Levitz (2009) confirmed that service quality is an essential need of students. The UBU APRO should be serious about enhancing APRO service quality in these aspects. These results also identified areas where students expressed relative dissatisfaction with their experience at APRO. A particular concern was that APRO should convenient and easy to access. UBU's support services need to be improved to meet students' needs. University officers should have good human relations beaming and a good personality that provides precise services, methods, and procedures and can work on service quality to increase student satisfaction.

As for the Faculty factor, Ubon Ratchathani Business School students were more satisfied with the APRO service quality minor than other faculties. Moreover, first-year students need more attention from the APRO. So, APRO staff should provide equal service without discrimination between faculty and more taking care of first-year students because they need to gain the experience to process APRO services. They must teach students how to use the APRO application and the process or step by step to ask for APRO help or support. In addition, the University's staff should improve in order to provide a superior technology registration system, easy to process, and deal with enrollment, withdrawal, consulting, and WIFI access experiences for students.

Acknowledgements

References

Abdullah, A. & Kasmi M. (2021). The Effect of Quality of Service on Customer Satisfaction. Journal Management Business. Vol. 8 (2).

Berry & Parasuraman. (1991). *Marketing Services: competing through quality*. New York: The Free Press.

Elliot, K. & Shin, D. (2002). Student satisfaction: An alternative approach to assessing this important concept. *Journal of Higher Education Policy and Management*, 24, 197-209.

European Commission. (2015). *Quality and relevance in higher education*. Retrieved from http://ec.europa.eu/education/policy/higher-education/quality-relevance_en.htm

Hishamuddin Fitri Abu Hasan et al. (2008). Service Quality and Student Satisfaction: A Case Study at Private Higher Education Institutions. International Business Research. Vol. 1 (3).

Juran, J.M. (1988), Juran's Quality Control Handbook, McGraw-Hill, New York, NY.

Khosravi A. A., Poushaneh, K., Roozegar, A., & Sohrabifard, N. (2013). Determination of factors affecting student satisfaction of Islamic Azad University. *Procedia Social and Behavioral Sciences*. 84 579-583.

Malik, M. E., Danish, R. Q., & Usman, A. (2010). The impact of service quality on students' satisfaction in higher education institutes of Punjab. Journal of management research, 2(2), 1-11.

Noel-Levitz. (2009). *Student Satisfaction Inventory*. Institutional priorities survey gap analysis, The University of Scranton.

Palacio, A. B., Meneses, G. D. & Perez, P. J. P. (2002). The configuration of the university image and its relationship with the satisfaction of students. *Journal of Educational Administration*, 40(5), 486 – 505.

Parasuraman A., Zeithaml, V. A. & Berry, L. L. (1994). Reassessment of expectations as a comparison standard on measuring service quality: implications for future research. *Journal of Marketing*. 58(1), 111-124.

Pichyada Pheunpha. (2019). A Factor Analysis of Students' Perceived Service Quality in Higher Education. ABAC Journal, Vol.39 No.4(October-December, 2019 pp 90-110).

Ravindran, S. D., Kalpana, M. (2012). Students' expectation, perception and satisfaction towards the management educational institutions. Economics and Finance, 2, 401-410.

Sahin O. (2014). An investigation of student satisfaction factors. *Journal of Research in Business and Management,* 2(6), 8-12.

Sekaran, U., & Bougie, R. (2010). *Research methods for business: a skill building approach* (5th ed.). New York: John Wiley & Sons, Inc.

Sumaedi, Sik, Bakti, Gede Mahatma Yuda, & Metasari, Nur. (2012). An empirical study of state university students' perceived service quality. Quality *Assurance in Education*, 20(2), 164-183.

Twum, F.O., & Peprah, W.K. (2020). The Impact of Service Quality on Students' Satisfaction. The International Journal of Academic Research in Business and Social Sciences, 10, 169-181.

Wiratchai, N. (2012). Using statistics. Department of Research and Educational Psychology, Faculty of Education, Chulalongkorn University.

Zammuto, R. F., Keaveney, S. M. & O'connor, E. J. (1996). Rethinking student services: assessing and improving service quality. *Journal of Marketing in Higher Education*, 7(1), 45-69.

Zeithaml, V.A. (1988). Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence. Journal of Marketing, 52, 2-22.

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Using Multiple Representations to Teach Energy– An Alternative Conceptual Approach

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

Energy is a principal concept in the learning of Physics, yet it is a concept that students found abstract and challenging to grasp, especially the key ideas of Transfer, Transform and Conservation. This paper proposes that a multiple representation approach in the teaching and learning of this topic helps support and deepen students' learning of the topic. Qualitative and quantitative treatments have their place in the multiple representations of energy, which allows teachers to scaffold students' learning for deeper understanding, and enable students to demonstrate their knowledge. This evidence-based sharing will illustrate how representations such as Energy Bar Diagram (LOL) and Energy Cube manipulative are used to (i) quantify conservation of energy (ii) show energy transformation within bodies, and (iii) quantify energy distribution and energy transfer between interacting bodies.

Keywords: Physics, Energy, Multiple Representations, LOL, Energy Cubes

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1.   Introduction

Physics is the study of interactions and transfer of energy between matter. "Energy" is an abstract concept for students to grasp. To deepen students' learning of this topic, the Professional Learning Team (PLT) at Yusof Ishak Secondary School and Academy of Singapore Teachers proposes a multiple representations approach to teaching and learning as well as in problem-solving.

In line with the Singapore Curriculum Philosophy, the "multi-modal" approach to teaching and learning "Energy" recognises that every student can learn and has different strengths which can be engaged in multiple ways.

There has been an ongoing discussion in the literature on how energy should be taught. Energy is a difficult concept to teach for two reasons (Millar, 2005):
- it is an abstract mathematical concept which is difficult to be defined;
- it is used in everyday contexts in a way which is less than precise than its scientific meaning e.g. "energy is used up" makes it sounds like energy is not conserved.

Locally (Lau, et. al 2011), it has been reported that some students' common alternative conceptions are:
- energy is either a physical substance that flows out of one thing to another or as a kind of force;
- work done represents energy stored in a body;
- energy is used up or lost during interactions.

WestEd Science Review (2011) reported some of the common alternative conceptions as follows:
- energy is deemed to be something physical or made of matter;
- energy is a force;
- energy is involved only when objects are moving or things are changing;
- energy transfers are perfectly linear in the sense that one event triggers only one energy ransfer.

Table 1: Summary of Common students' learning difficulties and alternative conceptions

Common students' learning difficulties	Common students' alternative conceptions
-It is an abstract mathematical concept which is difficult to be defined. -It is used in everyday contexts in a way which is less precise than its scientific meaning.	-Energy is either a physical substance that flows out of one thing to another or as a kind of force. -Work done represents energy stored in a body. -Energy is used up or lost during interactions. -Energy is involved only when objects are moving or things are changing. -Energy transfers are perfectly linear in the sense that one event triggers only one energy transfer.

Therefore, it is important for teachers to be aware of students' learning difficulties and to surface the students' preconceptions/misconceptions (see **Table 1**) of the topic on energy and use this data to design their teaching approach. To have an accurate understanding of energy, it is important to address the 5 important concepts as listed below:

- Defining different objects of interest and different initial state and final state will surface different energy data for analysis.
- In different state of the object, energy is called different names.
- Every interaction involves a transfer of energy during a timeframe of interest.
- Force is produced by the interaction between objects.
- Work done is a form of energy transfer by a force that is acting over distance. It is possible to know how much work has been done by calculating the change in energy during an interaction.

To facilitate the teaching and learning of the above 5 key concepts and to help overcome the learning difficulties and challenges, we layered in both the qualitative and quantitative treatments in a multiple representations approach. This would allow teachers to scaffold students' learning for deeper understanding. Students would be able to demonstrate their knowledge and make their thinking "visible" through this approach which will allow for teachers' quality feedback to students.

2.   Lesson Preparation Considerations

This section presents the student's prior knowledge and the teaching ideas to be achieved in this approach. Knowing the prior knowledge and the teaching ideas to be taught allow teachers to design the energy lesson building on students' existing knowledge, hence achieving a better progression of learning.

2.1 Prior knowledge

At the primary level, Singapore students learn that energy:

- is required to make things work or move and energy from most of our energy resources is derived in some ways from the Sun, our primary source of light and thermal energy.
- exist in different forms e.g. kinetic energy (movement energy), gravitational potential energy (objects above the ground), elastic potential energy (spring, elastic band), light energy, electrical energy, sound energy, thermal energy and chemical energy (as a form   of stored energy: food, batteries, fuels).

At the lower secondary level, they learn that:

- work is the use of a force to move an object.
- energy is the ability (or capacity) to do work or to produce change (work done = energy used) and there are different forms of energy e.g., kinetic, potential, light and sound.
- energy is conserved and can only change from one form to another (the total amount of energy before and after the change is exactly the same).
- sources of energy include fossil fuels (coal, oil, gas), kinetic energy from water and wind, nuclear, solar, and biomass.

2.2   Teaching ideas

In the course of their learning, students must be able to articulate the following key ideas:
- Energy can be categorised generally into two groups – energy of motion and energy of relative position.
- Energy can be quantified.
- Energy is a numerical quantity that is conserved during interactions (in a closed system).
- Energy can transform from one form to another during an interaction.
- Mechanical work is a pathway of energy transfer during an interaction and can be calculated using *work done = force × distance*.

The remainder of this paper presents how the team go about the teaching of energy at upper secondary level. We adopted Content Representation (Loughran et al., 2012), CoRe for short, as a tool to develop our pedagogical content knowledge (PCK) in the teaching of energy. In particular, the methodology of CoRe helped us in clarifying the big teaching ideas for the topic and develop unique strategies that support students' learning via multiple representations approach (See **Appendix 1**).

2.3   The multiple representations

These multiple representations approach in teaching is deployed using qualitative and quantitative treatments

2.3.1 Qualitative treatment

The team began teaching the topic on energy by eliciting students' prior knowledge and take the opportunity to address some students' alternative conceptions about energy.

Among scientists, there is no standardized way to categorise energy, nor is there a single convention for naming the various types of energy. Nevertheless, the team have adopted the approach by WestEd (2011) to classify energy in terms of *energy of motion* and *energy of (relative) positions*.

The team utilised the use of whiteboarding as a constructivist approach to allow students to explain what they think energy is. During this activity, the teacher played the role of a facilitator, bearing in mind that the students have brought with them a set of prior knowledge and alternative conceptions.

Considerable amount of time was spent with the students to reflect on the definition of energy. Teacher developed the concept that energy is a mathematical construct created by scientists to describe how much change can happen in a system. Teacher co-constructed a definition with students that includes the idea of energy being a numerical quantity that is conserved during interactions.

Teacher steered the students towards a definition of energy. Some of the more accurate and precise definitions of energy to teach the students are (WestEd, 2011):
- Energy is a measure of how much change can happen in a system. It is a quantity that is conserved despite the many changes that occur in the natural world.

– Energy is the amount of work required to change the state of a physical system. The numerical amount of energy of a system diminishes when the system does work on any other system.
– Mathematically, energy is a numerical quantity that does not change when an interaction happens in a closed system.

An example of a definition formed was to define "energy as a measure of how much change has occurred due to position or motion during an interaction between bodies."

The qualitative categorisation of energy and derivation of an energy definition form the foundations for quantitative approach in problem solving.

See **Appendix 2** for the worksheet used by the team to construct students' understanding about energy.

We felt that it is important in the analysis of energy transformations to bring in the idea of system. Most teachers would struggle with the thought of introducing "system" to students. However, during the course of interactions with our students, we realised the usefulness and importance of identifying the objects of interest, the forces involved and the specific timeframe during an event, a process or an interaction when analysing energy conversion. In fact, the identification of objects, forces and timeframe defines the system of interest. So, the idea of system does not need to be introduced formally if only when an accurate and deeper analysis of energy conversion allows it to emerge naturally.

Another interesting area of discussion with the students is the relationship between force and energy. This is a necessary discussion because students are confused between gravitational force and gravitational potential energy. While the mathematical formula can be used to highlight their differences, a fundamental understanding of their differences is necessary. It is important to highlight that force is the cause of the change in position or motion but energy is just a numerical quantity that is assigned to the system or objects of interest, and this number is conserved at all times. Energy is not the cause of the change in position and motion of the object of interest. This is a teachable moment to remind students that energy cannot be created or destroyed.

As always, we could conclude the qualitative discussion by consolidating the learning points.

See **Appendix 3** on how it might look like.

2.3.2 Quantitative treatment

Both the qualitative and quantitative treatments are interdependent and necessary to foster deep understanding. To aid in the quantitative understanding of energy, teachers can provide multiple means of representation:

Representation 1: Using *energy flow diagram* to analyse energy conversion/transfer (See **Figure 1** below).

$$\Delta K.E. \text{ (change in K.E.)}$$

$\Delta G.P.E.$
(change in G.P.E.)

$W = F \times s$
(work done by an applied force)

$Q = f \times s$
(thermal energy produced due to work done against resistive forces)

Figure 1: Energy flow diagram

With the help of the energy flow diagram, students can learn how to express the equation for energy conversion mathematically. They should also be taught to describe and explain the energy transfer that takes place conceptually in their own words.

Representation 2: Using *energy bar chart* to quantify conservation of energy during interactions (at the initial and final states). See **Figure 2** below.

Initial/Final State

G.P.E.   K.E.   Q   Total Energy

Figure 2: Energy bar chart

An energy flow diagram can also be combined with the energy bar charts of the initial and final states to form a so-called *LOL diagram* see **Figure 3** below.

Figure 3: The LOL diagram

The concept of energy transformation can be reinforced here, and importantly, the Principle of Conservation of Energy (COE) can also be introduced quantitatively and illustrated with the energy bar charts or LOL using total energy at the initial state + energy transfer into the system = total energy at the final state + energy transfer out of the system. Where work is involved, the idea of work as amount of energy transfer/converted can be easily illustrated using LOL.

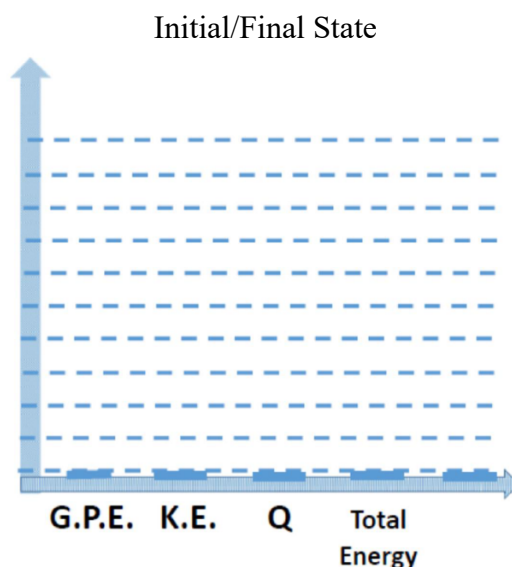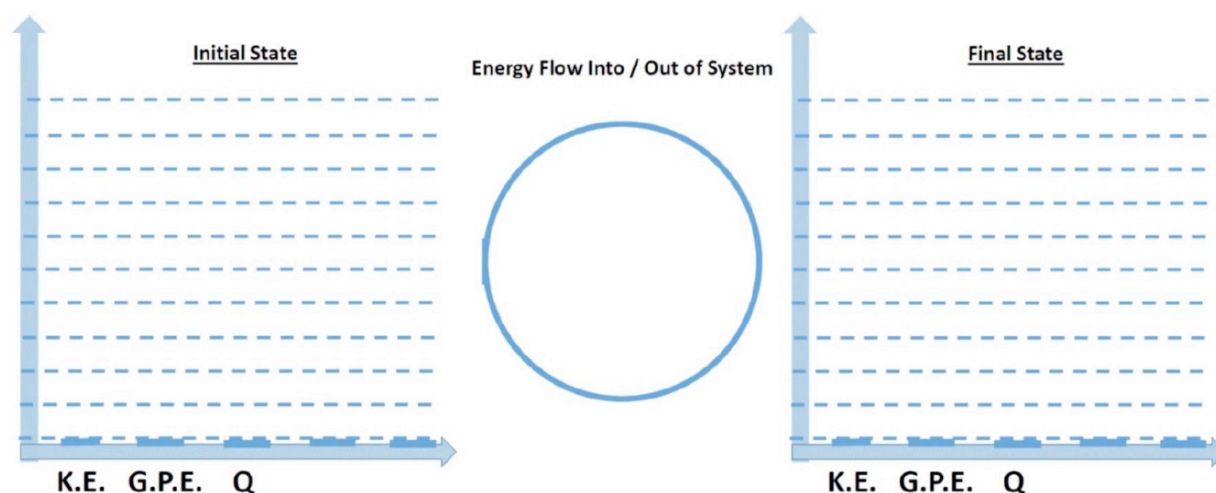**Representation 3:** Using *energy cubes* (See **Figure 4**) to quantify forms of energy and to help in visualising interactions between objects of interest in a specific timeframe of interest (in a system). The energy cube has six sides, each side has a form of energy attached to it, the top face represents the form of energy associated with an object of interest at a particular define state (Initial/final).

Figure 4: An energy cube. This energy cube is representing 1 unit of kinetic energy

The energy cube provides another option for "physical" expression of understanding of COE, making students' thinking more visible for teachers to give more accurate feedback. Every representation has its limitation. Likewise, it is important to highlight to the students the limitations that the energy cube does not suggest that energy is an object or exists as something physical. Take the opportunity to emphasise that energy is a numerical quantity that is conserved during interactions between bodies.

3.   Lesson Enactment

Here, we shall briefly describe how the energy flow diagram, energy bar chart or LOL and energy cubes can be used for teaching and learning in a lesson. To make connection with the new world application, hence making it more meaningful for the students, a real-world scenario or authentic case study has to be deployed. To arouse interest, students can be involved in the process of deciding on a case study. For us, we chose the re-entry of Tiangong 1 (on 2 April 2018) as the case study (see **Appendix 4**).

3.1   Introduction (framing the learning)

Set the context for the real-world scenario or authentic case study (e.g., re-entry of Tiangong 1). Present qualitative / quantitative data to students for sense making (e.g., high temperature during re-entry leading to vaporisation of components).

3.2   Hands-on / minds-on using multiple representations

Identify the objects of interest, the forces involved and specific timeframe of interest for the energy transfer during interaction. In their own groups, students shall use energy flow diagram, LOL and energy cubes to describe the transfer of energy and account for the Conservation of Energy. Students shall present the group findings in class discussions. See **Appendix 5** for a sample of group presentation.

3.3   Checking for understanding

The suggested success criteria are:
Students are able to:
- identify the forces and objects of interest that are present during interactions,
- describe the energy transformation/energy transfer (using energy bar chart and energy cubes),
- demonstrate that total energy is conserved (using energy flow diagram and energy bar chart).

See **Appendix 6** for a sample of worksheet on checking for understanding.

A lesson plan on the energy study of re-entry of Tiangong 1 can be found in **Appendix 7**.

4.   Making connections

The topic on energy cannot be learnt in isolation, and it is important for students to see the connections between energy and earlier topics of Newtonian Mechanics, i.e. kinematics and dynamics. Students have to be adept in using different representations, e.g. force diagrams, velocity-time graphs, mathematical equations, word descriptions, energy flow diagram, to solve problems in Newtonian Mechanics. As energy is a principal concept that appears in subsequent topics like thermal physics and waves, it is definitely a meaningful and worthwhile endeavor to invest considerable amount of time and attention in the teaching of energy. See **Appendix 8** for a sample of the worksheet used in our classes.

5.   Feedback from teachers and students

A 'demonstration class/workshop on "A Conceptual Approach in Teaching of Energy Using Multiple Representations" with lesson design described above was conducted at Centre for Teaching and Learning Excellence (CTLE), Yusof Ishak Secondary School, in 2018, 2020 and 2022 for a group of pre and in-service physics teachers and teacher leaders. In post-demo class discussion and their written feedback, teachers agreed that CoRe was a useful design for reflective practice and developing the pedagogical content knowledge on teaching energy. They affirmed that the multiple representations approach help students to learn better. They also acknowledged that energy flow diagram, energy bar and energy cubes were useful teaching aids that could support students in their learning.

Quantitative (four-point Likert scale) and qualitative feedback that were collected from the students and teachers were encouraging too.

5.1.   Impact on students

A survey (See Appendix 9) was conducted at Centre for Teaching and Learning Excellence at Yusof Ishak Secondary School on 41 upper secondary physics students over 2018 and 2019 showed positive qualitative and quantitative responses on the use of this multiple representations approach.

The average Quantitative (four-point Likert scale): A high rating of **3.60** out of 4.00 is obtained.

Table 2: Student quantitative survey (Likert scale of 1 [strongly disagree] to 4 [strongly agree]) on the learning activities of the Energy lessons using multiple representations

Learning Activities	Mean
I learn better when lessons are conducted using models.	3.61
Hands-on using models with discussion in groups to verify teacher's teaching improves my understanding of the lesson.	3.68
Explaining my individual/group's answers to my group/class helps me to clarify what I understand/do not understand.	3.51
The lesson activities make it easier for me to understand the Law of Conservation of Energy.	3.61

Some qualitative feedback from the students is highlighted below:

Use of Models
- Engaging and interesting
- Easy to follow teacher's instructions
- Able to understand/visualise better with the models
- The demo was clear and easy to understand
- Demos are easy to visualize
- Able to see better in physical form
- Allows students to engage/participate actively

Deeper Understanding
- Activities allowed more clarification on issues faced and helps in understanding concepts
- There were many hands-on activities which is what I like as it is easy for me to remember
- Help me to understand better
- Easier to consolidate learning using the energy cube
- Lots of hands-on activities, gain more knowledge of the energy

5.2. Impact on teachers

A survey (See **Appendix 10**) was conducted on 73 Physics teachers who attended the demonstration classes in 2018, 2020 and 2022 also showed positive qualitative and quantitative responses on the use of this multiple representations approach.

Workshop rating: A high rating of 3.44 out of 4.00 is obtained.

Some Qualitative feedback from the teachers (useful ideas participants would like to apply back in their own classrooms) are highlighted below:
- Use of Multimodal representations
- Use of Energy flow diagram
- Use of CoRe in design for understanding
- Using of energy cubes & Energy Bar Chart (LOL) to help with visualisation
- Linking force and energy
- Use of energy cube to quantify and also show the transfer/transformation of energy.
- Enhance understanding of Conservation of Energy
- Use of multiple representation to help students learn
- The use of LOL and energy flow diagram as representation
- Interesting use of tiangong-1
- Use of the cube to redesign the lesson on energy.
- Use energy cube to teach abstract idea
- Use of change in energy
- Use of energy cube to teach concept of energy conversion and conservation
- Use of energy charts and energy cubes to help students understand ideas of energy stores and energy transfer
- The new idea of energy stores
- Very revolutionary ways of teaching energy.
- Using props like energy cubes to generate communications
- Teaching energies in terms of stores and the different modes of representation
- The scenario cards are innovative.
- The multiple representations for students to visualize and the LOL chart
- Terms used in energy stores and how energy is transferred in and out of the system.
- The energy cubes is a good demonstration that energy is conserved

Conclusion

Energy is a principal concept in the learning of Physics, yet it is a concept that students found abstract and challenging to grasp. Teachers can provide multiple means of representation by

using (i) energy flow diagram to analyse energy conversion, (ii) energy bar chart to quantify conservation of energy during interactions and (iii) energy cubes to quantify energy distribution between interacting bodies as well as to reinforce principles of conservation of energy.

As energy cannot be learnt in isolation from kinematics and dynamics, it is important for students to see the connections between these concepts. Therefore, it is worthwhile to invest time and attention in ensuring that students are adept at using different representations like force diagrams, velocity-time graphs, mathematical equations, word descriptions, energy flow diagram, to solve problems in Newtonian mechanics.

These multiple representations approach can be digitalized (self-assessing teaching app) for self-directed learning. This approach can also be modified to teach Energy using a pedagogical framework of Energy Stores (e.g. Kinetic energy store, Potential energy store, Nuclear energy store, Chemical energy store, Nuclear energy store and Elastic energy store) and four Energy transfers pathways (mechanically, electrically, propagation of waves and temperature difference). This pedagogical framework of energy stores and energy pathways and multiple representations approach allow the important ideas about interactions through forces and field to be featured more strongly.

Moving forward, the mass production and National wide implementation of the physical model (Energy Cube, LOL Energy Bar Diagram) in collaboration with Curriculum Planning & Development Division (CPDD) and the dissemination of the digital model through the Senior Teacher-Lead Teacher Network allow for scalability across all schools.

Appendix 1: Content Representation (CoRe)- Tool for developing pedagogical content knowledge (PCK)

Content Representation (CoRe) – Energy and Work

Teaching Ideas in Physics (TIPs)	• Energy can be categorised generally into two well-accepted types – energy of motion and energy of relative position • Energy can transform from one form to another during an interaction • Energy is a quantity that is conserved during interactions (in a closed system)	• Energy can be quantified	• Work is a measure of change in energy during an interaction
What you intend the students to learn about this idea?	(a) show understanding that kinetic energy, potential energy (chemical, gravitational, elastic), light energy, thermal energy, electrical energy and nuclear energy are examples of different forms of energy (b) state the principle of the conservation of energy (c) apply the principle of the conservation of energy to new situations or to solve related problems (d) calculate the efficiency of an energy conversion using the formula efficiency = energy converted to useful output / total energy input	(e) state that kinetic energy $E_k = ½ mv^2$ and gravitational potential energy $E_p = mgh$ (for potential energy changes near the Earth's surface) (f) apply the relationships for kinetic energy and potential energy to new situations or to solve related problems	(g) recall and apply the relationship work done = force × distance moved in the direction of the force to new situations or to solve related problems (h) recall and apply the relationship power = work done / time taken to new situations or to solve related problems
Why it is important for students to know this?	– Various types of energy result from objects moving or from the positions of one object in relation to the position of another object – In different parts of systems, energy is called different names – Thinking about energy as having different types helps us understand what is occurring in systems	– Every interaction involves a transfer of energy during a timeframe of interest – Force is present whenever there is transfer of energy, however, force is not the cause for transfer of energy – Not every system is ideal; some energy is transformed to other forms of energy e.g. thermal energy which cannot be utilised	– Work can be a measure of the energy transferred by a force that is acting over distance – It is possible to know how much work has been done by calculating the change in energy during an interaction

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Content Representation (CoRe) – Energy and Work

Teaching Ideas in Physics (TIPs)	• Energy can be categorised generally into two well-accepted types – energy of motion and energy of relative position • Energy can transform from one form to another during an interaction • Energy is a quantity that is conserved during interactions (in a closed system)	• Energy can be quantified	• Work is a measure of change in energy during an interaction
What else you know about this idea (that you do not intend students to know yet)	– A system is defined by the objects of interest and forces of interest present in a timeframe of interest – Closed system – Energy is a measure of how much change that can happen in an interaction (that can happen in a system)		– Work is a measure of change in energy during an interaction – Refer to WestEd on limitations of the "official definition" of Work – Second Law of Thermodynamics
Difficulties / Limitations connected with teaching this idea	– Energy is an abstract concept	– Energy as a measure of the capacity of an object or system to do work is true only in certain situations	– Product of force and distance moved is a precise operational definition for mechanical work
Knowledge about students' thinking which influences your teaching of this idea	– Energy is involved only when objects are moving or things are changing – Energy is a substance or a physical object – Energy is a cause – Energy is fuel – Energy is force – Energy is power – Energy can be created or destroyed – Energy transfers are perfectly linear i.e. one event triggers only one event		– It is possible to do all kinds of work when energy is present
Other factors that influence your teaching of this idea	– It is more useful to define a start and end states rather than get caught up in the intermediate states when using energy transformations or considering energy changes	– Sometimes it is more useful to consider changes in amount of energy rather than thinking about amount of energy in a particular place or form	– Sometimes it is more useful to talk about rate of energy transfer rather than thinking about amounts of energy in different places or forms

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Content Representation (CoRe) – Energy and Work

Teaching Ideas in Physics (TIPs)	• Energy can be categorised generally into two well-accepted types – energy of motion and energy of relative position • Energy can transform from one form to another during an interaction • Energy is a quantity that is conserved during interactions (in a closed system)	• Energy can be quantified	• Work is a measure of change in energy during an interaction
Teaching procedures (and particular reasons for using these to engage with this idea)	– Elicit prior knowledge – Address misconceptions – Use of whiteboarding (constructivist approach) to allow students to explain what energy is – Use of "energy flow diagram" to solve qualitatively and quantitatively problems related to PoCE		
	– Debunking misconceptions about energy – Introduce the concept of energy – Classify energy into 2 types – energy of relative positions and energy of motion	– Energy can be transformed; introduce energy transformation (start and end of a process/interaction) – Introduce Principle of Conservation of Energy using Total Energy at start = Total Energy at the end – Solve problems using PoCE and "energy flow diagram" – Analyse energy transfer using "energy flow diagram" – Connect concept of work and amount of energy converted	
Specific ways of ascertaining students' understanding or confusion around this idea (include likely range of responses)	– Use of diagnostic test for intervention and extent of meeting learning outcomes – Use of "energy flow diagram table" to solve qualitatively and quantitatively problems related to PoCE		

Appendix 2: Sample learning activities for providing progression of learning and surfacing students' preconceptions (this is presented in worksheet format)

1. List down at least 6 different types of energy you encounter in your everyday life and/or read in newspapers and books.

2. Classify the list into 2 categories:

Energy due to relative positions	Energy due to motion

3. Describe what you think energy is or what it means to you.

4. Write down the energy transfer of the motion of a toy car powered by batteries.

5. Consolidation of learning.

Appendix 3: Key learning points/Teaching Ideas to be accomplished in this energy curriculum

What we have learnt about Energy

1. Energy is a measurable quantity, a number, that describes how much change can happen in a system.

2. It is a quantity that is always conserved.

3. Energy transfers occur during interactions. As a result of an interaction, energy can change from one type to another.

4. Force is produced by the interaction between objects.

5. A system can be defined by identifying the objects of interest and the forces of interest within a specific timeframe of interest.

Appendix 4: The lesson slides using the re-entry of Tiangong 1(Decommissioned space station) as a real-life application for analysis of Energy Changes.

Appendix 5: Sample students' cooperative learning work, using multiple representations (white boarding, energy bar diagram, diagrams with explanations, energy cube)

Figure A5.1: Left picture: Multiple representations of energy data at stage one of space station reentry as presented by students and Right picture: Multiple representations of energy data at stage two of space station reentry as presented by students.

Figure A5.2: Multiple representations of energy data at stage 3 of space station reentry as presented by students.

Appendix 6: Sample students' group submission for their reflection and consolidation of their learning journey and exit pass, using multiple representations (energy bar diagram, diagrams and energy flow diagram)

Figure A6.1: Sample group work of students' using energy bar diagram and checklist for consolidating learning. Left picture: stage 1 of space station reentry and Right picture: stage 2 of space station reentry

Figure A6.1: Left picture: Sample group work of students' using energy bar diagram and checklist for consolidating learning at stage 3 of space station reentry and Right picture: Exit pass for the whole learning activity.

Appendix 7: Lesson plan

Appendix 8: Learning activity to help students to make connections to their understanding of motion of an object across the 3 topics of Dynamics, Kinematics and Energy.

Appendix 9: Student Survey

Student Survey 2018

Student Survey 2019

Appendix 10: Teacher Survey from CTLE Demonstration Classes (2018, 2020 & 2022)

Teacher Survey 2018

Evaluation Form (Collated)

Title : Demonstration Class on Conceptual Approach in Teaching of Energy
Date: 17 May 2018

Usefulness	Q1 - 5	3.23
Satisfied	Q5 - 7	3.26

Comments on Course / Workshop / Seminar	SD	D	A	SA	SQ rating
The objectives of the workshop were achieved.	0	0	18	5	3.22
The learning resources supported me in my learning	0	0	16	7	3.30
I can apply the ideas/knowledge/skills learned from the workshop	0	0	19	4	3.17
The presentation was clear.	0	0	15	8	3.35
The workshop met my learning needs.	0	1	15	7	3.26
I would recommend the workshop to my colleagues	0	0	17	6	3.26
The questions were adequately addressed.	0	0	17	6	3.26
The facilitator is skilful at facilitating the participants' learning	0	2	13	8	3.26
	Too short	Just right	Too long		
The duration of the workshop was sufficient to meet its objectives	19	2	2		

Q10. Some useful idea(s) from the demonstration class which I would like to apply:
Multimodal representations
Energy flow diagram
Use of CoRe in design for understanding
Using of energy cubes & Energy Bar Chart (LOL)
Linking force and energy
Use of energy cube to quantify and also show the transfer/transformation of energy.
PCK
Energy cube
Enhance understanding of Conservation of Energy
Use of multiple representation to help students learn
LOL
The use of LOL and energy flow diagram as representation
Energy bar
Energy bar rather than cube
Interesting use of tiangong-1
energy cube
Usage of the energy cubes and bars to help with visualisation
Use of lol and energy cube

Teacher Survey 2020

(1) COURSE INFORMATION

Title of Course/Workshop/Seminar: Teaching Energy

Date(s) of Course/Workshop/Seminar: 11 August 2020

Class Code: NIL

Your feedback will assist us in future planning.
No of forms = 10/13
SQ Indicator
Usefulness: 3.37
Satisfaction: 3.33

(2) OVERALL FEEDBACK ON COURSE/WORKSHOP/SEMINAR

Please shade/tick the appropriate circle.

	Comments on Course/Workshop/Seminar	Strongly Disagree	Disagree	Agree	Strongly Agree	Mean
1.	The objectives were achieved.	o	o	6 (60%)	4 (40%)	3.40
2.	The learning resources (e.g., videos, book chapters, websites, notes, lab protocols, etc.) supported me in my learning.	o	o	7 (70%)	3 (30%)	3.30
3.	I can apply the ideas/knowledge/skills learnt from the course/workshop/seminar.	o	o	6 (60%)	4 (40%)	3.40
4.	The presentation was clear.	o	o	6 (60%)	4 (40%)	3.40
5.	The course/workshop/seminar met my learning needs.	o	o	7 (70%)	3 (30%)	3.30
6.	I would recommend the course/workshop/seminar to my colleagues.	o	o	7 (70%)	3 (30%)	3.30
7.	The questions were adequately addressed.	o	o	6 (60%)	4 (40%)	3.40
8.	The facilitator is skilful at facilitating the participants' learning.	o	o	7 (70%)	3 (30%)	3.30
9.	The course/workshop/seminar/master class helped me to reflect on my classroom practices.	o	o	8 (80%)	2 (20%)	3.20
		Too short	Just right	Too long		
10.	The duration of the course/workshop/seminar was sufficient to meet the objectives of the course/workshop/seminar.	1 (10%)	8 (80%)	1 (10%)		

10. Some useful idea(s) from the course/workshop/seminar which I would like to apply:
- Use of the cube to redesign the lesson on energy.
- The cube for visual learning.
- Use of the cubes and chart.
- Use energy cube to teach abstract idea
- Bar chart and change in energy
- Using of multiple representations in lesson
- Use of energy cube to teach concept of energy conversion and conservation

Teacher Survey 2022

(1) COURSE INFORMATION

Title of Session: Using Multiple Representations to Teach Energy: An Alternative Conceptual Approach

Date(s) of Session: 21 April 22

Class Code (if applicable):

Conducted by (delete accordingly): MTT

Facilitator(s): Boon Chien, Siew Lin

Your feedback will assist us in future planning.
No of forms =28 (F2F) / 12 (Online)

SQ Indicator
Usefulness (F2F): 3.60
Satisfaction (F2F): 3.58
Usefulness (Online): 3.53
Satisfaction (Online): 3.49
Weighted average: (3.60x28+3.58x28+3.52x12+3.49x12)/(40x2) = 3.57

(2) OVERALL FEEDBACK ON COURSE/WORKSHOP/SEMINAR/MASTER CLASS (F2F)
Please shade/tick the appropriate circle.

	Comments on Course/Workshop/Seminar/Master Class	Strongly Disagree	Disagree	Agree	Strongly Agree	Mean
1	The objectives were achieved.	o	o	7 (25%)	21 (75%)	3.69
2	The learning resources (e.g., videos, book chapters, websites, notes, lab protocols, etc.) supported me in my learning.	o	1 (1%)	9 (32%)	18 (67%)	3.56
3	I can apply the ideas/knowledge/skills learnt from the course/workshop/seminar/master class.	o	o	11 (39%)	17 (61%)	3.56
4	The presentation was clear.	o	o	9 (32%)	19 (68%)	3.59
5	The course/workshop/seminar/master class met my learning needs.	o	1 (1%)	9 (32%)	18 (67%)	3.50
6	I would recommend the course/workshop/seminar/master class to my colleagues.	o	o	9 (32%)	19 (68%)	3.63
7	The questions were adequately addressed.	o	o	9 (32%)	19 (68%)	3.63
8	The facilitator is skilful at facilitating the participants' learning.	o	o	8 (29%)	20 (71%)	3.66
9	The course / workshop / seminar/ master class helped me to reflect on my classroom practices.	o	o	11 (39%)	17 (61%)	3.56
10	The duration of the course/workshop/seminar/master class was sufficient to meet the objectives of the course/workshop/seminar/master class.	o	2 (6%)	8 (29%)	18 (67%)	3.50

(3) OVERALL FEEDBACK ON COURSE/WORKSHOP/SEMINAR/MASTER CLASS (Online)
Please shade/tick the appropriate circle.

	Comments on Course/Workshop/Seminar/Master Class	Strongly Disagree	Disagree	Agree	Strongly Agree	Mean
1	The objectives were achieved.	o	1 (8%)	7 (58%)	4 (33%)	3.60
2	The learning resources (e.g., videos, book chapters, websites, notes, lab protocols, etc.) supported me in my learning.	o	1 (8%)	7 (58%)	4 (33%)	3.50
3	I can apply the ideas/knowledge/skills learnt from the course/workshop/seminar/master class.	o	o	10 (83%)	2 (17%)	3.48
4	The presentation was clear.	o	1 (8%)	9 (75%)	2 (17%)	3.50
5	The course/workshop/seminar/master class met my learning needs.	o	1 (8%)	10 (83%)	1 (8%)	3.43
6	I would recommend the course/workshop/seminar/master class to my colleagues.	o	1 (8%)	9 (75%)	2 (17%)	3.50
7	The questions were adequately addressed.	o	1 (8%)	8 (67%)	3 (25%)	3.53
8	The facilitator is skilful at facilitating the participants' learning.	o	1 (8%)	8 (67%)	3 (25%)	3.55
9	The course / workshop / seminar/ master class helped me to reflect on my classroom practices.	o	o	9 (75%)	2 (25%)	3.50
10	The duration of the course/workshop/seminar/master class was sufficient to meet the objectives of the course/workshop/seminar/master class.		1 (8%)	9 (75%)	2 (17%)	3.43

Some useful idea(s) from the course/workshop/seminar/master class which I would like to apply: (F2F)
- Use of manipulative
- How to use LOL
- Use of energy charts and energy cubes to help students understand ideas of energy stores and energy transfer
- Energy cubes & LOL template
- The new idea of energy stores
- Very revolutionary ways of teaching energy.
- Using props like cubes to generate communications
- Teaching energies in terms of stores and the different modes of representation
- The scenario cards are innovating.
- The multiple representations for students to visualize and the LOL chart
- Terms used in energy stores and how energy is transferred in and out of the system.

11. Some useful idea(s) from the course/workshop/seminar/master class which I would like to apply: (Online)
- The idea of distinguishing between energy stores and transfers.
- The use of LOL and Energy cubes in my classes in future once I have the tools.
- The shift in terminology, the idea of transfer in and transfer out instead of transform/converted.
- How to teach this using an online platform that could possibly do it without the tools .
- Manipulative and scenario cards help to visualise the concept during introductory phase of the topic
- Introducing students to different energy representations in the form of energy stores
- Use of energy cubes and energy analysis
- The use of energy cubes combined with the Energy transfer cards
- I like the physical movement of cubes to represent the movement of energy
- the energy cubes is a good demonstration that energy is conserved.
- Different energy representations.

References

C. Wenning, Whiteboarding & Socratic dialogues: Questions & answers, J. Phys. Teach. Online 3 (1), (2005).

Feynman, R. (1963). *The Feynman Lectures on Physics*. Book 1. New York: Addison-Wesley.

Kirsten R. Daehler, Jennifer Folsom, Mayumi Shinohara (2011). Making Sense of SCIENCE: Energy for Teachers of Grades 6-8, Teacher Book. NSTA Press and Wested Publisher.

Lau, C.Y., Wong, D., Chew, C. M. K., & Ong, K.S (eds.). (2011). Handbook for teaching secondary physics. Singapore: Ministry of Education: MOE/CPDD.

Loughran, J., Berry, A., & Mulhall, P. (2012). Understanding and Developing Science Teachers' Pedagogical Content Knowledge. Sense Publishers.

Millar, R. (2005). Teaching about energy. University of York. Department of Educational Studies: Research paper 2005/11.

M. Wells, D. Hestenes, and G. Swackhamer, A modeling method for high school physics instruction, Am. J. Phys. 63 (7), 606 (1995).

Scherr, R., Close, H., McKagan, S., & Vokos, S. (2012). Representing energy. I. Representing a substance ontology for energy. Physical Review Special Topics - Physics Education Research, 8(2), 020114-1-020114-11. Retrieved from: http://journals.aps.org/prper/abstract/10.1103/PhysRevSTPER.8.020114 on March 14, 2017

Tracy, C. (2014). Energy in the new curriculum: an opportunity for change. School Science Review, 96(354).

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Using Pre-Test for Assessing Familiarity With Japanese Culture of Foreign Students During Japanese Communication Class

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Abstract

After over two years into the pandemic, international student mobility is still not recovered in Japan and many of the exchange activities with students at foreign universities are still being conducted online. In 2022, we conducted an online summer school for foreign students from abroad to learn about up-to-date scientific research trends as well as to introduce basic knowledge about the history, culture, society, and lifestyle of Japan, as well as communication style with people in Japan. We designed a pretest covering various aspects of Japanese culture. The test was applied to a group of 60 participants, from whom 36 completed it during the set time. From the test results, the participants tended to show a good understanding of tangible items such as food, customs, weather, and modern appliances, while the more abstract items such as traditional sites, social values, and work culture seemed to be more difficult for them. The test also helped to get the participants to reveal their interests in Japanese culture. In short, applying such a pretest seems to be a good tool for the teacher to explore the level of knowledge and the need of students, and therefore to adjust the content in class accordingly.

Keywords: International Students, Japanese Communication, Japanese Culture, Pretest

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Introduction

International students receive the special attention of their respective host universities. Cultural values are considered an important part of the education to be provided to international students (Brion, 2019; D'Andrade, 2008; Meier, 2016; Storme & Demkhshani, 2002). As a result of internationalization, universities in Japan try to provide international students with preparatory courses, Japanese language courses, and Japanese cultural experience activities, local exchange activities… where they can experience Japanese and local culture (Hirota & Oka, 2001; Tanikawa, 2020).

In our previous papers, we have reported factors related to studying in Japan (Tran & Jin, 2021), experiences of international students with Japanese culture (Tran & Jin, 2020), pull factors provided by universities to international students (Tran et al., 2022), and challenges in attracting international students to Japan (Tran & Jin, 2022). These reports as well as similar reports from various sources in Japan have shown that there is an increasing interest in learning Japanese culture along with the Japanese language among international students in Japan. Understanding Japanese culture will not only facilitate international students' daily life and help to avoid academic stress but also support to adapt to the Japanese working environments and doing business with Japanese partners in the long run (Ogawa, 2013). Therefore, possessing sound Japanese cultural proficiency and the Japanese language will be an asset for international students.

Summer schools are the common activities aiming at attracting international students to host universities (Shimazaki, 2018). For a long time, Tokushima University (TU) organizes several summer schools each year for different types of participants from abroad, where foreign students could have a short-term experience of academic and cultural life in Japan. However, since 2020, the COVID-19 pandemic has disrupted international students inbound to Japan (Bista et al., 2021; Murata, 2022). After over two years into the pandemic, international student mobility is still not recovered in Japan and many of the exchange activities with students at foreign universities are still being conducted online, including summer schools. Subsequently, there were attempts to conduct online summer schools as an alternative to traditional on-site events.

In 2022, one such event was conducted at TU for foreign students from abroad to learn about up-to-date scientific research trends as well as to introduce basic knowledge about the history, culture, society, and lifestyle of Japan, as well as communication style with people in Japan. About 60 students from seven countries in Asia, including Japan participated.

Aiming to assess the proficiency in Japanese culture of participants during the summer school in 2022, we conducted a short test covering various aspects of Japanese culture. By analyzing the results of the tests conducted in 2022, this presentation is aiming to show the preliminary results of applying a Japanese culture proficiency test in class, and the implications for further test development and application.

Method

We designed a conceptual framework (Figure 1) to make clear the goals and purpose of this attempt. Students who have interest and curiosity towards Japanese culture are attracted to participate in the school. Administrating the test at the beginning of the course assisted in the assessment of the participants' level of knowledge and therefore help the instructor to adjust

the content to suit the participants' need to plan for future courses. It also will help to refine and developing more test questions for the need.

Figure 1: Conceptual Framework

As the online summer school was conducted in English, and the English proficiency of the participants ranged from intermediate to advanced level, we tried to introduce a test in English that consisted of 10 multiple choice questions covering aspects such as lifestyle, sightseeing, food and drink, seasons, tradition, popular technology, business, and social practice… of Japanese culture. The questions are compiled from various sources (Chavez, 2005; Gilhooly, 2004) with some adaptations, or developed independently by the author. Figure 2 shows a sample of questions. The participants needed to choose a correct answer among four choices.

Figure 2: A question example

We conducted data collection in July 2022. Data collection was conducted via online Google Forms by 60 participants who were students at foreign universities who attended the online summer school at TU in 2022. The students were mainly from Asian countries. The survey was fully anonymous and no data to identify the person had been recorded. We made a qualitative analysis of the data obtained by using the KH Coder (*KH Coder*, n.d.). Word clouds were produced using a free online word cloud generator (*Word Cloud Generator*, n.d.). Quantitative data were analyzed by Excel/SPSS.

Results

The pretest covers various aspects of Japanese culture. The test was applied to a group of 60 participants, from whom 36 provided valid scores. Figure 3 shows the distribution of the total score. The mean score was 5.03/10 points, slightly above average for all participants.

Figure 3. Histogram of the total score

Nevertheless, the mean score was differentiated by each item. Table 1 shows the mean score by item. The results show that higher scores at the pretest were achieved in questions about appliances, gardens, seasons, and drinks… while lower scores at the pretest were related to restaurants, castles, businesses, vending machines, and values... Quantitative questions such as "How many vending machines are there in Japan? The most-visited castle in Japan?" related to the number or frequency, and abstract questions such as "Which are not Japanese values? Which is true about Japan's work culture" are frequently missed.

Table 1. Mean score by item

	Question about	*Mean*	*Std. Dev.*
1	Number of vending machines	0.39	0.494
2	Type of restaurants	0.50	0.507
3	Type of foods	0.50	0.507
4	Famous castles	0.25	0.439
5	Four seasons	0.69	0.467
6	Home appliances	0.78	0.422
7	Best drinks to gods	0.53	0.506
8	Japanese values	0.36	0.487
9	Japanese gardens	0.72	0.454
10	Business style	0.31	0.467

Regarding the need specified by the participants towards Japanese culture in an open-ended question, the answers of the participants were demonstrated as shown in Figure 4. There seems to be a tendency to pay more attention to visible parts of culture such as foods, clothes, technology… than the invisible parts of culture.

Figure 4. Interests in Japanese Culture

Conclusion

From the test results, the participants tended to show a good understanding of tangible items such as food, customs, weather, and modern appliances, while the more abstract items such as traditional sites, social values, and work culture seemed to be more difficult for them. The test also helped to get the participants to reveal their interests in Japanese culture, which mostly focused on the visible part of the culture.

In this preliminary attempt, as the number of participants was quite limited, we could not take into account the factors that could influence the results such as English proficiency, country, major, scholarship, age, part-time job, and income… In the future, we consider applying the test to compare longer periods such as between pre-arrival and, post-arrival, or pre-program and post-program. It also needs to design a pool of questions with more diversified content for such a purpose.

Acknowledgment

References

Bista, K., Allen, R. M., & Chan, R. Y. (2021). Impacts of COVID-19 on International Students and the Future of Student Mobility: International Perspectives and Experiences. In *Impacts of COVID-19 on International Students and the Future of Student Mobility: International Perspectives and Experiences*. Taylor and Francis. https://doi.org/10.4324/9781003138402

Brion, C. (2019). Cultural Proficiency: The Missing Link to Student Learning. *Journal of Cases in Educational Leadership*, *22*(4), 99–114.

Chavez, A. (2005). *Guidebook To Japan: What the other guidebooks won't tell you*. Gom Press.

D'Andrade, R. (2008). *A Study of Personal and Cultural Values*. Palgrave Macmillan, New York.

Gilhooly, E. (2004). *Teach yourself world culture: Japan*. Hodder Education.

Hirota, Y., & Oka, M. (2001). Reform of acceptance system for Japanese language and culture study abroad students at Okayama University. *Journal of the Economic Society of Okayama University*, *33*(3), 1–17.

KH Coder. (n.d.). Retrieved September 10, 2022, from https://khcoder.net/

Meier, E. (2016). *The Culture Map*. PublicAffairs.

Murata, A. (2022). Studying in Japan during the COVID-19 Pandemic: International Students' Loneliness and Resilience. *Multicultural Society and Language Education*, *2*, 1–15. https://doi.org/10.50921/jlp.2.0_1

Ogawa, M. (2013). What kind of "general Japanese affairs" should be for international students. *Senshu University Journal of Foreign Language Education*, *41*, 105–113.

Shimazaki, K. (2018). Practice of a Japanese Language Program for Interacting with Society, Experiencing, and Learning —Tohoku University Summer Program—. *Bulletin of the Organization for Advanced Liberal Arts and Student Services, Tohoku University*, *4*(3), 383–396. https://www.ptonline.com/articles/how-to-get-better-mfi-results

Storme, J., & Demkhshani, M. (2002). Defining, Teaching, Evaluating Cultural and Proficiency in the Foreign Language Classroom. *Foreign Language Annals.*, *35*(6), 657–669.

Tanikawa, I. (2020). Expectations and evaluation of short-term international students for cultural experience classes. *Konan University Educational Learning Support Center Bulletin*, *5*(1), 97–108. https://doi.org/http://doi.org/10.14990/00003620

Tran, H., & Jin, C.-H. (2021). Factors Pulling International Students to Japan: A Situation Analysis. *The Asian Conference on Education 2021 Official Conference Proceedings*, 125–136. https://repo.lib.tokushima-u.ac.jp/ja/116706

Tran, H. N., Inosaki, A., & Jin, C. H. (2022). On Campus Support and Satisfaction of International Students: A Review of Japanese Literature. *The IAFOR Conference on Educational Research and Innovation: 2022 Official Conference Proceedings*, 1–16. https://doi.org/10.22492/ISSN.2435-1202.2022.1

Tran, H. N., & Jin, C. H. (2020). International students' exposure to Japanese Culture : Results from the field trips to Kyoto. *Bulletin of International Center, Tokushima University*, *2019*, 13–16. https://repo.lib.tokushima-u.ac.jp/114380

Tran, H. N., & Jin, C. H. (2022). Challenges in Attracting International Students to Japan. *Educational Alternatives*, *20*, 11–25.

Word Cloud Generator. (n.d.). Retrieved September 10, 2022, from https://www.jasondavies.com/wordcloud/

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Teacher Candidates' Perspectives on Teacher Education Instruction: Online vs. Face-to-Face Modalities

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Abstract

COVID-19 ushered in a forced time of online instruction for many universities across the United States. As such, faculty had to quickly adapt their pedagogy in order to provide students with quality instruction in this new mandated virtual environment. At the researcher's institution, post COVID students increasingly desire more choices in learning modalities. The researcher has transitioned to teaching solely online and wanted to conduct research to support the understanding of best practices for virtual instruction. The purpose of this study was to conduct a comparative analysis between the perceived effectiveness of teacher candidates of a secondary methods course taught online versus in a face-to-face setting. Findings indicate that students were satisfied in both environments primarily due to their connection with their professors, easy accessibility to their professors via email, zoom or in person, their connection to their peers as well as their appreciation of the content and delivery of the content within the course.

Keywords: Online Teaching, Best Practices, Teacher Candidate Perceptions

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Introduction

COVID-19 changed the landscape of higher education. Professors were forced to adapt to online instruction. Zoom became a platform everyone was familiar with and professors learned to adjust instruction to ensure that courses were still valuable. Furthermore, teacher educators had to learn new ways to model instruction for their teacher candidates within a virtual context.

This study focuses on the series of methods courses taken at a state university in the Central Valley of California. Students in this program are part of the secondary education program, are graduate students, and student teach for two semesters.

In the first semester, students take EDSS 4100: Secondary Education Methods I. In their second semester of student teaching, students enroll in EDSS 4300: Secondary Methods II and EDSS 4400: Secondary Methods III. These classes are referred to as the cohort series at this institution and students will have the same professor throughout these classes as well as the same peers.

Students participated in this study during their second semester of student teaching, while enrolled in EDSS 4300 and EDSS 4400. One set of participants were enrolled in a face-to-face section while the second set of participants were enrolled in the online section.

During COVID, the researcher moved locations and now only teaches online. It was important, for the researcher's own reflection and growth, to understand the perspective of those students within our program taking the same methods course, both online and face-to-face. It is within this context that this study emerged.

Literature Review

Even prior to COVID-19, distance learning was the fastest growing mode of learning. (Vaughan et al., 2013) However, all modes of distance (synchronous, asynchronous, and hybrid) learning exploded with the COVID pandemic. As such, a review of the literature is more essential than ever in understanding how best to utilize the online platform.

Design of Online Learning Courses

Prior to students enrolling in the course, an online professor must invest substantial time into designing and organizing the online course in a manner that is conducive to student learning and success. Garrison states, "Designing a blended learning experience should start with organizing the content and activities. In addition, clear objectives for content and performance expectations will ensure a productive educational experience…it is crucial that the course outline, assignments, and grading rubric be posted well before the course begins" (35).

Finally, the online professor needs to lean on student feedback for continued reflection on their practices and organization of the Learning Management System (LMS), syllabus, and tentative schedule in order to promote continual improvement (Garrison, 43).

Successful Student Qualities

The online student must possess certain qualities to be successful within this modality. Prior research has demonstrated that student self-motivation is essential (Fedynich, Bradley, & Bradley, 2015). Furthermore, the online student benefits by maintaining a system of organization within their online courses (Hong and Jung, 2011).

High Impact Practices

Virtual learning is often viewed from a deficit perspective; however, continued research and pedagogical exploration is proving that virtual learning is not only a matter of convenience, but also an option for rigorous learning opportunities (Montelongo, 2019).

High impact practices for the online classroom include, but are not limited to allowing opportunities for student reflection and instructing using various modes and mediums for content delivery (short videos, podcasts, guest speakers, infographics as well as other avenues of sharing content).

Furthermore, it is essential that the professor be accessible via email, zoom office hours or other avenues of connecting in order for students to feel engaged, cared for and supported in their learning. Relationships are essential to the success of the virtual classroom (Fink, 2016).

Culturally Relevant Pedagogy in an Online Modality

Gloria Ladson-Billings (1995) articulated and defined culturally relevant pedagogy as being comprised of three components:

1. Student Learning - The students' intellectual growth and moral development, but also their ability to problem solve and reason.
2. Cultural Competence - Skills that support students to affirm and appreciate their culture of origin while developing fluency in at least one other culture.
3. Critical Consciousness - The ability to identify, analyze, and solve real-world problems, especially those that result in societal inequalities.

Within this framework, virtual instructors must strive to meet these demands within diverse modalities. This can prove to be more challenging within the limitations of an online environment; however, with intentional efforts, these limitations can be overcome.

Pedagogy must be included that supports an understanding of various learning styles as well as various communication styles. Some specific strategies to consider include: video introductions, weekly overviews/agendas, video grade feedback, and synchronous live meetings (Montelongo, 2019).

The Use of Technology Tools

Faculty teaching online need to invest time in understanding the technology tools available to enhance their instruction and increase student engagement (Montelongo, 2019). While the Learning Management System provides a foundation and shell for the course, this should not be the lone form of technology use in an online course.

Theoretical Framework

This research seeks to determine teacher candidates' perspectives regarding the effectiveness of face-to-face courses versus online courses in a teacher education program. This study is situated within the framework of the Community of Inquiry (CoI). Within this framework, the learning experience is defined by three presences: cognitive, social, and teaching (Garrison et al., 2000).

The cognitive presence is defined as the meaning making through discourse, reflection and critical thinking. Social presence is the creating of a safe learning environment characterized by the building of a community where all participants feel safe and comfortable to share and ask questions. Finally, the teaching presence consists of several components. First, is the design and organization of the learning experience. Next is the design of the learning experience to provide opportunities for discourse and engagement among the students and between the student and teacher. Finally, is the direct instruction from the teacher to share their expertise.

Figure 1: Community of Inquiry Framework

Methods

A comparative analysis approach was utilized throughout this study in order to distinguish the perspectives of face-to-face students versus online students within the same educational methods courses. These cohorts of students spend one year together in a series of secondary methods courses: EDSS 4100, EDSS 4300 and EDSS 4400. EDSS 4100 is taken in their first semester of student teaching while EDSS 4300 and EDSS 4400 is taken during their second semester student teaching. This research was conducted during students' second semester as student teachers.

Participants

Participants were culled from 2nd semester cohort (methods) students, from an online and face-to-face section.Thirty-eight students responded to the survey. From the online class, 21 responded from the 22 enrolled and from the face-to-face class, 17 responded from the 20 enrolled.

Figure 2 shows the ethnicity of participants while Figure 3 illustrates the various content areas that the teacher candidates were completing their field work in.

Figure 2: Ethnicity of Teacher Candidates

Content Area	Online Class	Face-to-Face
ELA	5	3
Math	3	1
PE	4	1
Science	2	2
Social Science	4	4
Theatre	1	1
World Language	2	2
Art	0	2
Health	0	1

Table 1: Secondary Content Areas of Teacher Candidate

Data Collection

During a combined virtual class of both sections, students were given links to a consent form and a link to a survey. They completed the survey within the week of receiving it. The survey had five sections: demographics, teacher candidate characteristics, instructor effectiveness, effectiveness of course modality and open-ended questions.

All participants also participated in zoom focus group interviews. Combined professional learning community (PLCs) groups from the two sections met via zoom. The focus groups were student facilitated with professor provided questions. These sessions were also recorded and sent to the professor. Figure 4 lists the questions students engaged with in their zoom focus groups.

Interview Focus Group Protocol
Teacher Candidates' Perspectives in Teacher Education Instruction:
Online vs. Face-to-Face Course Work

1. Please introduce yourself briefly. (first name, content area, and a fun fact)
2. Do you have any personality traits that you believe make you more successful as an online student or as a face-to-face student? Explain.
3. Please share your overall experience with your methods courses, specifically how did the modality impact your success and/or challenges within the course?
4. What structures and/or routines within the class promoted your success and/or presented challenges to your success?
5. Please describe the collaboration experience with peers in your methods class.
6. Do you think your chosen modality impacted how prepared you were for your clinical practice? Explain.
7. If you had to take the methods courses over again, would you sign up for the same modality? Why or why not?
8. What advice would you offer future students when selecting between taking a methods course online or face-to-face?
9. What advice would you offer the program as they design future courses to be offered both face-to-face and online?
10. Do you have anything else you would like to share?

Figure 3: Focus Group Questions

Results

A total of thirty-eight students responded to the survey. From the online class, 21 responded from the 22 enrolled and from the face-to-face class, 17 responded from the 20 enrolled. The online modality was the preferred method for students with 30 of the 38 participants listing the online course as their first option for the cohort series of courses.

Table 2 is derived from open-ended questions in the survey. Students were able to share multiple reasons for their preference; however, for the online student the convenience of this modality was a leading factor in their decision to take the course online. Another reason mentioned by nine participants was the ability to save money on gas and to avoid a commute.

Face-to-face students cited they performed better with in person learning as well as that post-COVID, they needed human interaction and were suffering from zoom fatigue.

Reason you had preference	Online Class	Face-to-Face
Easier/convenience	18	
Life balance	2	
Exposed to less germs for loved ones/fear of COVID	4	
No commute/no gas expenses	9	
Made it possible to be an intern	2	
Not vaccinated/can't go on campus	2	
Did not want to buy campus parking permit	2	
Nervous about in person learning after pandemic	2	
Harder to gauge reactions in an OL setting		1
Better with in person learning		4
For Prof. Singh/he was my prior teacher		1
Needed human interaction		2
Zoom Fatigue		2

Table 2: Teacher Candidate Preferences for Chosen Learning Modality

The researcher was also interested in how the motivational level and organizational level of teacher candidates impacted their modality selection. Table 3 outlines how the two groups of participants rated themselves in motivation while Table 4 shows how these same students rated themselves with organization.

Of interest to the researcher is that, generally speaking, the face-to-face participants rate themselves higher in both motivation and organization. A review of literature points to these characteristics as beneficial to all students; however, they are essential for the online learner.

Motivation Level	Online Class	Face-to-Face
1-Highly	1	7
2	8	7
3	1	2
4	2	1
5-Unmotivated	1	0

Table 3: Teacher Candidate Motivation Levels

Organization Level	Online Class *1 did not state	Face-to-Face
1-Highly	4	9
2	12	4
3	1	2
4	2	1
5-Unorganized	2	1

Table 4: Teacher Candidate Organization Levels

Table 5 outlines the ease with which participants were able to contact their professor. In both modalities, professors were accessible to students. Participants shared this supported them in their learning and success within the class. Table 6 shows participants' rating of the effectiveness in the teaching methods that were modeled. Once again, both sets of participants rated this area high.

Professor easy to contact	Online Class	Face-to-Face
1-Always	20	17
2	1	0
3	0	0
4	0	0
5-Never	0	0

Table 5: Ease of Contacting Professor

How effective were teaching methods modeled?	Online Class	Face-to-Face
1-Very	15	12
2	6	5
3	0	
4	0	
5-Ineffective	0	

Table 6: Effectiveness of Teaching Methods Modeled

Table 7 shows participants' opinions regarding which modality they would choose for this class if they were to take the class again. The online participants would all choose the same modality again; however, the results are more varied for the face-to-face participants.

If you had to take the class again, would you take it in the same modality?	Online Class	Face-to-Face
yes	21	9
no	0	1
Maybe	0	7

Table 7: Teacher Candidates Modality Choice

Participants were reflective in the focus group sessions. Several participants shared the need to be understanding of one's own strengths, weaknesses and needs.

> *"You need to know yourself. Know where you will succeed."*
> *"Think about what you are good at and how you learn best."*
> *"Go with the option you will enjoy more. You are in the program for a long time."*

Furthermore, participants recognized that the two sections followed the same organizational pattern and exposed teacher candidates to the same topics.

> *"You can be successful in either modality. You get the same information."*

Participants also recognized that certain personal attributes can support success within the different modalities.

> *"For online classes, you need to be more organized."*

Findings from this study reveal that post-COVID students want and expect options within their program of study. Furthermore, research demonstrated that online learning is most successful when the professor is readily available, the professor and the LMS is well organized, opportunities for community building are built into the course and opportunities for PLC Zoom Sessions and Asynchronous Sessions are embedded throughout the semester.

Conclusions

In this study, participants shared their perspectives on two diverse learning modalities, online versus face-to-face, to support the researcher in understanding best practices according to the students.

Within this particular study, both sets of participants perceived their modalities as effective. The availability of the instructor, the organization of the LMS, and the relevance of the content delivered all were factors contributing to the overall positive perceptions of all participants.

Participants' focus interviews revealed that the success of online learning is fostered by a community with both the professor and peers within the class. Online instructors need to integrate meaningful opportunities for discussions and collaboration. Furthermore, the effective online instructor will be intentional in their delivery of content, using varied approaches for delivery as well as for student engagement.

As universities plan for future schedules, it is imperative to continue to offer students options for face-to-face, online and hybrid learning. It is clear that post-COVID students desire options for their learning.

References

Anderson, T. (n.d.). *Teaching in an online learning context - auspace.athabascau.ca*. Retrieved December 15, 2022, from https://auspace.athabascau.ca/bitstream/handle/2149/758/teaching_in_an_online.pdf?sequence=1&

Fedynich, L., Bradley, K. S., & Bradley, J. (2015). Graduate students' perceptions of online learning. Research in Higher Education Journal, 27. Retrieved from https://files.eric.ed.gov/fulltext/EJ1056187.pdf

Fink, L. D. (2016). Five high impact teaching practices: A list of possibilities. Collected Essays on Learning and Teaching, 9, 3-18.

Garrison, D. R. (2011). *E-learning in the 21st Century: A framework for research and Practice*. Routledge.

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer Conferencing in higher education. *The Internet and Higher Education*, 2(2-3), 87–105. https://doi.org/10.1016/s1096-7516(00)00016-6

Hong, S., & Jung, I.S. (2011). The distance learner competencies. A three-phased empirical approach. *Educational Technology Research and Development, 59(1),* 21-42.

Ladson-Billings, G. (1995). Toward a theory of culturally relevant pedagogy. American Educational Research Journal, 32(3), 465-491.

Montelongo, R. (2019). Less than/more than: Issues associated with high impact online teaching and learning. *Administrative Issues Journal Education Practice and Research*, 9(1). https://doi.org/10.5929/9.1.5

Picciano, A. G. (n.d.). *Theories and frameworks for online education: Seeking an integrated model*. Eric - Education Resources Information Center. Retrieved December 15, 2022, from https://files.eric.ed.gov/fulltext/EJ1154117.pdf

Vaughan, N. D., Cleveland-Innes, M., & Garrison, D. R. (2013). *Teaching in blended learning environments: Creating and sustaining communities of inquiry*. AU Press.

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Perspective Convergence of HIPs, Moments, and Active Learning in Construction Management Education: Comparing and Combining Findings From Multiple Research Projects

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

High-Impact Educational Practices (HIPs), the importance of memorable experiences throughout one's education, and active learning seek to magnify the student experience. The convergence of these strategies, known as Transformational Active Learning Experiences (TALEs), has importance to the student-centered educational experience in higher education. Four recent studies in construction management education have yielded separate and distinct findings. Two studies centered on faculty and student perspectives of learning spaces designed for active learning. Faculty and student perspective data included 65 faculty from 55 universities and 206 students, respectively. A third study focused on HIPs experienced by graduating students (N=145). Finally, representatives from industry who had completed an undergraduate degree in construction management were engaged in focus groups to gauge their most memorable and valuable educational experiences in higher education. This introductory study considers the collective results and explores congruence and divergence across sample populations using thematic analysis. Key findings include the importance of relevant and practical experiences, the potential of the educational space to enhance the experience, and the shared value of connection and engagement with others. Areas of divergence emerged in delayed realization of the value of the educational experience and the variability challenges with some activities. Key findings also included the importance of the appropriate environment and training for faculty. If synergies from HIPs, memorable experiences, and active learning could be more fully realized, the potential for improved cognition and retention, as well as improved development of metacognition, interpersonal skills, and emotional intelligence, can flourish.

Keywords: Active Learning, High-Impact Practices, Peak Moments, Student Experience, Transformational Active Learning Experiences

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Introduction

College students demand flexible, quality learning experiences that are compelling. Long gone are the days where college is simply four years' worth of lectures, homework, and assessments. Student engagement does not reside solely with mastering knowledge and acquiring skills. For this, faculty should strive to curate learning experiences where their class is both memorable and meaningful and empowers students to propel their own learning. University administrators must foster this culture and provide resources where necessary. On-campus higher education programs have a tremendous ability to engage the human element within the educational system through items like social interactions.

Efforts to enhance the student educational experience in higher education have included active learning (with interactive learning spaces (ILS) specifically designed to support active learning), high-impact educational practices (HIPs), and peak educational moments. Active learning is defined as any instructional method that engages students in their learning experience and moves them beyond passive observers. ILS are facilities (i.e. classrooms, labs, etc.) that are purposefully built to engage a student in their learning experience and move them beyond passive observers. HIPs are a set of specific practices that promote active student engagement both inside and outside of the classroom. Peak moments are those educational experiences that are both impactful and meaningful in a way that last long after the classroom experience ends.

The authors of this paper have engaged in a series of four research projects focused on faculty, student, and industry perspectives of construction management education including the following:

- An Active Learning Classroom in Construction Education: Student Perceptions of Engagement. Journal of Construction Education and Research, May 2020. (A1) (Farrow & Wetzel, 2020)
- An Initial Investigation of Student Experiences with the Elements of High Impact Educational Practices. Associated Schools of Construction Annual Proceedings, April 2021. (A2) (Farrow et al., 2021)
- Faculty Perceptions of Interactive Learning Spaces within Construction Programs. Journal of Civil Engineering Education, April 2022. (A3) (Farrow & Wetzel, 2022)
- Initial Investigation in Peak Learning Experiences of Construction Management Graduates. Manuscript preparation ongoing. (A4)

This study considers the collective results of the above articles and explores congruence and divergence across sample populations using thematic analysis. If the combined impact from active learning, HIPs, and peak moments could be more fully realized, the potential for deeper learning and enhanced student experiences could be realized.

Literature Review

This study explores the themes garnered from four research projects on interactive learning spaces, active learning, high-impact educational practices, and peak moments experienced by students in construction management education. All topics are rooted and explored in the context of experiential learning. As an applied discipline where graduates typically move directly into professional practice, construction education is uniquely poised to benefit from transformational active learning experiences.

Construction Education

The construction industry has experienced rapid innovation since the 2008 recession, challenging the current practice of construction education. The American Council of Construction Education (ACCE) is one of the accrediting groups that addresses construction management education, and they have shifted to an outcomes-based criteria for accreditation requirements (*Document 103B: Standards and Criteria for Accreditation of Bachelor's Degree Construction Education Programs*, 2018). One of the key shifts in accreditation standards over the past ten years has been the shift toward emotional intelligence quotient with a lesser emphasis on technical knowledge. Several of those essential or people-related outcomes relate to one's ability to collaborate and communicate effectively with others (*Document 103B: Standards and Criteria for Accreditation of Bachelor's Degree Construction Education Programs*, 2018, p. 103):

> SLO 1: Create written communications appropriate to the construction discipline
> SLO 2: Create oral presentations appropriate to the construction discipline
> SLO 6: Analyze professional decisions based on ethical principles
> SLO 9: Apply construction management skills as an effective member of a
>   multi-disciplinary team

Other groups like ABET have similar requirements (*Criteria for Accrediting Applied and Natural Science Programs*, n.d.). As the industry continues to evolve, further changes in required competencies is possible. Key future changes to industry are expected to include expanded number and type of stakeholders, new technology, and workforce demographics.

Construction education of the future will be required to respond to these changes. Additional cognitive and leadership competencies will be required (Arian, 2010; Wiezel & Badger, 2015). In this context, experiential learning which "gives prominence to soft skills such as the ability to collaborate, work in groups, read social cues, and respond adaptively" will be key (Davies et al., 2011, p. 13). Active learning strategies, HIPs, and peak educational moments all require learning approaches that are self-assessing and reflective which have been shown to enhance how students translate their learning to new settings and events (Bransford et al., 1999).

Learning Spaces and Active Learning

The traditional college classroom has changed little over the last 80 years of construction management education. Typical rooms have been lecture-rooms with chairs facing a podium (Park & Choi, 2014). Active learning and spaces designed to support interactive learning – interactive learning spaces (ILS) - provide an opportunity to deeply engage students in the educational material. Studies on active learning have identified enhanced learning, retention, stronger relations between peers and faculty, and improved social skills when students were engaged in active learning (Astin, 1993; Carmean & Haefner, 2002; Johnson et al., 2014).

In recent years, colleges have made significant strides to develop new and renovate existing classrooms and labs into improved ILS. These spaces can be costly to build and add operational and maintenance challenges. In addition, these spaces typically hold fewer students, increasing the per student cost of instruction. These issues drive the need for understanding their importance and impact (Park & Choi, 2014).

High-Impact Educational Practices (HIPs)

Active learning forces students to apply new knowledge and connect the newly acquired information with their existing understanding, extending their learning. Reflection exercises where learning experiences relate to reality are common and often cause students to reconsider established thoughts or opinions. Active learning also leans heavily on a collaborative environment where social interactions are supported (Vigotsky, 1971).

Multiple studies point to increased learning through active learning approaches. One study explored 225 evaluations of class sessions of active learning as opposed to traditional learning (Freeman et al., 2014). Students in passive classes were 50% more likely to fail and scored one-half a standard deviation lower on assessments than students engaged in classes with at least some active learning. This meta-analysis was proved consistent across a range of disciplines including science, computer, engineering, math, and liberal arts disciplines.

George Kuh suggested a group of educational practices (High-Impact Educational Practices-HIPs) that attempted to elevate the educational impact for students by leveraging some of the above mentioned active learning approaches (Kuh, 2008):

- First-Year Experiences
- Common Intellectual Experiences
- Learning Communities
- Writing-Intensive Courses
- Collaborative Assignments/Projects
- Undergraduate Research
- Diversity/Global Learning
- ePortfolios
- Service Learning, Community-Based Learning
- Internships
- Capstone Courses and Projects

While Kuh identified eleven specific practices above, Kuh and O'Donnel (2013) found that the eleven practices share eight key elements:

- Performance expectations set at appropriately high levels
- Significant investment of time and effort by students over an extended period of time
- Interactions with faculty and peers about substantive matters
- Experiences with diversity, wherein students are exposed to and must contend with people and circumstances that differ from those which students are familiar
- Frequent, timely, and constructive feedback
- Periodic, structured opportunities to reflect and integrate learning
- Opportunities to discover relevance of learning through real-world applications
- Public demonstration of competence

Peak Moments

Some events in life are so impactful and meaningful that they can change one's perspective. In "The Power of Moments", these are called peak moments (Heath & Heath, 2017). Moments to educators may not seem like time periods long enough to experience true education, but the Heaths' definition of moments recognizes that even in longer experiences, people tend to remember only distinct moments – "duration neglect". Research indicates that

moments occur through at least one of four elements that may include elevation, insight, pride, and/or connection.

Peak moments represent flagship experiences. Some of these may occur naturally through a HIP, like an internship or undergraduate research project. Others could occur through purposeful planning in a class. For example, a presentation by a student to a faculty member might provide a baseline approach. In contrast, a presentation to a panel of industry faculty who provide real-time and appropriate feedback could create a peak moment for a student (Farrow et al., 2022).

TALEs

Until recently, active learning, interactive learning spaces, HIPs, and peak moments have been explored in isolation. Recent research has been more intentional about how these items may combine to form transformative active learning experiences (TALEs) for students (Farrow et al., 2022). Such research suggests that if these approaches to teaching and learning could be linked in a cohesive and intentional fashion, the opportunity for creating outstanding learning experiences for students in a variety of class types exist.

Methods

Using the four research projects completed by the authors, a thematic analysis of all results of those studies was conducted. Thematic analysis carefully examines the data that exist to identify comment themes - topics, ideas, and patterns of meaning that repeat (Caulfield, 2022). First, the authors read through the text of all articles taking notes and refamiliarizing the authors with the previous data. Sections of the text for all four research articles were then highlighted – usually phrases or sentences, and notes were added in the margin of existing research articles to label key content. After completing a review of the text, the data was grouped into codes. This approach allowed a condensed overview of the data.

Once all articles were coded, some codes were found to occur only in a single paper and discarded for the purposes of this thematic study. These codes that occurred infrequently across all studies may have value, but this study focused specifically on code intersections occurring across multiple articles.

The final step in the study was an attempt to develop action items that readers of this study could employ based on the collected data. These action items were broader than the previously developed codes and provided as potential steps to enhance the educational experience. Action items were reviewed to assure a useful and accurate representation of the data that existed from the articles.

Summary of Previous Research

A1 used a mixed-methods approach to consider student perceptions of an active-learning classroom (N = 122). Students found their learning enhanced by the space (68%) and perceived stronger engagement (82%). When methods other than active learning were used in the space, students felt less positive about the space and thought that the space may have impeded learning. For example, when a passive lecture format was employed the space made it easier to carry side conversations with classmates or do non-related activities. Students also

suggested some topics are more appropriate for these type spaces, but perception is likely tied to how the instructor utilized the space.

A2 used a quantitative approach to explore HIPs experienced by graduating Construction Management students (N = 145). A total of 326 HIPs were experienced by 145 graduates (2.2 HIPs per student) with internships, study abroad, and co-ops as the most common experiences. Undergraduate research had noticeably lower participation. Seven of eight HIP elements scored relatively highly which indicates student engagement. Extended effort and engagement was the most identified HIP element. The "presentation" element scored substantially lower than others.

In A3, faculty perceptions and experiences with ILS were obtained using a mixed-methods survey. Several types of ILS were common, including BIM/Visualization labs, team spaces, traditional labs, and Active Learning Classrooms (ALCs). 67% of faculty reported positive experiences with ILS. Technology, layout/design, and organization within the ILS were cited as the biggest challenges for faculty. Faculty commented that ILS do not work for passive lecture format, a congruence with the data collected from the A1 study.

A4 employed focus groups to identify key learning experiences among recent graduates (last 10 years) of construction management programs (N =37). The questions posed solicited feedback regarding college memories that resonated with them as instrumental to their career and life. Real-world experiences that connected student learning with their future careers were the dominant peak experiences. The research found that these can be enhanced if they happen over extended time periods, include meaningful engagement with faculty and peers, exposure to diverse populations, and shared connection with classmates.

Results

The four articles were reviewed for key content with codes and themes developed as shown in Table 1.

Article	Key Content	Codes	Code Intersections
A1	• Learning and engagement enhanced by ILS • Group and collaborative work in ILS enhanced • ILS do not work with lecturing • Distractions can be more significant in ILS • Some classes work better than others in ILS • Use of Technology is Critical	• Space must match purpose of use (design and implementation) • Opportunity to expand interpersonal and communication skills • Passive lecture not best in ILS	• Alignment • Training • Begin with the end in mind • Strong opportunity for construction management education
A2	• Top HIPs included internships, study abroad, and co-ops (2.2 HIPs/student) with later work experiences most valuable	• Value of HIPs not always apparent to students • Opportunity to develop goal outcomes for internships	

	• Limited undergrad research • "Effort over an extended period of time" was dominant HIP element • HIP elements of interaction with faculty/peers and those different than themselves were only dominant in study abroad • Limited presentation of HIPs available for students • Students don't understand value of HIPs	• Interactions with others is opportunity for CM
A3	• Wide variety of ILSs • Resources needed to figure out active learning in traditional spaces • EALS do not work with lecturing • Opportunities for better design and use of tech inside ILSs	• Space must match purpose • Opportunities to enhance design and implementation of room • Training on use of spaces needed
A4	• Most significant moments stem from real-world experiences that connect education to future career • Opportunities to extend over time, have engagement with others, and make connections drive great experiences • Education on value	• Opportunities for real-world connections • Opportunities to curate experiences to produce peak moments

Table 1: Key content, codes, and overall themes from the four articles analyzed

Analysis and Conclusions

Themes from the four articles include alignment, training, beginning with the end in mind, and the strong opportunity for the combination of HIPs, active learning, and peak moments offered in an applied discipline like construction management education.

First, there is a strong need for alignment of experiential learning across administration, facilities, and curriculum. In short, recognition of the value of these experiences appears to be outpacing the implementation of some practices.

Action Item: Examples include an emphasis on high-impact practices for students with training for faculty and IT staff on how to support interactive learning spaces; design of active learning spaces without keen insight on how technology will be used or how sound will impact the room; and the implementation of spaces designed for active learning that are more Socratic in nature.

Instructors need to be made aware of the benefits/impacts that active learning and HIPs can offer and the types of teaching approaches that facilitate those opportunities.

Action Item: Faculty need training in teaching approaches that leverage the different spaces and technology, so their teaching elevates the learning experience rather than detracts from it.

Student alignment also needs to be addressed. Often, students complete HIPs but are not aware of the educational value of the same. Similarly, students are sometimes placed in active learning spaces without understanding how that space is intended to enhance the educational experience of students. Just because a student is placed in a specific environment or experience does not guarantee a positive academic experience.

Action Item: Faculty and advisors need to set appropriate expectations for students to fully realize the value of educational spaces and HIPs.

Students' experiences with HIPs, moments, and event-based active learning tend to be retrospective in nature. If education could be provided on the value of HIPs and moments, students could better plan and be a partner in curating a system where multiple HIPs and/or moments are experienced by students each academic year. And, if faculty engaged, opportunities exist for designing peak moment experiences into existing classes (Farrow et al., 2022).

Action Item: Develop robust curriculum models and academic badges that highlight value of potential HIPs and moments. Provide training to faculty so peak moments can be designed into classrooms that engage active learning.

Professional programs like construction management have an incredible opportunity to engage students in real-world experiences and enhance the learning experience in higher education. The collective data considered in this study provide strong evidence of the perceived value of real-world experiences by both students and industry. Curated classes taught in environments designed for the educational experience one is attempting to create provide an opportunity to significantly enhance the classroom experience.

Additional research is needed to explore the connection between active learning, interactive learning spaces, HIPs, and moments. As noted, much of the existing literature focuses on each of these items in isolation. Few studies have examined how they connect and build on each other in an academic setting. If these connections could be better understood, an opportunity exists to improve the educational experience.

References

Arian, F. M. (2010). Identifying competencies for baccalaureate level construction education: Enhancing employability of young professionals in the construction industry. *Proceedings*. Construction Research Congress, Reston, Virginia.

Astin, A. W. (1993). *What matters in college? Four crucial years revisited*. Jossey-Bass.

Bransford, J. D., Brown, A. L., & Cocking, R. R. (Eds.). (1999). *How people learn: Brain, mind, experience, and school: Expanded edition*. National Academy Press. https://www.desu.edu/sites/flagship/files/document/16/how_people_learn_book.pdf

Carmean, C., & Haefner, J. (2002). Mind over matter: Transforming course management systems into effective learning outcomes. *Educause Review*, *37*(6), 26–34.

Caulfield, J. (2022). *How to Do Thematic Analysis | Step-by-Step Guide & Examples*. https://www.scribbr.com/methodology/thematic-analysis/

Criteria for accrediting applied and natural science programs. (n.d.). Accrediting Board for Engineering and Technology. https://www.abet.org/accreditation/accreditation-criteria/criteria-for-accrediting-applied-science-programs-2017-2018/#GC2

Davies, A., Fidler, D., & Gorbis, M. (2011). *Future work skills 2020* (p. 14). Institute for the Future for the University of Phoenix Research Institute. http://www.iftf.org/uploads/media/SR-1382A_UPRI_future_work_skills_sm.pdf

Document 103B: Standards and criteria for accreditation of bachelor's degree construction education programs. (2018). American Council for Construction Education. https://www.acce-hq.org/images/uploads/Doc_103B_Final_Updated_0727181.pdf

Farrow, C. B., & Wetzel, E. (2020). An Active Learning Classroom in Construction Management Education: Student Perceptions of Engagement and Learning. *International Journal of Construction Education and Research*, 1–19. https://doi.org/10.1080/15578771.2020.1757536

Farrow, C. B., Wetzel, E., & Leathem, T. (2022). *Teaching in the Built Environment: Creating Transformational Active Learning Experiences* (1st Edition). Routledge. https://doi.org/10.1201/9781003106029

Farrow, C. B., & Wetzel, E. M. (2022). Faculty Perceptions of Interactive Learning Spaces within Construction Programs. *Journal of Civil Engineering Education*, *148*(2), 04021017. https://doi.org/10.1061/(ASCE)EI.2643-9115.0000058

Farrow, C. B., Wetzel, E. M., & Leathem, T. (2021). An Initial Investigation of Student Experiences with the Elements of High Impact Educational Practices. *57th Annual Associated Schools of Construction International Conference*, 357–366.

Freeman, S., Eddy, S., McDonough, M., Smith, M., Okoroafor, N., Jordt, H., & Wenderoth, M. (2014). Active Learning Increases Student Performance in Science, Engineering, and Mathematics. *Proceedings of the National Academy of Sciences of the United States of America*, *111*. https://doi.org/10.1073/pnas.1319030111

Heath, C., & Heath, D. (2017). *The power of moments: Why certain experiences have extraordinary impact*. Simon & Shuster.

Johnson, Z., Cascio, C., & Massiah, C. (2014). Explaining Student Interaction and Satisfaction: An Empirical Investigation of Delivery Mode Influence. *Marketing Education Review*, *10*(1), 227–238.

Kuh, G. D. (2008). *High-Impact Educational Practices: What They Are, Who Has Access to Them, and Why They Matter*. Association of American Colleges and Universities. http://www.neasc.org/downloads/aacu_high_impact_2008_final.pdf

Kuh, G. D., & O'Donnell, K. (2013). *Ensuring quality and taking high-impact practices to scale*. Aassociation of Aamericna Colleges and Universities.

Park, E. L., & Choi, B. K. (2014). Transformation of classroom spaces: Traditional versus active learning classroom in colleges. *Higher Education*, *68*, 749–771.

Vigotsky, L. (1971). *Mind and Society*. Harvard University Press.

Wiezel, A., & Badger, W. (2015, April). Project Managers Competencies Needed in 2022 and Beyond. *51st ASC Annual International Conference Proceedings*. Associated Schools of Construction Annual Conference, College Station, Texas.

Refugees and Disaster Frameworks – Ukraine's Education in Time of Crisis

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

The number of refugees globally is at an all-time high and it is predicted to continue to rise in the years ahead. Host countries of these refugees are put under pressure as they must stretch the limited resources to accommodate them. The Ukraine war with Russia has caused around 10 million Ukrainians to flee their homes to find safety in neighbouring countries such as Poland. This has consequently disrupted the education of millions as learning institutions have been demolished. The call for continuing education amid crisis resonates with the disaster framework; Inter-agency Network for Education in Emergencies (INEE Framework). The goal of the framework is to make provisions for education during emergencies. The Sustainable Development Goal 4 (SDG 4) which stipulates inclusive and equitable quality education and promotes lifelong learning opportunities for all is hugely violated during crisis as happening now in Ukraine – children are out of school because of the war. The INEE Framework brings a lifeline to educators and learners as they seek to provide access to safe and relevant learning opportunities as well as to ensure the quality of educational preparedness, response, and rehabilitation. This literature also looks at the integration of refugee educators and learners into their host country's educational system, the preparedness of host communities and the enhancement of policies by ensuring a functioning multisectoral path to assist the most vulnerable groups as well as individuals with special needs.

Keywords: Refugee, Education, Conflict, Disaster Framework, Ukraine

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Introduction

The international dispute between Russia and Ukraine, a county that used to be a member of the former Soviet Union Republic, has been going on for quite some time now until the recent escalation of matters in early 2021. Russia's invasion of Crimea in 2014 as they argued to have a historic claim to it, has caused Ukraine to live in trepidation and fear of a ticking bomb yet to explode – war with Russia. The two countries have been on bad terms with each other for a prolonged period, with Russia tending to recapture the now sovereign state of Ukraine, with a claim of it being part of its territory and also fiercely acting against Ukraine's burgeoning links to the West.

With an ever-growing tension between these two countries, Russia finally invaded Ukraine on the 24th of February 2022 which has consequently caused Europe's largest refugee crisis since World War II. This invasion has also caused more than 8 million Ukrainians to migrate to other countries and has accounted for a third of the population displaced (Onciu, 2022). The clash has resulted in many deaths, the bombing of buildings and other properties, the hindering of normal living conditions and others have made Ukraine untenable for many to live in and therefore had to flee. The ongoing war has adversely disrupted the educational system in Ukraine as schools have been damaged and more than half of school-going children have fled their homes to seek refuge in surrounding countries. There were no efforts and thoughts to resume traditional classes in Ukraine as schools building have been converted into shelters for displaced victims and some school sites have now become makeshift graveyards as the conflict intensifies.

Ukraine's Education Pre-Invasion

The Ukrainian educational system is divided into five stages: preschool, primary, secondary, upper secondary, and postgraduate education. The country's educational system, just like many of the post-Soviet countries, has been defined by over 70 years rule of by the Soviets. In an effort to strengthen the educational system after the collapse of the Soviet rule, Ukraine embarked on many reforms such as the introduction of private education. As a country that declared its independence in August 1991 after the dissolution of the Society Union, it is seriously severed by the prolonged and continuing conflict between its leaders and pro-Russian separatists. Based on that, its educational sector development was badly affected.

Even before the invasion, the Ukrainian educational system struggled in the midst of political instability and a high rate of malfeasance to manage societal relations and create quality public institutions. The Ukrainian educational system possesses a long tradition, but its standing in terms of prestige and prominence has been dented recently by heightened quality issues. The causes of these situations are but not limited to the ramifications of the former Soviet rule and the swift social transformation that occurred when the communist society disintegrated. Filiatreau, S. (2011), an international educator illustrated the situation as "Ukraine's economic crisis of the 1990s that led to a decline in the financing of education, including research and development…. [It] has had a tremendous negative impact on the educational system of Ukraine leading to the mass immigration of educated people … and the marketization of higher education. These factors, combined with the increasing levels of corruption in Ukrainian society, Soviet-style higher education, and lack of transparency mechanisms in Ukrainian higher education at all levels, have led to skyrocketing corruption in higher education, [and] declining quality …." Although Ukraine joined the Bologna

Process in 2005 with the anticipation of building the capacity of its educational system, the political climate and instability have unfulfilled that objective.

Ukraine's Education After the Invasion

The conflict in Ukraine has had a wide-ranging impact on the educational system. As the unfolding hostile circumstances rupture the social institutions of the country, the educational sector has not been left out as it has been one of the major casualties. More than 74 million children drop out of school or have their education interrupted each year because of disputes and emergency situations. With the invasion of Ukraine by Russia, about 7.5 million school-going children have abruptly experience disruptions in their education. About 22 educational institutions a day have been destroyed as the war progresses (Confronting Ukraine's education crisis, 2022). Parents, educators, and school governing bodies are struggling to offer classes for school-going children who are still in the country, as well as for those who have left to seek refuge in other countries. Teachers, who are facilitators in the learning process have also had their activities hugely disrupted. Over 25,000 educators (6% of the total educators in Ukraine) have fled to neighbouring countries as a result of the war (Ukraine: Education - Impact of the War in Ukraine May 2022).

Wars like the one between Ukraine and Russia can take a very long time before peaceful resolutions are attained. However, education cannot be on hold until the days of accordance and peaceful pact. This has therefore shifted the educational paradigm in Ukraine by resorting to online education in order to promote lifelong and inclusive education as the Sustainable Development Goal 4 (SDG 4) has stipulated. This alternative form of teaching and learning comes with many challenges, especially as many of these children may not have access to the internet and to some, the technical know-how will be a bottleneck if they must join online classes. However, per the situation at hand, this will be the best alternative if the children have to continue their education. Also, refugee students that fled to other neighbouring countries like Poland, Romania, Hungary, and others, will definitely face the issue of integrating into the culture and educational system of that country.

Approach to the Challenge | Research Questions

As an educator and a social worker, the issues pertaining to refugees and lifelong learning are crucial and very important to me. I have the greatest desire to understand educational systems, people's living circumstances, and to help ameliorate situations using education as a tool.

First, I read through many refugee and disaster frameworks that will go along with the challenge – Ukraine's education in the time of crisis. I also had it at the back of my mind, the concept; formula of disaster risk = national or national hazards x vulnerability, divided by the capacity of a societal system to deal with it. I cogitated a disaster risk reduction strategy; The Preparedness Package for Refugee Emergencies (PPRE), which embarks on emergency risk analysis, advance preparedness actions and works with host countries for a smooth integration of refugees.

The call for continuing education in the midst of crisis goes in sync with the INEE's Framework. The goal of the framework is to make provisions for education during emergencies. I examined and read through many scholarly articles and web pages to get abreast with the current situation in Ukraine. I also furthered my enquiry into the root cause

and reason why the Ukraine war is happening. The findings shaped my understanding of the general overview of the case.

In my quest to find out more about the relief measures put in place to help refugees continue their education, I thought about how many of these children are able to access education in their host countries. How is the initial education response by host countries to the refugee children? Are the host countries prepared and receptive enough to receive these refugees? Are there going to be attitudes against the refugees? All in all, it is assumed that a positive response by European host countries will bring enhanced refugee education policies and boost more innovative practices.

The Preparedness Package for Refugee Emergencies (PPRE)

One of the outcomes of wars is the inevitable creation of refugees. Most often than not, they flee to other neighbouring countries to seek refuge and proper living conditions. Managing these displaced people in an emergency requires a strategic plan and that is where PPRE features. When things are not managed properly, it will deeply affect the socio-economic structure of the host countries. In narrowing it down to Ukraine, the fierce battle that is ongoing has led to many people leaving Ukraine as refugees. "Many of these people are educators and students whose dreams of climbing the academic ladder have been cut short" (UNCHR Operational Data Portal, Ukraine Refugee Situation, 2022). The goal of the PPRE is to set the pace, analyse risks, and put into place relief measures to be taken in a period of emergency. It works through three (3) pillars namely: analysis, partnership, and capacity development. It calls for solidarity and global support from governments, non-governmental organisations (NGOs) and other humanitarian acting bodies (UNHCR Emergency Handbook, 2021). In the same vein, the United Nations Office for Disaster Risk Reduction has enacted Word into Action guidelines to provide plans for host community authorities to thread in order to successfully integrate the displaced into national and regional areas. This is very crucial as those fleeing for refuge face significant risks coupled with an increased humanitarian need (UNDRR words Action Guidelines, 2022). With the situation in Ukraine, the inter-agency Regional Refugee Response Plan (RRP) tend to support likely host countries such as Poland, The Republic of Moldova, Hungary, and Slovakia. It is done in conjunction with government authorities, UN agencies, local stakeholders, civil societies, and NGOs to unleash detailed responses and activities to support hosting communities. This will go all the way to help teachers and students to properly integrate into their new environment as there will be available resources including but not limited to counselling services, flexible curriculum implementation, shelter, and food (Ukraine Situation, 2022). For the PPRE's Block of Preparedness, refer to the appendix.

Inter-agency Network for Education in Emergencies (INEE Framework) in Ukraine's Crisis

According to UNESCO, (2022), "every humanitarian crisis is also an education crisis. Beyond learning, education offers a protective environment that is even more relevant to crisis-affected populations, particularly children". This quote is in sync with the INEE Framework which has the objective of making provisions for education during emergencies through stakeholders. The framework leans on quality education, response and rehabilitation and ensures a safe environment for learning. Like all human beings, refugees whose education has been disrupted should have the right to education no matter the circumstances and no matter where they eventually find themselves. They must enjoy the same rights as

other people. Refugees drop out of school and may lose the chance to continue their education which would consequently affect their future aspirations. That is why this framework and Sustainable Development Goal 4 (SDG 4) call for an immense effort to make learning and education accessible to these refugees. To ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, many functional actors and NGOs such as Osvitoria are continually developing and restoring education and providing quality education to all in the midst of the crisis.

Impacts/Conclusion

The refugees and disaster framework INEE is a benchmark that provides education even in emergency periods. It has made education available to those who otherwise would not have had it due to hostile conditions. As education is being provided during emergency situations, host nations that make some of these milestones possible should not be left in need of resources. This is where the PPRE, with the help of other agencies, has assisted hosted nations to make provisions for refugees in terms of education and other humanitarian and basic needs. SDG 4 calls for quality and inclusive education. It reminds us that education is a right and must be enjoyed by all irrespective of circumstances such as the Ukraine-Russian War. It is imperative for policymakers to consider proactive measures to tackle current and future conflicts and refugee crises. There could be the development of international and regional exchange programmes for learners and teachers alike to learn more about the educational systems surrounding them. That way, in emergency cases, the assimilation of such an educational system in another country would be easily comprehended by the vulnerable refugees.

Acknowledgements

Appendix

PPRE Building Blocks of Preparedness

References

Confronting Ukraine's education crisis. (2022, April 8). Cambridge University Press & Assessment. https://www.cambridge.org/partnership/research/Confronting-Ukraine%E2%80%99s-education-crisis.

Filiatreau, S. (2011). Ukraine's participation in the Bologna Process: has it resulted in more transparency in Ukrainian higher education institutions? *International Research & Review: Journal of the Phi Beta Delta H*, 1(1), 1–47.

Onciu, A. (2022, March 3). *Ukrainian exodus could be Europeâns biggest refugee crisis since World War II*. EL PAÃIS English Edition. https://english.elpais.com/international/2022-03-03/ukrainian-exodus-could-be-europes-biggest-refugee-crisis-since-world-war-ii.html.

Situation Ukraine Refugee Situation. (2022). Https://Data.Unhcr.Org/En/Situations/Ukraine/Location?Secret=unhcrrestricted.%20.

Ukraine Situation. (2022). *Regional Refugee Response Plan Summary and Inter-Agency Funding Requirements* https://data.unhcr.org/en/documents/download/91114

Ukraine: Education - Impact of the War in Ukraine. (2022) [EN] | HumanitarianResponse. Https://Www.Humanitarianresponse.Info/En/Operations/Ukraine/Document/Ukraine-Education-Impact-War-Ukraine-May-2022-En.

UNDRR|words Action Guidelines. (2022). https://www.undrr.org/publication/words-action-guidelines-disaster-displacement

UNESCO. (20220*). Mapping host countries' education responses to the influx of Ukrainian students*. https://www.unesco.org/en/articles/mapping-host-countries-education-responses-influx-ukrainian-students

UNHCR|Emergency Handbook. (2021). Https://Emergency.Unhcr.Org/Entry/34912/Preparedness-Package-for-Refugee-Emergencies-Ppre.

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Use of Simulations in Teaching U.S. History for Motivating in Online and Blended Learners

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

Facing unmotivated and inattentive students, teachers turn to new methods to engage classes, such as video lessons and interactive content. A literature review of this nature benefits educators in providing a counterpoint of the disadvantages and best practices of simulations for classroom success. Simulations, including role-playing scenarios, video games, map exploration activities, and mock trials, actively involve students in either live or game-based learning, which improves test performance, interest, and openness to new learning experiences. Participation in active simulations improves critical-thinking and problem-solving skills. Utilizing best practices of purpose, active involvement, formative (not summative) assessment, affinity spaces, learning characteristics, failure as an option, emotion, and situated learning establishes an environment which promotes students' long-term comprehension and success. The power of simulation lies in its demand for active learning, whereas passively reading a textbook or completing answers on a worksheet of contrived questions which are not those of the student negatively impacts the inspiration (breathing in) of knowledge. Fueled by a better understanding of the available research, engagement is possible.

Keywords: Motivation, Simulation, Interactive, Role-Playing, Games, Trials

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Introduction

Educators employ many strategies to engage students in learning history, from fast-talking, popular video hosts like John Green and *Crash Course* to the "flipped classroom" model (Tucker, 2012). History teachers will go to great lengths to motivate students and step beyond the classroom lecture and dreaded worksheets. However, even flipping the classroom and assigning a *Crash Course* video through EdPuzzle, which requires student responses to keep attention in the at-home setting and convey analytics to the teacher, does not improve the pedagogy; it just offers a better mousetrap.

If the key to motivation is attention and the key to attention is activity while learning, then a hands-on, participatory learning experience is the solution. Simulations offer active learning in multiple ways, as described by David Ghere (2001, as cited in Gradwell & DiCamillo, 2013). Ghere characterizes simulations in four types: role-playing, game, map, and trial (as cited in Gradwell & DiCamillo, 2013).

Role-playing activities involve students assuming roles in an historical situation, usually facing a critical problem of this period, and working to find a solution or witness consequences unfold. Role-playing can involve scripting, research, collaborative groups, costuming, speeches, debates, and reflections. Whether they represent the "starving times" after the Mayflower landed just before winter, the Salem witch trials, the decision to declare war on Great Britain, or the passage of the Constitution, role-playing can bring historical individuals to life and create a situation of empathy for their plight.

Immersive games also provide learners with a virtual environment that simulates historical locations, with programmed characters who present an authentic panoply of participants in the setting with historically-accurate language, vocabulary, and costuming without the involved preparation. In a 2015 Pew Research study, 72% of teens played video games, though the rate was 84% for boys and 59% for girls (para. 9). Other demographic analyses did not demonstrate statistically-significant differences, as did the gender factor. Any task which engages 72% of the students is a method to be considered by educators, especially one particularly effective with boys. An American Psychological Association website article detailed a study of global data from 1914 to 2014 representing 30 countries and over a million students which demonstrated that girls' academic achievement was higher than boys' and that the difference increased, peaking by the end of middle school, but that the trend moved in the other direction in the years representing high school and college (Voyer & Voyer, 2014). Some games can be individual, online experiences, like *MissionUS* (www.mission-us.org). Others may be collaborative games, such as *Kahoot!* (www.kahoot.com). Even physical game simulations, either prepared or student-created options, can provide methods of active learning.

Ghere's (2001) third example of simulation was maps, which can be either physical, like in the game *Risk*, or digital, displaying territory, exploring it, or engaging in conquest, as in games like Microsoft's *Age of Empires*. These function through a series of unique situations, depending upon one's own decisions and those of other players or computer "players." With the same opening choices, a user's experience can be different.

Ghere's fourth type of simulation is listed as a trial (2001). While actually a type of role-playing, the trial has a unique nature and style of participation. Trial simulations can be based on actual legal proceedings in history, such as 1803's Marbury vs. Madison, establishing the

precedent of judicial review, or 1954's Brown vs. the Board of Education of Topeka, Kansas, or 1966's Miranda vs. Arizona, reshaping the process of police arrests. Numerous courtroom simulations are available for educators at *USCourts.gov*. Learning from trials can also be based on organic topic material to address current events, understand the components of a court proceeding, or even learn about perspectives, analysis, interviews, listening skills, or persuasive argument preparation. Regardless of the type, simulations are the embodiment of active learning.

Advantages of Simulations

MissionUS is an interactive, immersive simulation game focused on key periods in U.S. history. The current offerings include five missions. In each experience, learners are introduced through a prologue, before engaging in five interactive episodes of the story, which take 15-20 minutes each to complete. Additional content is provided on the website for educators to use as classroom supplements to enhance the experience and incorporate it into the appropriate unit in American History. Receiving top rankings from organizations like Common Sense Media, accolades from historians, users, and teachers, and five out of five stars for quality and user-friendliness, MissionUS offers educators lessons with technical support for blended learning.

The Education Development Center conducted three studies of *MissionUS* simulations to assess the value of programs and impacts on students. In 2009, EDC surveyed 20 classrooms, involving 387 students in four states, which had played "For Crown or Colony?*"* Teachers reported *MissionUS* was engaging, supported struggling students, offered a more human picture of history, led to active discussions, and made them feel ambitious as educators (EDC, 2009). The teacher's guide was rated "excellent" (EDC, 2009). A strong majority of teachers would use the program again in the future (EDC, 2009). For students, 73% said they were interested in playing another *MissionUS* simulation (EDC, 2009). Learners were more interested in history taught with *MissionUS* than traditional methods, and it reduced boredom considerably (EDC, 2009). Most students enjoyed the simulation not because it was a game, but because it helped them learn history without depending upon reading, lectures, and tests, as well as the fact that the characters were interesting (EDC, 2009). At home, users stated they had shared the game with friends, siblings, and parents (EDC, 2009). Twenty-five percent played the game at home with parents, friends, and siblings (EDC, 2009). Students talked about the game with friends (51%), with parents (38%), and with siblings (20%) outside of school (EDC, 2009). Primarily, students improved their understanding of class content material after being exposed to *MissionUS.*

A second study applied more rigorous data collection methods and expanded the subject pool, still using the same software (EDC, 2011). Students scored significantly higher and improved more in the categories of "seeing multiple points of view on the past" and "analyzing cause and effect" (EDC, 2011, p.1). Another group performed better than peers regarding the analysis of historical images, which researchers suggested demonstrated a potential for this type of learning to increase close reading and writing skills (EDC, 2009, p. 2). Teachers surveyed indicated students "learned more history and were more engaged with the content" (EDC, 2011, p. 2). When asked if students developed a greater understanding of historical perspectives than peers, 95% of teachers agreed (EDC, 2011, p. 2). Furthermore, 93% reported better student performance with vocabulary, and 90% stated students were "deeply engaged in classroom activities and discussions" (EDC, 2011, p. 2). During observation and survey responses, researchers determined the game substituted for "textbook reading,

traditional board lectures, and writing in response to short-answer questions" (EDC, 2011, p. 1).

A third study addressed: 1) feasibility - "How effectively are teachers able to integrate the online and tablet versions of the game into their normal instruction?"; and 2) learning outcomes - "Do students who use the online or tablet game perform better on an assessment of Depression-related history knowledge than students who study the topic using typical materials and methods?" (EDC, 2006, p. 1). The study of 146 students in six classrooms with three teachers in New York public and parochial schools established within-teacher control groups at each school in which the curriculum presentation was the same for each class, with the exception that the treatment groups used either iPads or school computers to access the simulation (EDC, 2016, p. 1). Researchers tested students using the same fourteen-question assessment both before and after the unit (EDC, 2016, p. 2). The treatment group scored 8.7% higher than the control group on a comparison of the pretest versus the posttest (EDC, 2016, Table 1). Treatment students performed better on twelve of fourteen questions, with one question showing 41.3% higher scores and another at 35.8% higher (EDC, 2016, Table 3). Teachers stated the simulation was easy to implement and provided a strong curricular fit and that learning increased at statistically-significant levels (EDC, 2016, p. 1).

According to Cavanaugh (1975, as cited in Corbeil and Laveault, 2011), "the simulation game takes the student beyond any determinist approaches and allows him or her to understand the uncertainties of the past" (p. 463). When students recognize the path ahead was uncertain at the time of major events in history, they gain the historical understanding that decisions by leaders made the history that today's students know. Therefore, they begin to recognize the importance of their own decisions and their impact on the future. For example, students who are called to participate in the *American Revolution: Experiences of Rebellion*, a unit in the CHOICES series produced by the Watson Institute of International Public Affairs at Brown University, engage in a role-playing scenario in which three groups present "options" to concerned citizens. At the close of the discussion, when a vote of the citizens is taken, there is no guarantee that they will follow the path of history. In several situations experienced by the author, students chose the safe alternative of remaining loyal British subjects because war against the biggest superpower in the world at the time was too risky. This supports the point that "the simulation game introduces other versions and shadings usually underrepresented in historical studies, like the loser's point of view" (Cavanaugh, 1975, as cited in Corbeil and Laveault, 2011, p. 463). In the presentation of persuasive arguments, students consult primary source documents to build their cases, further supporting Cavanaugh's principle that "the simulation game encourages self-thinking and the study of historical processes as well as data" (1975, as cited in Corbeil and Laveault, 2011, p. 464).

Corbeil and Laveault presented an experimental study of a simulation, with controls on three variables in the design: participant, activity, and material (2011). Simulation groups performed as well as their counterparts in lecture groups, though the majority were motivated to take another course in the future (64%), compared to a minority of the control group participants (Corbeil and Laveault, 2011, p. 469). Increasing student motivation for the topic material is a positive outcome of simulations. As the research was conducted on college students with an expectation of formal methods of coursework, the researchers theorized the method would present more significant results with younger learners, particularly those in a Piagetian preformal stage of cognition (Corbeil and Laveault, 2011, p. 473).

Since 2009, when retired Supreme Court Justice Sandra Day O'Connor founded *iCivics,* it has offered civics games, curriculum material, and document analysis activities. Baylor University researchers conducted a study analyzing the impact of *iCivics* games on 253 students in grades 4, 5, 6, 8, and 12 (LeCompte, Moore, & Blevins, 2011). The *iCivics* platform was selected because it was designed to align with state and national curriculum standards (LeCompte et al., p. 59). Students played "Executive Command" at the outset of the study, but were not required to use it exclusively (LeCompte et al., 2011, p. 61). First, participants were given a Scantron-based pretest on civics-related content material. Next, students were introduced to *iCivics* and the "Executive Command" game and required to use the platform for thirty minutes, twice a week for six weeks (LeCompte et al., 2011, p. 60). At the end of the six-week time period, students received the same test in the same manner as the pretest (LeCompte et al., 2011, p. 61). Students represented different demographics, ethnicities, races, and a balance of gender, but, when analyzed, none of these factors yielded statistically-significant variations in data (LeCompte et al., 2011, p. 65). Each grade level demonstrated increased scores from pre- to post-test, with the exception of 12th grade, which included a slight, though not significant, drop (LeCompte et al., 2011, Figure 3). Fourth grade participants showed the most dramatic increase at 9.53 on the 30-point test (LeCompte et al., 2011, Table 3). During this interval, students received no other civics instruction aside from the game. Therefore, researchers attributed the increased scores to use of the *iCivics* game platform, suggesting that the impact on 12th graders was reduced because the content is designed for grades 6 to 8 (LeCompte et al., 2011, p. 66). A control which did not play the game would be advised.

Disadvantages of Simulations

Discouraging

Drake and other critics of simulations suggest they can discourage interest in history by making it seem fictional through playing roles (as cited in Gradwell & DiCamillo, 2013). Gradwell and DiCamillo's subject demonstrates that students are motivated to participate in history and, therefore, to learn it, gaining personal insight through their experiences (2013).

Oversimplifying

According to the Anti-Defamation League, simulations present an oversimplified view of an historical situation by creating convenient storylines and offering surface-level understandings without depth (as cited in Gradwell & DiCamillo, 2013). In interview responses, Gradwell and DiCamillo (2013) presented that a survey course of history oversimplifies everything, but simulation allows teachers to magnify key points for greater depth than they would otherwise be allowed. The teacher attempted to "allow them to understand what actually happened at Ellis Island, and the larger issue there is to show the problems immigrants faced" (Gradwell & DiCamillo, 2013, p. 48).

Overemphasizing Past Struggles

Drake (as cited in Gradwell & DiCamillo, 2013, p. 49) suggests when an historical group is cast in a simulation based on struggles, participants do not understand their achievements, but focus on hardship and injustice. Barton and Levstik encourage teachers to "deemphasize heroes in history and to emphasize individuals' heroic actions" (as cited in Gradwell &

DiCamillo, 2013, p. 49) because students are offered a guide to opportunities for such actions for themselves, in real situations.

Impractical

According to DiCamillo and Gradwell (2013), some critics of simulations label them impractical when facing state or national testing and that the time needed does not balance the value of the learning experience. Jim Kramer, one of the teachers interviewed by the authors, indicated his classes had ample time for appropriate preparation and that integrating simulations led to improvement in state testing performance (DiCamillo & Gradwell, 2013, p. 157).

Not Taking it Seriously

Particularly in middle school, serious topics are not always taken seriously. This causes concern for in-class simulations (DiCamillo & Gradwell, 2013, p. 157). In any participatory performance, a 'reasonable suspension of disbelief' is required to advance the scenario. In such simulations, there is always a risk of someone who opts to mock the process, fail to participate, or protest. Petulance among teenagers is common. However, upon reflection, a skeptic should realize that the same petulant teens are likely to act in their own best interest. Since the primary alternative to a role-playing simulation or online game is textbook reading and in-class lecture, it is more likely that playing a part is preferable to dry reading and lecture.

Not for All Learners

Some cautious educators express concern about the applications of simulation lessons for a diverse student population. Bender and Kramer conducted their simulation for a population that included 25% special education students, where 27% of all students qualify for free and reduced-cost lunches. Other simulations have specifically addressed ethnic and racial diversity, with learning outcomes, which did not statistically differ from these groups (DiCamillo & Gradwell, 2013, p. 158).

Arduous to Create

Some educators question whether simulations are worth the effort to create. Crafting a detailed simulation can be difficult and time-consuming. A strategy for managing the load would be starting small and adding enhancements later, incrementally improving the module. *MissionUS*, *BeWashington*, or *iCivics* are existing simulation games which require nothing but creating a login to participate. Most schools have at least a computer lab for classes to use by arrangement. While simulations involve some special classroom logistics, they are manageable and have the value of eliciting learning gains which justify the extra time and effort involved in implementation.

Best Practices

Purpose

In the end, advantages outweigh disadvantages. However, a primer for optimal success in teaching history through simulation is a 2011 study by Gradwell and DiCamillo. Their

subject articulated the importance of purpose with his goal "to encourage students to learn about the past and inform the future" (Gradwell and DiCamillo, 2011, p. 44). These simulations got students 'hooked' on history and engaged in "learning to think critically and historically" (Gradwell and DiCamillo, 2011, p. 44) in the hope that they would become good citizens from their learning. With these goals, simulations were only one method which was logical, reasonable, engaging, and thought-provoking. By playing that role, either live or by assuming the avatar of a video game character, students walked the path of citizenship. By participating in the storyline, they became 'hooked' by the active learning. Students also needed to be effective critical thinkers, which cannot arise from a worksheet. While a lecture from the right presenter might include a hook to promote continued interest, such a response is not true for all participants or for the entire length of time the lecture is presented.

In 2010, the Association for Middle Level Education produced a statement of core beliefs, in which three of their six principles are supported by simulations for teaching because they: 1) equip students to be "a contributing citizen"; 2) elicit statistically-significant learning improvements; and 3) are "challenging, integrative, and exploratory" (AMLE, 2010).

All ten Common Core State Standards (CCSS) for English Language Arts strands which pertain to History can be achieved through a simulation by: 1) citing textual evidence; 2) determining central ideas; 3) following and explaining steps in processes; 4) utilizing vocabulary terms; 5) organizing research material and persuading an audience; 6) recognizing an author's viewpoint and purpose; 7) using maps, flags, and other visual materials; 8) distinguishing between fact and opinion; 9) analyzing primary and secondary source material; and 10) comprehending at advanced levels beyond their standards. Products are ideal for older learners who use these activities in 10th grade for U.S. History survey courses or Advanced Placement U.S. History. Bearing in mind that if one activity can satisfy all CCSS strands for the middle grades, they become an integrative solution.

Formative, not Summative

The optimal role for simulations in the social studies classroom is as a formative activity. Because the simulation is experience-based, it provides a method for building understanding and making connections, which inform the learning process. While some educators might be tempted to view a larger activity or project as a summative assessment, the simulation itself is truly a demonstration of learning formation. Related activities, like a diary entry of the simulation experience, the development of another alternative, or a content test of the subject matter, could easily be summative assessments, but not the simulation itself. Debriefing is a critical aspect of live simulations (Ghere, 2001, p. 22) to avoid the illusion of playtime or fiction and to secure the learning lessons with students.

Active Involvement

One of the keys to the success experienced with simulations for learning is the active involvement of students. Whether they are physically moving within a simulated environment, engaging in a dialogue with unique role-playing circumstances, or directing their computer-based character through locations and experiences in the digital world, these are active, hands-on engagements. When the alternative is passive learning, the decision is clear. Deeper engagement from 90% of participants was reported with regard to *MissionUS:* "For Crown or Colony?" (EDC, 2011, p. 2). Shiloah and Shoham detailed a learning simulation that actively involved students in analyzing the situation of the Franco-Prussian

War by participating in Bismarck's decision-making process. They learned that there was more than one answer, worked together to find solutions, and demonstrated creativity and imagination, none of which would occur through reading or lecture (2002).

Affinity Spaces

Affinity spaces are defined as "loosely organized social and cultural settings in which the work of teaching tends to be shared by many people, in many locations, who are connected by a shared interest or passion" (Gee, 2007). Gaming in 2018 is not the same experience as gaming in 1978, when Atari and Pong were 'the rage.' Now, gamers have sophisticated keyboards for special features, headsets with extended microphones for talking to players on the other side of the world, and sometimes virtual reality headsets to become totally immersed. High-end video cards make the gaming experience emulate a movie theater screen. In this three-dimensional world, the gamer connects with others who share common interests. Learners can also share experiences in class, both through the class environment and effective use of games. Modern games transport learners to other realities, which makes the potential for learning history possible. In a classroom simulation, it is not possible to effectively display a battle at sea, but this is not challenging for a video game. Students in Nebraska can be instantly transported to Lexington and Concord for the start of the Revolutionary War.

People who share experiences with one another establish a bonded relationship. The bonds may be weak, especially if they are broken every 45 minutes to dash to another classroom, or they may be strong, like those described in the Helsinki Syndrome, in which kidnap victims identified with captors after establishing dependence under significant stress, creating a 'pressure cooker' which bonded unlikely individuals. The bonds of affinity spaces are based on a shared interest over an extended period. Once bonded, the collective functions as a social network, and base of knowledge and information. Not every classroom can be an affinity space, and not every affinity space can be a learning community.

Learning Characteristics

For activities to effectively deliver learning, each of the following characteristics must apply: 1) structure, with specific goals; 2) interpreting content and practicing critical thinking; 3) presenting immediate feedback; 4) opportunities for applying prior knowledge; and 5) learning from the experiences of others through social interaction (Gee, 2018, p. 21). Simulations provide coverage of all those learning characteristics. Simulations are structured environments embedded with specific goals. Students engage and interpret experiences, practicing many problem-solving skills in the process. Simulations provide immediate feedback like the real-world consequences for the situation. In a CHOICES simulation, prior knowledge becomes a key to success in the next iteration (Watson Institute for International Relations, 2016). When engaged in collaborative role-playing experiences, students learn from the activities of their peers. In digital games, participants learn from other active players and from non-playing characters embedded in the game to prompt users through the learning pathways. Therefore, simulations address all five of Gee's characteristics for learning.

Failure as an Option

Students who expect success as a routine face no challenge to motivate them to continue or to improve. The activity which serves best to build fortitude and motivation in students is the

experience of failure. Of course, this does not mean that a student should flunk a class to appreciate the experience, but he/she should face the possibility of experiencing setbacks and possibly losing. Games get children's attention because of the challenge that they face and the risk of failure. When students engage in a debate, one person or team will inevitably lose, but they want to try again with a different strategy. In the *MissionUS* module "Flight to Freedom," in which participants play a fourteen-year-old enslaved girl who strategizes to escape the plantation. However, several of the possible outcomes result in death or return to the plantation and punishment. While none of these are displayed, the failure is clear to students. Yet, they restart, learn from their mistakes, and make another attempt to reach freedom. Students playing *iCivics* "Executive Command" assume the role of a newly-elected President with a ticking timer moving toward the next election in four years. The actions that participants take in the game -- enforcing laws, meeting with foreign leaders, speaking to Congress, responding to citizen requests -- determine whether he/she will be re-elected for a second term, with no guarantees. Being voted out of office teaches students to manage the tasks of the Executive Branch well and make effective decisions.

While the game environment establishes situations of success and failure, school operates differently. Failure in a game is the loss of time or experience points, but failure in school can impact one's academic record and limit future options. "Competition in video games is seen by gamers as social" (Gee, 2008, p. 34). Games in school can be used in a way that becomes social learning, through leaderboards. Publishing the best is one thing; grading students on the game is different. For example, students may engage in the *iCivics* "Executive Command" game, but achieve their 'homework points' by completing it once and learning about the executive branch of government. However, they may continue to play to achieve a higher score, if they know that the leaderboard will be posted for the class, just because they want to be recognized socially for their skills, even if their class points will not change from the extra effort.

Emotion

Like vehicle accidents, emotional situations are embedded in our memories deeper than vocabulary words for a spelling test. "Memories are contextual. School activities that draw out emotions—simulations, role playing, and cooperative projects, for example—may provide important contextual memory prompts that will help students recall the information during closely related events in the real world" (Sylwester, 1994, para. 40). The more involved students are in role-playing simulations internalizing the biography of a 'concerned citizen,' the more students will remember the plight of Sarah Walker, the western Connecticut mother whose husband is called for the militia, leaving her alone to manage the farm with four young children (Watson Institute for International Relations, 2016). Contextual memories promote easy recall on unit tests or on APUSH tests which may be years away.

Live, role-playing simulations are not the only emotionally-charged school events. "Video games...are good at attaching emotions to problem-solving" (Gee, 2008, p. 35), such as timed situations, or when avoiding capture, or danger is nearby. Therefore, emotional experiences in games, like the situation previously described from *MissionUS* "Flight to Freedom," cause information to be deeply embedded in the student's memory. "Emotions can help us to both focus our attention ... and retrieve information from long-term memory" (Gee, 2008, p. 35). In the event of a stressful situation, like a high-stakes testing environment, these memories can be unlocked for using the information in response to question prompts.

Situated Meanings

Just as emotions can provide contextual settings for information, vocabulary terms are learned better through context and general connectedness with other material. Memorizing terms like militia, triangular trade, and mercantilism from a list using flash cards does little to embed them in long-term memory, but, when present in a simulation setting or game, used conversationally, they become part of a student's personal repertoire. "Situated meanings" like "dialogue, image, experience, and action are crucial if people are to…be able to relate words to actual experiences, actions, functions, and problem-solving" (Gee, 2008, p. 36). In short, students are less likely to remember the term *militia* and the definition "citizen soldier" than to remember the image of a patriot in ordinary clothing reaching for his hunting rifle over the fireplace mantle and grabbing his ammunition, hat, and coat in response to a call from outside that "the British are coming!"

Conclusion

Given the challenges faced by classroom teachers to provide motivating experiences to students, simulations provide an effective method for countering text-heavy courses and the likelihood of lectures. With evidence that the best tactics for motivating students are those involving active learning, simulations present an excellent option. Some historical settings may be challenging to recreate. Therefore, a video game-based simulation provides opportunities for classroom learning.

Numerous studies have demonstrated the statistical advantages of using simulations for learning, as presented through interviews of experienced teachers, survey results, and experiments with both control and treatment groups. Yields included increases on post-tests scores over pretests, strong improvements in specific problem-solving and critical-thinking tasks, interest in continuing and sharing the activity outside of class with others, interest in participating in future similar activities, and more interest in the subject matter.

A series of suggested disadvantages were proposed and answered. While others may be presented, these should be weighed against positive outcomes regarding content knowledge, problem-solving, critical thinking, empathic understanding, awareness of multiple perspectives, increased participation, and general curiosity as learners.

This exploration included the presentation of 'best practices' like establishing a *purpose*, emphasizing *active involvement*, using simulations as *formative* (not summative) assessments, fostering classroom *affinity spaces*, giving attention to *learning characteristics*, including *failure* as an option, embedding knowledge in long-term memory through *emotion*, and capitalizing upon *situated meanings* for deeper learning of contextual material. Succinctly, when teachers begin with a purpose and involve students in formative assessments in familiar surroundings which exemplify learning qualities, but involve reasonable risks, emotional experiences, and impactful situations, students are predisposed to learn the content effectively.

References

Association for Middle School Education. (2010). This we believe. *AMLE.org*.
    http://www.amle.org/portals/0/pdf/twb/TWB_Flyer.pdf

Bradbury, N. (2016). Attention spans during lectures: 8 seconds, 10 minutes, or more?
    Advances in Physiology Education, 40(1). https://doi.org/10.1152/advan.00109.2016

Briggs, S. (2014). The science of attention: How to capture and hold the attention of easily
    distracted students. *InformED.* 28 June 2014.
    https://www.opencolleges.edu.au/informed/features/30-tricks-for-capturing-students-
    attention/

Common Core State Standards. (2018). English Language Arts Standards >> History/Social
    Studies >> Grade 6-8. http://www.corestandards.org/ELA-Literacy/RH/6-8/

Corbeil, P. & Laveault, D. (2011). Validity of a simulation game as a method for history
    teaching. *Simulation & Gaming, 42*(4), 462-475.

Dede, C. (2011). Developing a research agenda for educational games and simulations.
    Computer games and instruction. Charlotte, NC: Information Age Publishing, pp.
    233-250.

Dicamillo, L. & Gradwell, J. (2013). To Simulate or Not To Simulate? Investigating Myths
    about Social Studies Simulations. *The Social Studies, 104*(4), 155-160.

Dicamillo, L. & Gradwell, J. (2012). Using Simulations to Teach Middle Grades U.S. History
    in an Age of Accountability. *RMLE Online, 35*(7), 1-16.

Education Development Center (2009). "For Crown or Colony?": Fall 2009 implementation
    study executive summary. https://cdn.mission-us.org/uploads/document/
    document_file/1065/MUS_2009_implementation_study_summary.pdf

Education Development Center (2011). History games go to school: Results of a 2011
    comparison group study of AHCI's *MissionUS.* https://cdn.mission-
    us.org/uploads/document/document_file/1064/AHCI_MUS_2011_study_summary.pd
    f

Education Development Center (2016). *MissionUS*: "Up from the Dust" summary of results
    from a 2016 quasi-experimental classroom study. https://cdn.mission-us.org/
    uploads/document/document_file/1066/Up_from_the_Dust_study_summary.pdf

Gee, J.P. (2007). *What video games have to teach us about learning and literacy.* (2nd ed).
    New York: NY; Palgrave/MacMillan.

Gee, J.P. (2018). Affinity spaces: How young people live and learn online and out of school.
    Phi Delta Kappan. 99(6), 8-13.

Ghere, D. (2001). 'You are members of a United Nations commission...' Recent world crises
    simulations. *Teaching History* (103), 22-25.

Gonzalez, P.C. and Tally, W.J. (2012). Using historical role-playing games (RPGs) to teach history content and critical thinking skills, Presented at the International Society of Technology in Education annual conference, San Diego, CA. 30 June 2012. http://cct.edc.org/sites/cct.edc.org/files/publications/HistoricalRPGs.pdf

Gradwell, J. M. and DiCamillo, L. (2013). A means to an end: A middle level teacher's purposes for using historical simulations. *Middle Grades Research Journal*, *8*(3), 39–59. http://cmich.idm.oclc.org/login?url=http://search.ebscohost.com .cmich.idm.oclc.org/login.aspx?direct=true&db=eue&AN=93980611&site=ehost-live

Hartley, J. and Davies, I. (1978). Note-taking: A critical review. *Programmed learning and educational technology,* 15(3), p. 207-224. https://doi.org/10.1080/0033039780150305

Hernández-Ramos, P. & Paz, D. L. (2010). Learning history in middle school by designing multimedia in a project-based learning experience. *Journal of Research on Technology in Education, 42*(2), 151-173. http://cmich.idm.oclc.org/login?url= https://search-proquest.com.cmich.idm.oclc.org/docview/274695986?accountid=10181

Jackson, M. (2004). Making visible: Using simulation and game environments across disciplines. *On the Horizon 12* (1) pp. 22-25.

LeCompte, K., Moore, B., & Blevins, B. (2011). The impact of iCivics on students' core civic knowledge. *Research in the Schools*. *18* (2), p. 57-73.

Lo, J. (2018). PBL in Social Studies Classrooms: Teaching High Quality and Engaging Projects. *Social Education 82*(1) pp. 18-19.

Maybin, S. (2017). Busting the attention span myth. *BBC World Service.* 10 Mar 2017. Retrieved at https://www.bbc.com/news/health-38896790

Pew Research Center (2015). 72% of teens play video games; rises to 84% of teen boys. *Teens, Technology, and Friendships*. 4 Aug 2015. http://www.pewinternet.org/2015/08/06/ teens-technology-and-friendships/2015-08-06_teens-and-friendships_3-01/

Robelon, E. (2013). Math viewed as 'Most Valuable' School Subject, Survey Finds. *Education Week*. Sept. 6. http://blogs.edweek.org/edweek/curriculum/2013/09/ math_viewed_as_most_valuable_s.html

Ruben, Brent D. (1999). Simulations, Games, and Experience-Based Learning: The Quest for a New Paradigm for Teaching and Learning. *Simulation & Gaming, 30*(4), 498-505.

Schrier, K. (2018). Using games to solve real-world civic problems: Early insights and design principles. *Journal of Community Engagement and Higher Education. 10*(1), pp.21-35.

Shiloah, N. & Shoham, E. (2002). The tenth grade tells Bismarck what to do: Using structured role-play to eliminate hindsight in assessing historical motivation. *Teaching History*, (107), 48-51.

Sylwester, R. (1994). How emotions affect learning. *Educational Leadership 52*(2), pp. 60-65. http://www.ascd.org/publications/educational-leadership/oct94/vol52/num02/How-Emotions-Affect-Learning.aspx

Tucker, B. (2012). The flipped classroom. *Education Next. 12*(1). https://www.educationnext.org/the-flipped-classroom/

Voyer, D., and Voyer, S. Girls make higher grades than boys in all school subjects, analysis finds. *American Psychological Association.* 29 Apr 2014. https://www.apa.org/news/press/releases/2014/04/girls-grades.aspx

Watson Institute for International Relations (2016). *CHOICES: The American Revolution: Experiences of rebellion.* Providence, RI: Brown University.

Resources

Age of Empires - video game released in 1997 with many editions and customized campaigns for empire-building with or against other players and/or the computer; by Microsoft Studios and available at https://www.ageofempires.com/

BeWashington - role-playing simulation of key events in the life of George Washington at http://play.bewashington.org/

CHOICES - curriculum resources including role-playing simulations for history and current issues content at http://www.choices.edu/

Crash Course U.S. History - instructional video series on U.S. History topics at https://thecrashcourse.com/courses/ushistory

EdPuzzle - customized video content with embedding features for interactivity at https://edpuzzle.com/

HipHughes History - instructional video series on U.S. History topics at https://www.youtube.com/user/hughesDV/

iCivics - game-based learning and curriculum resources at https://www.icivics.org/

Kahoot! - a classroom quiz-based resource which engenders competition at https://kahoot.com

MissionUS - game-based role-playing activities for U.S. History at https://www.mission-us.org/

Risk: The Game of Strategic Conquest - board game created in 1957 and licensed by Hasbro, Inc., also available online at https://www.game-remakes.com/play.php?id=476 (also licensed by Hasbro)

United States Courts - simulation lessons and other educational material related to the federal judiciary system at http://www.uscourts.gov/about-federal-courts/educational-resources

Student Transitions and Mental Health: Literature Review and Synthesis

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

Waning mental health and resilience in the post-secondary student population is a growing concern across North American institutions, these concerns have only been compounded further by the added stressors associated with the Covid 19 pandemic. Transitioning into post-secondary brings with it a variety of interpersonal and intrapersonal challenges that often reciprocally influence each other. Successful adaptation to such challenges is equally influenced by demographic (e.g., impacts of gender, sexuality, ethnicity, and socioeconomic status) and institutional factors (e.g., the provision and efficacy of health-related services and programming on campus). A thorough literature review and synthesis was conducted examining post-secondary student mental health. Attention was given to post-secondary mental health, help seeking, demographic, and institutional characteristics. The scope of this literature review focused on the North American context. Future directions for research and practice are drawn from the findings. Institutions need to focus on initiatives intended to improve campus climate and service utilization amongst their students. Health care providers, administrators, and educators are challenged to provide evidence-based, health-related services that meet the unique needs of their student population.

Keywords: Post-Secondary Institutions, College Students, Mental Health, Resilience, Help-Seeking

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Introduction

Mental health of post-secondary students is a growing concern (Eells, 2017; Marcotte et al., 2015; Walburg, 2014). There is speculation across multiple facets of the education system that students are failing to adjust to post-secondary on academic, social, and psychological levels (Eells, 2017; Hall, 2016; Marcotte et al., 2015; Walburg, 2014). Researchers emphasize a recent increase in anxiety, depression, eating disorders, substance abuse, and other mental health issues in college students, and the rising demand on counselling supports, which are often under-funded, under-staffed, etc. (e.g., Lattie, Ketchen Lipson, & Eisenberg, 2019). The Covid 19 pandemic has had progressive negative impacts on student mental health (e.g., attention and externalizing problems), which has exacerbated existing concerns (e.g., Copeland et al., 2021). Elharake, Akbar, Malik, Gilliam, & Omer (2022) conducted a review of studies examining the impact of the Covid 19 pandemic on mental health and found students are feeling even more anxious, depressed, fatigued, and depressed than prior to the pandemic.

A variety of interpersonal and intrapersonal challenges accompany the post-secondary experience (Eells, 2017; Walburg, 2014). Post-secondary students are challenged to adjust to new academic standards, regulate newfound personal and financial freedom, manage new responsibilities, form, and maintain new interpersonal relationships, deal with the loss of pre-existing social support networks, and navigate new and often complex environments (Hall, 2016; Marcotte et al., 2015; Walburg, 2014). These challenges are often compounded by a variety of factors such as personal safety, violence, financial stress, health resource awareness, stigma, and physical health (e.g., Hall, 2016; Marcotte et al., 2015; Walburg, 2014; Elharake et al., 2022). Successful adaptation to higher education is influenced by factors at both the individual and institutional levels (Chen, 2012). Post-secondary institutions are challenged to optimize students' academic success without compromising mental and physical health, as well as to provide evidence-based resources that are culturally, racially, and ideologically competent (Eells, 2017).

The Current Review

The purpose of the current literature review was to highlight important trends in the research concerning post-secondary student transitions and mental health. Attention was given to prevalence of mental health disorders, individual characteristics, institutional factors, student help-seeking behaviors, screening tools, and campus mental health initiatives. Evidenced-based suggestions can assist counselling staff, administration, support staff, student associations, and faculty in better understanding and supporting post-secondary student mental health.

Methods

An extensive literature search was conducted in 2019, with more recent literature added afterward. The following databases were accessed: PsychINFO; SocINDEX; Academic Search Complete (EBSCO); PsycARTICLES; EMBASE; InCites Journal Citation Reports; International Encyclopedia of the Social & Behavioral Sciences; Scopus (Elsevier); Web of science; Jstor. The search terms used to conduct this search included: college, university or post-secondary students AND mental health, resilience, transitions, help-seeking, programs.

Inclusion Criteria

This review included peer reviewed academic articles that were published no earlier than 2005 with most articles included within this analysis being published more recently than 2010. The focus of much of the literature found was conducted within the North American context, although some international studies and statistics have also been included.

Student Mental Health and Transition to Post-Secondary

Mental health is one of the most comprehensively studied indicators of student adjustment in higher education (Marcotte et al., 2015). Research consistently finds that depression is a significant indicator of student dropout (Auerbach et al., 2016; Marcotte et al., 2015). The 2013 National College Health Assessment survey revealed, for example, that 31% of students sampled ($N = 131, 000$) reported feeling "so depressed that it was difficult to function", an increase from 28.4% since the 2011 NCHA survey (American College Health Association, 2013, p.14). Various studies have reported an increase in post-secondary student depression and anxiety, and some suggest an increased incidence of depression in comparison to the general population (e.g., Daddona, 2011; Ibrahim, Kelly, Adams, & Glazebrook, 2013; Marcotte et al., 2015; Lattie, et al., 2019). The Covid 19 pandemic has had negative impacts on student mental health, which has only exacerbated existing concerns (e.g., Copeland et al., 2021).

A large-scale study by the World Health Organization (WHO) in 2016 investigated the prevalence of mental health disorders in post-secondary students across 21 different countries. When averaged, the overall proportion of students meeting the criteria for a DSM-IV disorder was 20.3% (one-fifth) (Auerbach et al., 2016). Of the many disorders identified, anxiety was found to be the most prevalent (11.7%), followed by mood disorders (6.0%), and substance disorders (4.5%; Auerbach et al., 2016). Results indicated that the majority students (83.1%) reported pre-matriculation onsets of their disorders, meaning that their symptoms or disorders began prior to entry into post-secondary (Auerbach et al., 2016). Pre-matriculation onsets were found to be a more reliable predictor of student dropout than were post-matriculation onsets.

Individual Characteristics

Although college student mental health is a rising public health concern, there is research pertaining to protective factors against mental health disorders in this population. Marcotte and colleagues (2015) assessed factors associated with depressive symptoms and student resilience. Of the students surveyed ($N = 389$), approximately 13.4% were classified as depressed and 59.6% were classified as non-depressed, as determined by the Beck Depression Inventory (Marcotte et al., 2015). In the non-depressed group, 42% were considered exceptionally resilient despite having some factors that were characteristic of the depressed sample; four main factors were associated with the enhanced resilience of these students: (1) the presence of personal goals; (2) absence of dysfunctional thoughts; (3) emotional adaptation to post-secondary; and (4) presence of a professional goal (Marcotte et al., 2015). Risk factors have been identified for poorer mental health outcomes during the Covid 19 pandemic including being of lower socioeconomic status, living in rural areas, and having a family member who works in healthcare (Elharake et al., 2022).

Hall (2016) found maladjusted students were those who lacked familial support, were academically underprepared, and failed to adjust to the institution on a social level. Other factors that have been found to influence student dropout are: (1) familial obligations; (2) a lack of academic persistence; (3) a lack of financial aid; (4) low commitment to the institution; (5) absence of professional goals; (6) the presence of a disability; and (7) poverty (Hall, 2016).

Chen's (2012) revealed risk factors for first year dropout including: (1) low SES; (2) low first year GPA; (3) poor academic and social on-campus integration; (4) insufficient financial aid; and (5) lack of an educational plan. Notably, Chen (2012) found that low SES racial minority students were found to have particularly high rates of dropout, however, when these students were awarded financial aid, their dropout rates were lower than racial majority students.

Institutional Characteristics

Structural characteristics of institutions such as control, selectivity, and size have found to be associated with student dropout. Chen also (2012) found that institutions that devote more resources to availability of student services and cocurricular activities have significantly lower dropout rates than those who devote less. Similar studies have found that student engagement in curricular and cocurricular activities on campus is associated with higher GPA and a positive academic experience (Webber, Krylow, & Zhang, 2013). Course work with an emphasis on building cognitive skills, establishing positive relationships with faculty and peers, effective time management, and application of course material is shown to increase students' ratings of academic satisfaction (Webber et al., 2013). Students consistently rate positive experiences with faculty members as one of the most significant contributors to enhancing their overall academic experience (Umbach & Wawrzynski, 2005; Kalkbrenner, Jolley, & Hays, 2019). Students who engage in academic and social learning activities both on and off campus rate their academic experience as more rewarding and report a higher cumulative GPA in comparison to those who do not participate in co-curricular and extracurricular activities (Webber et al., 2013).

It is important to note that although institutional expenditure on improving quality and availability of student services is significantly associated with retention (Chen, 2012), the extent to which students access such services plays a fundamental role in their ability to mitigate rising mental health concerns (e.g., Liu, Pinder-Amaker, Hahm, & Chen, 2022).

Student Help Seeking

The American College Health Association (2009) reported only 24% of students who experience depression in the United States receive treatment. A longitudinal study in Ireland found that college students with low-to-average well-being scores were less inclined to seek formal mental health services than students with higher well-being scores (Goodwin et al., 2016). The proportion of students who accessed services provided on campus was only 3.77%, despite such services being free of charge (Goodwin et al., 2016). Goodwin and colleagues (2016) reported that barriers to utilization of services such as a lack of familiarity with services, mistrust of healthcare providers, lack of communication, lack of perceived urgency, skepticism, and stigma, have all been recognized as barriers to both service delivery and access on campus (Eisenberg, Hunt, Speer, & Zivin, 2011; Ibrahim et al., 2013; Mowbray et al., 2006).

In North America, research indicates that women are overall more likely than men to seek professional help in response to both mental and physical health concerns (Morgan, Ness, Robinson, 2003). Differences in help-seeking behaviors also exist between individuals of diverse cultural backgrounds. Morgan and colleagues (2003) found that students of Asian descent are less likely than Caucasian students to seek counselling services, which they attributed largely to diverging cultural beliefs regarding mental illness. For these reasons, cultural and ideological differences regarding mental health is an anticipated barrier to both service delivery and service access in post-secondary institutions (Addis & Hahalik, 2003; Morgan et al., 2003; Vogel & Webster, 2003). Given the barriers to help-seeking on post-secondary campuses, some institutions are employing screening tools to help identify at risk students.

Screening Tools

Outcome Questionnaire (OQ 45.2). The Outcome Questionnaire is growing in use amongst mental health professionals in school systems across North America and consists of three main subscales: (1) symptom distress; (2) interpersonal relations; and (3) social role (Boswell, White, Sims, Harrist, & Romans, 2013).

College Student Adaptation Questionnaire (SACQ). The College Student Adaptation Questionnaire (SACQ) seems to be the most frequently used self-report scale in assessing college students' level of adjustment to post-secondary (Campbell, Palmieri, & Lasch, 2006). The SACQ covers four main areas of adjustment: (1) academic; (2) personal-emotional; (3) social; and (4) attachment (to the institution; Campbell et al., 2006).

NCHA II Survey. The NCHA II survey was developed by the ACHA and consists of 300 questions (ACHA, 2013) and includes nine different sections: (A) General Health; (B) Disease and Injury Prevention; (C) academic impacts: (D) violence, abusive relationships, and personal safety; (5) tobacco, alcohol, and marijuana Use; (E) sexual behavior; (F) nutrition and exercise; (G) mental health; and (H) sleep.

Mental Health Continuum Short Form (MHC-SF). The mental health section of the NCHA survey includes the MHC-SF, consisting of 14 items representing facets of well-being, including emotional, psychological, and social well-being (Keyes, 2009). Scores indicate if an individual is: (1) *flourishing*; (2) *moderate*; and (3) *languishing*.

Clifton StrengthsFinder. The Clifton StrengthsFinder is one of the most used tools to assess individuals' strengths (Soria & Stubblefield, 2015). This tool identifies individuals' five most salient strengths based on a list of 34 themes of natural talent (Soria & Stubblefield, 2015).

Existing Post-Secondary Mental Health Initiatives

Strengths-Based Campus Framework. A study at the University of Minnesota compared retention rates of first-year students who took the Clifton StrengthsFinder with those who did not take the StrengthsFinder (Soria & Stubblefield, 2015). Results indicated significantly higher retention rates among students who completed the Clifton StrengthsFinder compared to students who did not take the StrengthsFinder (Soria & Stubblefield, 2015).

The SAVES Model. Eells (2017) developed a comprehensive model to bolster resilience in students. The saves model is conceptualized by the acronym 'SAVES' (S- Social Connection, A- Attitude, V- Values, E- Emotional Acceptance, S- Silliness/ Humor).

Social Connection (S) Human beings' have an inherent nature to be social (Eells, 2017). Social scientists, through exhaustive research on the topic, have been able to conclude with great confidence that social connectedness is one of the most important protectors against illness, both mental and physical (Barlow, Durand, Hofman, & Lalumiere, 2018). Eells (2017) recommends first year students find senior students or faculty members as mentors, provided that mentors are willing to display a degree of vulnerability to encourage relatability. Forms of mentoring may also take place outside of the post-secondary institution, such as in the community (Eells, 2015).

Attitude (A) Composed of two elements: (1) learned optimism; and (2) mindset. Learned optimism is a term developed American psychologist, Martin Seligman (1990) and is the rival to learned helplessness, and it is broken down into three main components, the first of which is impermanence (Eells, 2017). Eells (2017) bases the mindset component on research conducted by Carol Dweck. Dweck (2007) examined individuals with a fixed mindset; she found that individuals with this mindset are more likely to view success as innate potential. In contrast people with a growth mindset are more likely to seek out and persevere through challenges because of their realization that growth is a process, and that success takes time (Dweck, 2007).

Values (V) The third part of Eells' model is values. Eells (2017) recommends that it is important to develop a value system that will guide individuals through challenges. The general basis of gratitude is the recognition that everything in life is a gift to be cherished, and that we are in no way entitled to the gifts we are given in life (Eells, 2017).

Emotional Acceptance (E) The 'E' in the saves model stands for emotional acceptance. Eells (2017) derived this part of the model from acceptance and emotional commitment therapy (ACT). Emotional acceptance is the ability to accept what one cannot or should not change. Mindfulness, as mentioned in the values component of this model, is a strategy to develop emotional acceptance that has been widely researched and accepted as an effective strategy. Eells (2017) recommends mindfulness training be offered at post-secondary institutions.

Silliness (S) Laughter allows us to make light of situations and it is an important part of our ability to bounce back from adversity (Eells, 2017). Ultimately, laughter encourages us not to take ourselves or situations too seriously (Eells, 2017).

The Inquiring Mind Post-Secondary. A three- hour training session developed by the Mental Health Commission of Canada that is offered at post-secondary institutions across Canada. The program teaches students to conceptualize mental health as resting upon a continuum; the Mental Health Continuum Model ranges from: (1) health; (2) reacting; (3) injured; and (4) ill. The objective of this program is to teach students how to identify mental health signs and symptoms in themselves and others (The Inquiring Minds Post-secondary, 2019).

Mental Health First Aid (MHFA). An evidence-based international harm prevention initiative aimed at reducing mental health stigma, increasing mental health knowledge,

decreasing social distance between individuals struggling with mental health, and developing effective mental health support (Hadlaczky, Hokby, Mkrtchian, Carli, & Wasserman, 2014). Massey and colleagues (2014) delivered MHFA to staff at a university in Ontario, Canada and found significant increases mental health knowledge, greater sensitivity to mental health issues, and increases in confidence in addressing mental health concerns (Massey, Brooks, Burrow, 2014).

Discussion

Mental health has been highlighted throughout the literature as one of the largest concerns among post-secondary students (Auerbach et al., 2016; Eells, 2017; Malla et al., 2018; Marcotte et al., 2015; Lattie et al., 2019). Based on a large-scale study conducted by WHO in 2016 investigating the prevalence of mental health disorders in the post-secondary population, anxiety and mood disorders were found to be the two most common when averaged across 21 different countries (Auerbach et al., 2016). It may be in the best interest of students for post-secondary institutions to focus on programming that targets these disorders.

Research consistently reveals that certain demographics of students have significantly more mental health concerns and a higher degree of psychological distress. For example, Chen (2012) found that student retention was significantly associated with ethnic minorities; ethnic and racial minority students have higher rates of dropout when compared to racial majority students. Interestingly, however, Chen (2012) notes that dropout rates subside when racial minority students are awarded financial aid, suggesting a link between race and financial stability. Focus could be dedicated to programming or increased financial assistance for racial minority students.

Most estimates of mental health disorders among the LGBTQ community are comparatively higher than the heterosexual population (Cochran, Sullivan, & Mays, 2003; Bostwick, Boyd, Hughes, & McCabe, 2010; Conron, Mimiaga, & Landers, 2010). Conron and colleagues (2010) noted that more LGBTQ participants reported more barriers to health services in comparison to heterosexual participants, which may partially account for the increased mental health morbidity in this population. Increased mental health concerns in the LGBTQ community may also be compounded by discrimination and victimization (Birkett, Newcomb, & Mustanski, 2015; Sutter & Perrin, 2016). Birkett and colleagues (2015) found that psychological problems in LGBTQ individuals tend to subside when they experience less victimization. Considering these results, programs focused on reducing stigma and discrimination may be advantageous.

A positive campus climate that includes on campus activities can help students explore new friendships because this way students do not have to venture off campus, which is especially important if they have no mode of transportation (Smiley, 2015). On-campus programs may also inspire the student to feel more emotionally connected to their institution, which has been shown to help with student retention (Webber et al., 2013). Investments in student services and programming seems to be an effective way to improve student well-being and enhance student retention (Liu et al., 2022).

Existing literature has drawn attention to the low prevalence of students seeking mental health help (Eisenberg et al., 2011; Goodwin et al., 2016; Ibrahim et al., 2013; Mowbray et al., 2006). Students' lack of awareness is consistently cited as a barrier to student help-

seeking (Eisenberg et al., 2011; Goodwin et al., 2016; Ibrahim et al., 2013; Mowbray et al., 2006). Colleges and universities could implement programs aimed at reducing stigma associated with mental health, as this has been cited consistently as a barrier to help-seeking among all populations of students (Addis & Hahalik, 2003; Morgan et al., 2003; Vogel & Webster, 2003).

Limitations and Future Directions for Research and Practice

Currently, mental health services in post-secondary institutions are relying predominantly on students to seek out help. The literature suggests, however, that students who are the most in need of support are the ones who are least likely to seek out treatment (Goodwin et al., 2016). Jaworska and colleagues (2016) found that less than half of the institutions in Alberta reported having policies in place to monitor their own mental health services and initiatives, and very few institutions follow up with students who have accessed support services at their institutions. A need for targeted interventions based on population-specific data has been highlighted as a potential solution to some of these barriers (Heck et al., 2014; Goodwin et al., 2016; Jaworska et al., 2016, Liu et al., 2022).

Rresearch is suggesting that internet-based and technology-enabled mental health interventions (e.g., mindfulness, stress management) seem to be effective for improving student mental health outcomes including decreasing distress, anxiety, and depression (Nguyen-Feng, Greer, & Frazier, 2017; Lattie et. al, 2019). Internet-based delivery of mental health programming is a promising future direction for both research and practice, as it appears that this recently emerging trend is here to stay.

Conclusions

Researchers have identified an increase in mental health concerns and diagnoses in post-secondary students over time (Daddona, 2011; Marcotte et al., 2015; Zivin, Eisenberg, Gollust, & Golberstein, 2009; Lattie et al., 2019; Copeland et al., 2021; Elharake et al., 2022). Specifically, there has been a steady increase in anxiety, depression, eating disorders, substance abuse, and other mental health issues in college students, and the rising demand on counselling supports, which are often under-funded, under-staffed, etc. (e.g., Lattie et al., 2019).

Post-secondary institutions are comprised of racially, culturally, and ideologically diverse students who do not necessarily share the same needs. These institutions are challenged to provide evidence-based, health-related services to students that are both racially and culturally appropriate. This challenge is often further compounded by issues with funding, barriers in student-help seeking, inadequate methods to identify at-risk students, and inconsistent (or nonexistent) methodology to evaluate existing health-related services on campus (Chen, 2012; Hall, 2016; Malla et al., 2018; Webber et al., 2013). Liu and associates (2022) highlight two urgent priorities considering current mental health needs: 1) ensuring access to mental health services, and 2) outreach to students with special circumstances (e.g., low-income, as well as racial, sexual, and gender minorities).

All post-secondary institutions experience and anticipate barriers to service delivery on campus, regardless of size and funding, therefore, they may benefit substantially by obtaining data that is unique to their student population (American Health Association [ACHA], 2013).

Acknowledgements

References

Addis, M. E., & Mahalik, J. R. (2003). Men, masculinity, and the contexts of help seeking. *American Psychologist*, 58(1), 5-14. https://doi.org/10.1037/0003-066X.58.1.5

American College Health Association. (2013). *Canadian Reference Group Executive Summary, Spring 2013*. ACHA (pp. 1–19). Retrieved from http://www.cacuss.ca/health_data.htm

Auerbach, R. P., Alonso, J., Axinn, W. G., Cuijpers, P., Ebert, D. D., Green, J. G., … Bruffaerts, R. (2016, October 1). Mental disorders among college students in the World Health Organization World Mental Health Surveys. *Psychological Medicine, 46*(14), pp.2955-2970. Cambridge University Press. https://doi.org/10.1017/S0033291716001665

Barlow, D. H., Durand, V. M., Hofmann, S. G., & Lalumiere, M. L. (2018). *Abnormal psychology: An integrative approach* (8th ed.). Boston, MA: Cengage Learning.

Birkett, M., Newcomb, M. E., & Mustanski, B. (2015). Does it get better? a longitudinal analysis of psychological distress and victimization in lesbian, gay, bisexual, transgender, and questioning youth. *Journal of Adolescent Health*, *56*(3), 280–285. https://doi.org/10.1016/j.jadohealth.2014.10.275

Bostwick, W. B., Boyd, C. J., Hughes, T. L., & McCabe, S. E. (2010). Dimensions of sexual orientation and the prevalence of mood and anxiety disorders in the United States. *American Journal of Public Health*, *100*(3), 468–475. https://doi.org/10.2105/AJPH.2008.152942

Boswell, D. L., White, J. K., Sims, W. D., Harrist, R. S., & Romans, J. S. C. (2013). Reliability and Validity of the Outcome Questionnaire–45.2. *Psychological Reports*, *112*(3), 689–693. https://doi.org/10.2466/02.08.pr0.112.3.689-693

Campbell, M. H., Palmieri, M., & Lasch, B. (2006). Concurrent validity of the College Adjustment Scales using comparison with the MMPI College Maladjustment Scale. *Psychological Reports, 99*(3), 1003-1007. doi:10.2466/pr0.99.3.1003-1007

Chen, R. (2012). Institutional characteristics and college student dropout risks: A multilevel event history analysis. *Research in Higher Education, 53*(5), 487-505. doi:10.1007/s11162-011-9241-4

Cochran, S. D., Sullivan, J. G., & Mays, V. M. (2003). Prevalence of mental disorders, psychological distress, and mental health services use among lesbian, gay, and bisexual adults in the United States. *Journal of Consulting and Clinical Psychology*, *71*(1), 53–61. https://doi.org/10.1037/0022-006X.71.1.53

Conron, K. J., Mimiaga, M. J., & Landers, S. J. (2010). A population-based study of sexual orientation identity and gender differences in adult health. *American Journal of Public Health*, *100*(10), 1953–1960. https://doi.org/10.2105/AJPH.2009.174169

Copeland, W. E. et al. (2021). Impact of Covid-19 pandemic on college student mental health and wellness. *Journal of American Academy of Child and Adolescent Psychiatry, 60* (1), 131-144. doi: 10.1016/j.jaac.2020.08.466

Daddona, M. F. (2011). Peer educators responding to students with mental health issues. *New Directions for Student Services*, *2011*(133), 29–39. https://doi.org/10.1002/ss.382

Dweck, C. S. (2016). *Mindset: The new psychology of success*. New York: Random House.

Eells, G. T. (2017). Hyper-achievement, perfection, and college student resilience. *Journal of College and Character,18* (2), 77-82. doi:10.1080/2194587x.2017.1300096

Eisenberg, D., Hunt, J., Speer, N., & Zivin, K. (2011). Mental health service utilization among college students in the United States. *Journal of Nervous and Mental Disease*, *199*(5), 301–308. https://doi.org/10.1097/NMD.0b013e3182175123

Elharake, J. A., Akbar, F., Malik, A. A., Gilliam, W., Omer, S. B. (2022). Mental health impact of Covid-19 among children and college students: A systematic review. *Child Psychiatry and Human Development,* 1-13. doi: 10.1007/s10578-021-01297-1

Goodwin, J., Behan, L., Kelly, P., Mccarthy, K., & Horgan, A. (2016). Help-seeking behaviors and mental well-being of first year undergraduate university students. *Psychiatry Research, 246*, 129-135. doi:10.1016/j.psychres.2016.09.015

Hadlaczky, G., Hökby, S., Mkrtchian, A., Carli, V., & Wasserman, D. (2014). Mental health first aid is an effective public health intervention for improving knowledge, attitudes, and behavior: A meta-analysis. *International Review of Psychiatry*, *26*(4), 467–475. https://doi.org/10.3109/09540261.2014.924910

Hall, J. W. (2016). A study of factors that inhibit and enhance at-risk student retention at a community college: Multiple case study. *ProQuest Dissertations and Theses.* Retrieved from https://lib.pepperdine.edu/login?url=https://search-proquest-com.lib.pepperdine.edu/docview/1819294263?accountid=13159

Heck, E., Jaworska, N., Desomma, E., Dhoopar, A. S., Macmaster, F. P., Dewey, D., & Macqueen, G. (2014). A survey of mental health services at post-secondary institutions in Alberta. *The Canadian Journal of Psychiatry, 59*(5), 250-258. doi:10.1177/070674371405900504

Ibrahim, A. K., Kelly, S. J., Adams, C. E., & Glazebrook, C. (2013). A systematic review of studies of depression prevalence in university students. *Journal of Psychiatric Research*, 47(3), 391-400. Elsevier Ltd. https://doi.org/10.1016/j.jpsychires.2012.11.015

The Inquiring Mind Post-Secondary. (2019, June 19). https://theworkingmind.ca/inquiring-mind-post-secondary

Jaworska, N., De Somma, E., Fonseka, B., Heck, E., & MacQueen, G. M. (2016). Mental health services for students at postsecondary institutions: A National survey. *Canadian Journal of Psychiatry, 61*(12), 766–775. https://doi.org/10.1177/070674371664075

Keyes, C. (2009). Brief description of the mental health continuum short form (MHC-SF). *American Journal of Public Health*, *100*(12), 2366–71. https://doi.org/10.2105/AJPH.2010.192245

Lattie, E. G., Kethcen Lipson, S., & Eisenberg, D. (2019). Technology and college student mental health: Challenges and opportunities. *Frontiers in Psychiatry*. https://doi.org/10.3389/fpsyt.2019.00246

Liu, C. H., Pinder-Amaker, S., Hahm, H. C., & Chen, J. (Priorities for addressing the impact of the Covid-19 pandemic on college student mental health. *Journal of American College Health, 70* (5), 1356-1358. https://doi.org/10.1080/07448481.2020.1803882

Malla, A., Shah, J., Iyer, S., Boksa, P., Joober, R., Andersson, N., . . . Fuhrer, R. (2018). Youth mental health should be a top priority for health care in Canada. *The Canadian Journal of Psychiatry*, *63*(4), 216-222. doi:10.1177/0706743718758968

Marcotte, D., Villatte, A., & Potvin, A. (2015). Resilience factors in students presenting depressive symptoms during the post-secondary school transition. *Procedia - Social and Behavioral Sciences, 159*, 91-95. doi:10.1016/j.sbspro.2014.12.335

Massey, J., Brooks, M., & Burrow, J. (2014). Evaluating the effectiveness of mental health first aid training among student affairs staff at a Canadian university. *Journal of Student Affairs Research and Practice*, *51*(3), 323–336. https://doi.org/10.1515/jsarp-2014-0032

Morgan, T., Ness, D., Robinson, M. (2003). Students' Help-Seeking Behaviors by Gender, Racial Background, and Student Status. *Canadian Journal of Counselling I*, *37*(2), 151–166.

Mowbray, C. T., Megivern, D., Mandiberg, J. M., Strauss, S., Stein, C. H., Collins, K., … Lett, R. (2006, April). Campus mental health services: Recommendations for change. *American Journal of Orthopsychiatry*, 6(2), 226-237. https://doi.org/10.1037/0002-9432.76.2.226

Nguyen-Feng, V. N., Greer, C. S., & Frazier, P. (2017). Using online interventions to deliver college student mental health resources: Evidence from randomized clinical trials. *Psychological Services, 14* (4), 481-489. https://doi.org/10.1037/ser0000154

Soria, K. M., & Stubblefield, R. (2015). Building a Strengths-Based Campus to Support Student Retention. *Journal of College Student Development*, *56*(6), 626–631. https://doi.org/10.1353/csd.2015.0056

Smiley, M. A. (2018). *Exploring the practices of alternative high school principals in transitioning their high school students to post-secondary.* (Doctoral dissertation, Capella University, 2018). Ann Arbour, Michigan: Proquest.

Sutter, M., & Perrin, P. B. (2016). Discrimination, Mental Health, and Suicidal Ideation Among LGBTQ People of Color. *Journal of Counseling Psychology*, *63*(1), 98–105. https://doi.org/10.1037/cou0000126

Umbach, P. D., & Wawrzynski, M. R. (2005). Faculty do matter: The role of college faculty in student learning and engagement. *Research in Higher Education, 46*(2), 153-184. doi:10.1007/s11162-004-1598-1

Vogel, D. L., & Wester, S. R. (2003). To seek help or not to seek help: The risks of self-disclosure. *Journal of Counseling Psychology*, *50*(3), 351–361. https://doi.org/10.1037/0022-0167.50.3.351

Walburg, V. (2014). Burnout among high school students: A literature review. Children and *Youth Services Review, 42*, 28-33. doi: 10.1016/j.childyouth.2014.03.020

Webber, K. L., Krylow, R. B., & Zhang, Q. (2013). Does involvement really matter? Indicators of college student success and satisfaction. *Journal of College Student Development, 54*(6), 591-611. doi:10.1353/csd.2013.0090

Zivin, K., Eisenberg, D., Gollust, S. E., & Golberstein, E. (2009). Persistence of mental health problems and needs in a college student population. *Journal of Affective Disorders*, *117*(3), 180–185. https://doi.org/10.1016/j.jad.2009.01.001

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Maximizing High-Impact Practices in an Environmental Design Curriculum – An Introductory Study

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Abstract

The Environmental Design (ENVD) program at Auburn University is a multidisciplinary program designed to solve twenty-first century problems. The curriculum focuses on the built environment, while placing an emphasis on "systems thinking" which focuses on how the parts of the whole interact. Students can personalize their projects based on their individual interests and create conceptual solutions to the problems studied. While the degree is a broad exposure to design disciplines, the individuality of this major allows it to stand out amongst related majors within the College of Architecture, Design and Construction at Auburn University. The ENVD program has followed the university strategic plan to elevate the student experience through high-impact practices. The study focused on high-impact practices currently measured by Auburn University including e-portfolios, internships, co-ops, undergraduate research, and study abroad. The study also evaluated and categorized student-given data regarding peak student moments. These peak moments potentially represent additional high-impact practices to be experienced. Results indicated students participated in an average of just over one high-impact practice during their time in the ENVD program. Peak moment data indicated specific additional opportunities in mentorship, empathy and diversity, and additional project-based learning. If a curriculum model could be created that highlighted specific opportunities for high-impact practices, students may be encouraged to complete additional high-impact practices during their academic studies. In addition, the ENVD program could expand high-impact practices by better conveying the value and importance of these as students begin their academic studies.

Keywords: Curriculum, High-Impact Practices, Environmental Design, Student Experience

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Introduction

Created around the idea of a multidisciplinary approach to design, the Environmental Design Program at Auburn University provides a holistic view of the design discipline. The curriculum focuses on the built environment, while placing an emphasis on systems thinking through viewing problems as interconnected and linear. A keen emphasis is also placed on empathetic solutions that consider the human condition. Students can personalize their projects based on their individual interests and create conceptual solutions to the problems studied. This approach allows students to be a partner in defining which problem they wish to solve as opposed to solving a definitive, pre-developed problem common in other disciplines. The individuality of this major allows it to stand out to prospective students amongst related majors within the College of Architecture, Design and Construction at Auburn University. Individual projects compound to form the cohesive learning outcomes that future employers seek.

Traditional educational practices have occurred inside a classroom with limited accommodation of student interests or needs. Typically, each classroom has a single instructor, and students are asked to advance at the pace of the instructor. New approaches offer opportunities to expand beyond the classroom, engage a broader range of instructors, and personalize the student's educational experience. In addition, traditional practices have been found to unequally prepare students, historically neglecting those who are underserved, or students whose life circumstances may put them at an educational risk. Educational practices must be improved to maximize all students' educational experiences and to create clear outcomes for them (Kuh, 2008).

High-impact teaching and learning practices (HIPs) have been widely tested and proven to be beneficial to students (Kuh, 2008). These following practices have been identified as HIPs:

- First-Year Experiences
- Common Intellectual Experiences
- Learning Communities
- Writing-Intensive Courses
- Collaborative Assignments/Projects
- Undergraduate Research
- Diversity/Global Learning
- ePortfolios
- Service Learning, Community-Based Learning
- Internships
- Capstone Courses and Projects

These practices allow a large range of students to find educational, professional, and personal success with the goal of elevating student learning and the student experience. HIPs allow for further interdisciplinary skills to be acquired and utilized throughout a student's career (Sandeen, 2012). Elements within HIPs acknowledge a more disparate group of students, with various abilities, to succeed. However, HIPs are not always accessible nor adaptable for each individual student. Often, students must blindly seek out HIPs offered within their university, only to discover multiple restrictions that force them to choose between not participating or difficult compromises. Restrictions for these students may include time

constraints, additional financial commitments, and a lack of general understanding of how these practices add educational value (Valbrun, 2018).

HIPs often create memorable experiences for students that are recalled years after completing an education. Similarly, a recent book explored the impactful experiences in life, and the moments that resonated with an individual long after the experience had occurred (Heath & Heath, 2017). Some of the most notable moments cited included the birth of a child, the start of a new job, winning a championship sports game, or attending college. These types of experiences tend to echo in the memory of individuals, because they are inclined to think of these experiences as flagship, or peak moments. These peak moments are both impactful and meaningful to individuals – much like HIPs. The concept of a "moment" tends to imply a short period of time; education seldom occurs in an isolated period. But, that is not how the term "moment" is used here. Instead, the work builds on the concept of "duration neglect" which says that even in longer experiences, one tends to remember only specific, shorter events within a longer context.

While this study focused on HIPs experienced by students, peak educational moments for all students were also considered as they may provide a pathway for establishing and developing additional HIPs. By examining both HIPs and moments, a greater potential for maximizing the student experience exists.

Auburn University has recorded measurable outcomes from previous graduating Environmental Design student data, recorded since the Fall of 2020. In each undergraduate student's last semester at Auburn University, they are required to participate in a Campus Engagement and Experience Survey (CEES). Within the CEES, students are asked about their participation in five specific HIPs offered through Auburn:

- Study Abroad
- Internships
- Co-ops
- Undergraduate Research
- e-Portfolios

Additionally, students are asked to record their peak moment that occurred while they were a student at Auburn. This is an open-ended qualitative question allowing students to choose a moment, or experience, from any part of their college career which has impacted them in some way. These impacts can be from both positive and negative moments, as how the student chooses to move forward and learn from the experience greatly reflects its influence. It is conceivable that the intersection of HIPs and peak moments could produce an even larger learning experience, or a transformational educational experience (Farrow et al., 2022). If the relationship between these HIPs and Environmental Design students' peak moments could be better understood, greater targeted engagement of these HIPs could be implemented accordingly within the Environmental Design program. If there was a direct connection between the two, a designed curriculum could be developed to provide an increased understanding of the practices and opportunities for HIPs and moments.

Specifically, the following research questions were addressed in this introductory study:

- Are some HIPs more common among the students in the Environmental Design program?

- What common categories of peak moments appeared when analyzing Environmental Design student data?
- When did these HIPs and peak moments occur within each Environmental Design student's academic career?

If the above items could be better understood based on student experiences, a curriculum complete with opportunities for HIPs and moments could be created. Incoming students could then follow that model purposefully engaging in transformative educational experiences (Farrow et al., 2022).

Literature Review

Educational Flow

In 1990, Csikszentmihalyi (1990, p. 3) identified the concept of educational flow as "a sense of exhilaration, a deep sense of enjoyment that is long cherished and that becomes a landmark in memory for what life should be like". Baker (2005) subsequently identified three components of flow as absorption, enjoyment, and intrinsic motivation. In essence, educational flow represented total immersion by a student in an activity. Educational flow invokes the idea of a trance-like state or "total use of one's abilities, focus of attention, effortless control and feelings of mastery and transcendence" (Rana et al., 2009, p. 42).

Mental energy peaks when a student is engaged in educational flow (Bowers, 2017). In this situation, the student is motivated and enjoys the experience, often enhancing student engagement, which is an important element of both academic success and student happiness. Thus, engagement is linked to educational flow (Raettig & Weger, 2018).

The Power of Moments

Educational flow and powerful moments are related. A defining moment is a short experience that is both memorable and meaningful (Heath & Heath, 2017). Moments often develop from times of educational flow. In contrast, not all instances of flow yield long-lasting memories for students (Cherry, 2020).

Defining moments exist throughout all stages of life. Chip and Dan Heath (2017) identified three different types of defining moments: peaks, pits and transitions. These defining moments shape and transform an individual's life. Peak moments create positive emotion and are long lasting in an individual's memory. One definition of peak moments is stated as follows:

> ..a highly valued experience which is characterized by such intensity of perception, depth of feeling, or sense of profound significance as to cause it to stand out, in the subject's mind, in more or less permanent contrast to the experiences that surround it in time and space. (Leach, 1962)

These moments are based off three fundamental ideas:

- When individuals consider an encounter, they often focus on key moments within the experience. Often, these occur at peaks, valleys, and times of transition.

- Moments are created from at least one of the following four elements: i) elevation, ii) insight, iii) pride, and iv) connection.
- It is important to recognize, celebrate, and set clear expectations at times of peaks, valleys, and times of transition.

Instead of waiting for these peak moments to happen spontaneously, Chip and Dan Heath write that it is possible to actively curate them. If planned and executed in an educational system, an opportunity for elevating the student experience exists.

High-impact practices

High-impact practices are a set of educational endeavors that have been proven to lead to a greater interest and retention rate among students in undergraduate programs (Kuh, 2008). Kuh identified ten of these high-impact practices which include: (1) first year seminars and experiences, (2) common intellectual experiences, (3) learning communities, (4) writing-intensive courses, (5) collaborative assignments and projects, (6) undergraduate research, (7) diversity/global learning, (8) service learning, (9) internships, and (10) capstone courses and projects. When implemented, these practices can benefit students significantly and allow them to take advantage of the opportunities offered throughout their college years.

According to Kuh, these high-impact practices are productive because they offer students learning experiences outside of the standard classroom setting that utilize a diverse skill set. Studies have found correlation between high-impact practices and student success. The participation in learning communities can lead to an increase in critical and higher order thinking, openness to difference and appreciation of diversity, and high academic performance (Kilgo, 2012; Kuh, 2008). Students who participated in a sort of global learning were shown to make gains in their cognitive development and critical thinking skills (Gurin et al., 2002; Kilgo, 2012). Students who participated in these practices were able to learn, integrate, and share the information at an elevated pace than students who did not (Nelson et al., 2008). High-impact practices are useful for undergraduate students to obtain skill sets which will benefit them both academically and professionally.

Transformative Active Learning Experiences (TALES)

Each of the above individual tactics of educational flow, peak moments, and high impact educational practice have an opportunity to create significant learning as well as highly valued student experiences. When curated moments are strategically combined with high impact practices, the odds of having a transformative educational experience exists. Such an experience would not only provide deep learning but would also create a lasting memory for the student. Known as TALES (Transformative Active Learning Experiences), this type of experience has the opportunity to significantly improve the academic experience of students (Farrow et al., 2022). Considering these experiences are educational, their potential impact goes beyond that of common moments to include things like career impacts.

Methods

Environmental Design students at Auburn University were targeted for this research project. Data was collected from graduating seniors using the Campus Engagement and Experience Survey (CEES) over the following academic semesters: Fall 2019, Spring 2020, Summer 2020, Fall 2020, and Spring 2021. All graduating students were required to complete the

survey as part of the expectations within the zero-credit graduation course, UNIV-4AA0. Environmental Design students that completed the survey were graduating in the semester in which they completed the CEES. Administered by the university using a web-based learning management system, the CEES has approximately 40 questions that measure areas including the following: demographic information, time at Auburn University, perceptions of class experiences, HIPs, peak learning moments, and expectations as a future alumnus. This research focused only on data related to the specific HIPs measured by Auburn University and the open-ended question about peak learning experiences.

The five HIPs measured by the university included co-op, internships, e-portfolios, study abroad, and undergraduate research. The survey asked students to identify which of the five HIPs they had participated in, with the option to include multiple HIP experiences. Each time a student identified a HIP, the student was then asked when they participated, why they participated, and what they got out of the experience.

For peak learning moments, a specific, single question was asked of students:

> Describe a transformative learning experience, while a student at Auburn University, that helped shape the person you are today (a short experience that was both memorable and meaningful). Please be descriptive and note that the moment could take place anywhere (classroom, internship, study abroad, work, athletics, fraternity/sorority, student government, etc.)

An Auburn University employee from the office of Academic Insight collected the data and coded the qualitative data in NVivo®. Key themes were identified based on an analysis of the data and the HIPs measured by Auburn University to categorize the peak moment information digitally and separate data. The initial themes for the peak moments were the following:

- Internship (HIP also measured directly)
- Co-op (HIP also measured directly)
- Undergraduate Research (HIP also measured directly)
- ePortfolio (HIP also measured directly)
- Study Abroad (HIP also measured directly)
- Mentorship
- Class
- Personal Relationships
- On-Campus Organizations/Clubs
- Leadership
- Athletics
- Volunteering
- Diversity and Inclusion Experiences

The listed themes were developed using search terms appropriate to detect the different categories. To search for student responses involving mentorship, the following key search terms were used; *professor, *faculty, *staff, *Dr., *Dr, *dr., *dr, *doctor, *teacher, *mentor, *peer review, *peer. From hits on data strings including these search terms, further analysis was done to identify the context in which the terms were used and appropriately categorize the response. A similar approach was used for each theme.

The researchers recognize that other HIPs as identified by Kuh may have also been included in peak experiences. Those were not included in this introductory study.

Results

61 students graduated in Environmental Design at Auburn University during the period surveyed. Among the 61 students recorded, 74 HIPs were noted. While some students reported participating in multiple HIPs, others reported not participating in any. If a student participated in one HIP multiple times, this was still recorded as a single instance.

Are some HIPs more common among the students in the Environmental Design program?

Table 1 summarizes HIP participation by Environmental Design students. Over half of the students had completed an E-Portfolio, which was a course requirement during the graduated students' time in the program. Participation was significantly less among the other HIPs recorded, with the next highest recorded HIP being the completion of an internship, recorded by 28% of the students surveyed. Furthermore, 15% of Environmental Design students studied abroad and 18% of students participated in Undergraduate Research. Only 3% of students recorded the completion of a Co-Op.

HIPs	Number of Students Participating (Percent of Respondents)
E-Portfolio	35 (57%)
Internship	17 (28%)
Undergraduate Research	11 (18%)
Study Abroad	9 (15%)
Co-op	2 (3%)
Total	74 or 1.21 HIPs/student

Table 1: High Impact Practices Recorded

What common categories of peak moments appeared when analyzing Environmental Design student data?

Of the 61 student who graduated in Environmental Design during the survey period, 58 student responses on peak moments fell into one of the 13 original key themes. Summaries of the results were provided to the researchers using an Excel® spreadsheet. The data was then further classified based on similar themes created through manual organization resulting in eight different key themes: self-development, empathy and diversity, project-based learning, mentorship, on-campus organizations, study away, peer relationships and undergraduate research (Table 2).

Key Themes	Number of Students (Percent of Respondents)
Mentorship	14 (23%)
Self-development	10 (16%)
Empathy and diversity	8 (13%)
Project-based learning	7 (11%)
On-campus organizations	7 (11%)
Study away	7 (11%)
Peer relationships	3 (5%)
Undergraduate research	2 (3%)
Total	59

Table 2: Peak moments of students categorized in eight themes.

Of the 58 graduating students who provided admissible responses on the CEES survey, 23% expressed a significant moment in which they received mentorship from a professor or instructor. Students described the guidance they received from those within the Environmental Design program as well as the knowledge gained from the professors. One student stated it as follows:

> Through the guidance of my instructors, I found new meanings for what design is and what design can be. They gave me an entirely new outlook on the way I perceive design and how I make design related decisions. This new perspective allowed me to gain the appreciation and passion that I now have for design, and its endless possibilities in shaping a better future for the world. – M

16% of the students mentioned self-development during their time at Auburn, both personally and professionally. One of the 10 students mentioned learning time- management skills, while another gained confidence throughout their degree. 13% of students referenced Empathy and Diversity within their Peak Moment.

> During my internship, I was able to help with a project focused on experimental housing for developing communities. It had a great impact on me and showed me what can happen when you think outside the box and beyond conventional methods. This experience alone with others in my internship inspired me to pursue a master's degree in Community Development. – K

Along with the key themes found amongst the student data, 25 students acknowledged the impact their peak moment had on their future. Indicating the lasting significance of these moments throughout their career. 15 students referenced specific projects they had worked on in class, and 13 students cited their studio experiences. Example comments included the following:

> …I loved being able to feel a part of both the university as well as the .. community through organizations, classes, and volunteer work (which often overlapped). In doing so, I have cultivated irreplaceable friendships, experiences, and life lessons I will take with me after graduation.

> One of the most impactful moments of my academic experience was an interaction I had with one of my mentors... In a personal meeting we had to discuss options for post-graduation, she was supportive of my decisions to pursue further education but

told me that she wanted me to not hold back. She said, "Sometimes I get the feeling you are afraid to be good... you are afraid to be yourself" and that moment will be with me until the day I die.

While studying abroad I was able to learn about how other cultures and people approach design in everyday life. This really opened my world up to different methods and ideas to use going forward.

When did these HIPs and peak moments occur within each Environmental Design student's academic career?

As shown in Fig. 1, 22 of the student responses did not specify a certain time frame in which their peak moment occurred, and 19 students spoke of multiple academic years in their response. However, 5 of the peak moments were based in the student's first year, 2 were specific to sophomore year and another 2 were specific to junior year. Finally, 8 student's peak moments occurred during their senior year at Auburn University. For the few moments that occurred during a student's first two years in college, almost all surrounded a significant point of transition and self-development like failing a test, being challenged to transition study habits, or not meeting admission standards into a degree program.

Fig. 1. Time periods recorded when a student's peak moment occurred.

Discussions and Conclusions

The purpose of this introductory research was to explore HIPs and peak moments experienced by Environmental Design students at Auburn University. Based on the findings, it is apparent that students may not fully understand the value or know about the opportunities of HIPs. While five HIPs are measured at graduation for each Auburn student, ENVD students report only an average of 1.21 HIPs per student over a four-year undergraduate degree. Further, results indicate a lack of peak moments that occur during a student's sophomore and junior years. The authors noted that the exit survey could be the first time the ENVD student hears about HIPs. If the value of HIPs and opportunities for peak moments could be better explained to students early in their academic career, students would have a better opportunity for deeper learning and more curated academic experiences. The development of a document that may convey opportunities to students through academic advising is one such way this could occur. This could occur through a specific flyer (Fig. 2) or through a modified curriculum model (Fig. 3) students use on a regular basis.

Fig. 2 . Flyer for students as they begin ENVD program.

Fig. 3 . Curriculum modified to show possible HIPs and opportunities for peak moments.

Students could even be challenged to complete one HIP each semester to disperse opportunity and provide an opportunity for HIPs to build on each other. The ePortfolio, required in one ENVD class, could be introduced early in a student's career. While early introduction does not guarantee a high-impact experience, it does increase the odds of success if the student intiates engagement in the experience by being more informed of the available opportunities. Students could populate the ePortfolio with experiences each semester, and mentors could review the portfolios periodically during the academic experience.

Specific to the Environmental Design program at Auburn University, mentorship is currently recognized as the single biggest peak moment in the program. Much of this stems from the relatively small size of the program and specific faculty placing significant emphasis on this for students. Training for all faculty and staff within the ENVD program would enhance and expand the student experience in this area.

Professional development classes or seminars could be implemented in a student's first or second year to provide guidance on available opportunities, such as internships or co-ops. Faculty could also review the curriculum map to assure project-based learning (a common peak moment identified by students) is infused in the curriculum. While the program offers a single study abroad each year as well as a study away, expanded opportunities could be made available for students. This could include more economical options or approaches that provide a variety of time periods the student could explore.

The peak moment comments by students did not reveal obvious moments of educational flow. Not surprisingly, students remembered and told stories of experiences as opposed to remembering their immersion or lack thereof in a given experience. Students did indicate a connection between HIPs and peak moments. While some peak moments did reflect a specific HIP, most comments revolved around specific experiences within a given opportunity suggesting that the experiences the HIPs create provide the opportunity for peak moments as opposed to the HIP itself. This suggests that opportunity exist for faculty to further curate HIPs to improve the educational experience and elevate the peak moment for students.

The ENVD program resides in a college of majors that have been in place for long periods of time. One major in the college has been in place for 100 years. In contrast, ENVD has existed in its current for approximately ten years. In addition, dedicated faculty for ENVD have only existed for the last couple of years. This has limited the time the faculty have had to make small improvements, learn from them, and make additional improvements. Maturity of the program will help in the development of meaningful learning experiences.

Further research should expand the number of HIPs explored by students in the ENVD program and factors influencing non-participation. Further understanding about student and faculty knowledge of HIPs needs exploring. In addition, conceptual, logistical, and practical approaches to integrating HIPs into the ENVD program must be better understood by faculty and administrators. Thoughtful, creative approaches to TALEs in ENVD should be explored and evaluated for additional modifications if a curated, strong student experience is to be created for tomorrow's student.

References

Bakker, A. B. (2005). Flow among music teachers and their students: The crossover of peak experiences. *Journal of Vocational Behavior*, *66*, 26–44.

Bowers, J. (2017). Flow and peak experiences. *Handbook of Medical and Psychological Hypnosis: Foundations, Applications, and Professional Issues.*, 559–563.

Cherry, K. (2020, November 26). *Peak Experiences in Psychology*. https://www.verywellmind.com/what-are-peak-experiences-2795268

Csikszentmihalyi, M. (1990). *Csikszentmihalyi, M. (1990) FLOW: the psychology of optimal experience. New York: Harper and Row.* Harper and Row.

Farrow, C. B., Wetzel, E., & Leathem, T. (2022). *Teaching in the Built Environment: Creating Transformational Active Learning Experiences* (1st Edition). Routledge. https://doi.org/10.1201/9781003106029

Gurin, P., Dey, E. L., Hurtado, S., & Gurin, G. (2002). Diversity and higher education: Theory and impact on educational outcomes. *Harvard Educational Review*, *72*, 330–366. https://doi.org/10.17763/haer.72.3.01151786u134n051

Heath, C., & Heath, D. (2017). *The power of moments: Why certain experiences have extraordinary impact*. Simon & Shuster.

Kilgo, C. A. (2012). *The estimated effects of service learning and undergraduate research on students' intercultural effectiveness* [Master's thesis].

Kuh, G. D. (2008). *High-Impact Educational Practices: What They Are, Who Has Access to Them, and Why They Matter*. Association of American Colleges and Universities. http://www.neasc.org/downloads/aacu_high_impact_2008_final.pdf

Leach, D. (1962). *Meaning and correlates of peak experience* [Doctoral dissertation].

Nelson, T. E., Shoup, R., Kuh, G. D., & Schwartz, M. J. (2008). The effects of discipline on deep approaches to Student learning and college outcomes. *Research in Higher Education*, *49*(6), 469–494.

Raettig, T., & Weger, U. (2018). Learning as a Shared Peak Experience: Interactive Flow in Higher Education. *International Journal of Applied Positive Psychology*, *2*. https://doi.org/10.1007/s41042-018-0011-9

Rana, S. A., Tanveer, S., & North, S. C. (2009). Peak experiences of music and subjective well being. *Journal of Behavioral Sciences*, *191*(1–2), 41–57.

Sandeen, C. (2012). High-impact educational practices: What we can learn from the traditional undergraduate setting. *Continuing Higher Education Review*, *76*, 81–89.

Valbrun, M. (2018, April 25). Maybe Not so "High-Impact"? *Inside Higher Education*. https://www.insidehighered.com/news/2018/04/25/study-questions-whether-high-impact-practices-yield-higher-graduation-rates

Learning Experiences in a Summer Bridge Program for Successful Retention of Post-Secondary Hispanic Students in Puerto Rico

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract
Due to the natural disasters in Puerto Rico, students' academic performance has been affected and dropouts have increased. Moreover, COVID- 19 intensified the challenge for post-secondary education, resulting in students obtaining lower scores for college entrance exams. Students are not academically prepared for the transition to university. To address these challenges at the Inter American University of Puerto Rico, Metropolitan Campus we developed an Intensive Summer Bridge Academy (ISBA) to address the gaps in knowledge and skills of developmental Mathematics education. In 2021 the ISBA consisted only of coursework with ten students registered. Because of low enrollment and low knowledge gain in 2021, we combined coursework with extracurricular activities of social-mental health including peer tutoring, mindfulness, and stress management and fourteen students registered in 2022. The two ISBA courses were taught using technology in the *EducoSoft* learning management system (LMS). Students in the 2021 had lower average grades and spent fewer (53) hours using the LMS when compared to students from 2022 who had higher average grades and spent an average of 55 hours using the platform. Majority of ISBA students (93 %) passed Mathematics when compared to institutional baseline of 53 %. All ISBA students were retained when compared to 69% of institutional retention. The students in the ISBA were satisfied with extracurricular activities. Students agreed in 2022 that the extracurricular activities were beneficial for their academic and personal development. The combination of technology and student support activities result in students successfully completing their developmental education in Mathematics.

Keywords: Intensive Summer Bridge Academy, Hispanics, Developmental Education, Mathematics

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Introduction

The Inter-American University of Puerto Rico (IAUPR) System is composed of 11 campuses around the island of Puerto Rico. Metropolitan Campus (MC) is in San Juan, the capital of Puerto Rico. The mission of MC is to serve the diverse needs and interests of its students and surrounding community. It offers technical certificates, associate's, baccalaureate, and graduate degrees, as well as professional certificates. Its total enrollment for fall 2018 was 7,831 students (Fig 1). From the total, 70.8% were enrolled in associate or bachelor's degree programs while 29.2% were graduate students. Of the total of undergraduate students, 80.2% were enrolled in a full-time basis and 28.9% were first generation college students. MC, just like other colleges and universities in Puerto Rico, has suffered decreases in enrollment in recent years because of the financial difficulties and economic dislocations over the past decade. Hurricane Maria also caused widespread devastation, which caused further migration to the mainland U.S., also resulting in decreasing enrollment (Fig 1). The declining enrollment has placed excessive pressure on MC's financial ability to meet the needs of all students and especially the incoming freshmen, 80% who are arriving with inadequate basic skills in Math and English. Underprepared students are three times as likely to drop out of college and of the ones who stay, many face the disastrous reality of running out of financial aid before they complete their studies.

Figure 1: Fall-to-fall enrollment 2017 to 2021. Source: *Office of Research, Evaluation and Planning, IPEDS.*

The student body comprises of 90 % Hispanic students, mostly female (60.1%), comprising of persons returning to complete their degrees, and young students who work and study at the same time. The percentage of MC students that reported a household family income under $24,000 is 65.4. In fall 2018, there were 652 first year (first time) students enrolled at MC, 54.1% of whom attended Puerto Rico Public Schools and 90.2% receive financial aid. Many incoming freshmen of MC need remediation; and do not advance to upper-level courses at an acceptable rate, hence take more than six years to graduate. In recent years retention and graduation rates have decreased by 3 % and 6% respectively when compared with the previous cohort (Tables 1 and 2).

Cohort	Enrollment	Retention	%
2014	723	518	72%
2015	588	420	71%
2016	555	402	72%
2017	647	447	69%

Table 1: Retention rates of students enrolled in bachelor's programs from 1st to 2nd year

Cohort	4-year			6-year	
	Enrollment	Graduates	Rate	Graduates	Rate
2008	685	129	19%	224	33%
2009	657	115	18%	191	29%
2010	734	170	23%	264	36%
2011	865	188	22%	324	37%
2012	735	140	19%	231	31%

Source: Enrollment Questionnaire of term 2015-16 (Cohort 2014), 2016-17 (Cohort 2015) y 2017-18 (Cohort 2016). Office of Research, Evaluation and Planning, IPEDS

Table 2: Graduation rates-undergraduate level

Intensive Summer Bridge Academy Framework

With funding from the US Department of Education (Title V, P031S200066) MC remodeled the Active Learning Center of Excellence (ALCE) to integrate several students support services. The ALCE includes an "early access/early readiness" strategy that specifically addresses identified underprepared student needs. MC has put significant effort into building connections to feeder high schools. This strategy builds on current efforts and provide secondary students and teachers the opportunity to enroll in MC's ALCE "Intensive Summer Bridge" academies (ISBA) to develop academic and technology skills. High school teacher training and faculty training was designed to make best use of technologies and social media. The objective of the ISBA was to help MC freshmen to strengthen their performance in basic skills courses such as Math as withdrawal and failure rates were high (Table 3).

Developmental Education Courses	Failure/Withdrawal Rates
Mathematics	47 %
Spanish	31 %
English	27 %

Source: Centro de Investigación Institucional y Fondos Externos 2018.

Table 3: Remedial courses results of Fall 2018

National research has shown that 'weekend colleges" are not very effective in achieving learning outcomes. Instead, MC proposed a two-week long ISBAs that have been proven to have lasting effects in student learning and study behaviors (Howard and Sharpe, 2019). As Bir and Myrick (2015) suggest we consider whether an intensive summer bridge academy built upon improving Math basic skills might be able "to provide a significant [improvement] to long-term academic performance" (p. 23).

Therefore, influenced by the work of Boroch et al (2007) during the spring of 2021 the ALCE project team sent a promotional flyer via email to all newly admitted students encouraging

them to participate in the summer bridge academy. Further, team members called all students admitted for Fall 2021 to provide them with information on the opportunity to improve and advance their Math and English knowledge in developmental courses. The recruitment for the hybrid courses was difficult due to the uncertainty of the spread of the COVID-19 virus and the lack of vaccines. The low recruitment resulted in only two courses GEMA 1000 (Quantitative Reasoning), a Mathematics course for non-science majors and GEMA 1200 (Fundamentals of Algebra) for STEM majors was offered. All coursework in the ISBA were offered through the online technology using *EducoSoft* learning management system (LMS) that included course materials, practice exams, and exams. The students registered in the courses were required to complete a pretest which determined their level of knowledge in Mathematics. The courses were taught in Spanish and tutoring was provided virtually and face-to-face at the ALCE. At the end of the course a posttest was administered to determine knowledge gain (Hake, 2007; Nissen, Talbot, Thompson, and Van Dusen, 2016) during both ISBA.

Due to the low enrollment in the ISBA in 2021 and recognizing the serve mental crisis for teens and college students, we developed a new active learning ISBA framework to address students' needs beyond the academic gaps of high school (Thakur, 2020). Below we present the adjustments made to the ISBA framework from 2021 to 2022 in the context of transitioning from lockdowns of COVID 19 to face-to-face ISBA.

Year 2021	Year 2022
GEMA 1000 and GEMA 1200	GEMA 1000 and GEMA 1200
Hybrid Courses	Face-to-face course
Two different faculty members taught the courses	Same faculty member taught both courses
Used *EducoSoft* Learning Management System (included course content, exam practice, exams)	Used *EducoSoft* Learning Management System (course content, exam practice, exams)
Pre-posttest for knowledge gain	Pre-posttest for knowledge gain
Hybrid Tutoring at ALCE	Face-to-face Tutoring at ALCE
2 weeks	2 weeks
No extracurricular activities	7 extracurricular activities
No student Satisfaction Surveys	Student Satisfaction Surveys
Mornings only	Mornings and afternoons
No lunch included	Lunch included for students

Table 4: A comparative analysis of the ISBA Framework offered at MC for 2021 and 2022

Conclusions

During the ISBA 2021 students spent an average of fifty-three hours while in the ISBA 2022 students spent an average of fifty-five hours using the platform during the two-week period of the program. Consequently, students who participated in ISBA 2021 had lower average grades (76%) when compared to students from 2022 (84%). Furthermore, we found that students in the GEMA 1000 in 2021 courses did worse after the course when compared to students in 2022. There was low knowledge gain (Hake, 2007) and, in some cases, negative results (see Table 5 and 6). Students were not engaged in the course and did not have the

interest to complete the posttest. Similar results were observed for the GEMA 1200 course; however, we did not see negative results in the posttest (see Table 7 and 8).

STUDENT	PRETEST	POSTTEST	DIF	% HAKE GAIN
1	41.91	57.14	15.23	26.2
2	81.91	73.8	-8.11	-44.8
3	48.57	40	-8.57	-16.7
4	26.66	20.49	-6.17	-8.4
5	71.43	30.46	-40.97	-143.4
6	51.43	57.14	5.71	11.8

Table 5: GEMA 1000 pre-post test score with percent Hake Gain- 2021

STUDENT	PRETEST	POSTTEST	DIF	% HAKE GAIN
1	17.5	52.5	35	42.4
2	25	85	60	80.0
3	35	97.5	62.5	96.2
4	33.75	77.5	43.77	66.0
5	22.5	80	59.5	74.2
6	10	53.75	43.75	48.6
7	10	65	55	61.1
8	10	82.5	72.5	80.6
9	17.5	67.5	50	60.6

Table 6: GEMA 1000 pre-post test score with percent Hake Gain- 2022

STUDENT	PRETEST	POSTTEST	DIF	% HAKE GAIN
1	40	65.2	25.2	42.1
2	47.1	65	17.9	33.8
3	41.4	84.8	43.3	74
4	47.1	88.1	41	77.5

Table 7: GEMA 1200 pre-post test score with percent Hake Gain -2021

STUDENT	PRETEST	POSTTEST	DIF	% HAKE GAIN
1	22.5	NP		
2	12.5	65	52.5	60
3	28.8	62.5	33.8	47.4
4	22.5	77.5	55	71
5	15	70	55	64.7

Table 8: GEMA 1200 pre-post test score with percent Hake Gain- 2022

Workshop	Excellent	Very Satisfied	Satisfied	Deficient	No Response
Mindfulness	89	8	3	0	1
Limitless Art	95	5	0	0	0
Mindful Eating	94	6	0	0	0
Time Management	91	9	0	0	0
Transition to University Life	83	16	0	0	1
Emotions Management	91	8	0	0	1
Problem coping skills	81	17	1	0	1

Table 9: Percent of overall student satisfaction for extracurricular activities in ISBA 22

The workshop content was purposely designed to include topics such as diversity, working in teams, inclusion of students with learning disabilities, connection to nature and spirit (Thakur, 2020). Overall, the students self-reported satisfaction with the extracurricular activities planned for the ISBA in 2022. No students found the content and activities to be deficient; however, 4 students did not respond (Table 9). Mindful eating and limitless art activities had the highest satisfaction. The Assessment of the ISBA showed 100% of students agreed that the activities and workshops in ISBA of 2022 were relevant and beneficial for their academic and personal development. This confirms what Turner, McCallum, and Benson (2021) say about how "social interactions with faculty, peers, peer-advisors and advisors influenced [students] college experience" (p. 7).

The ISBA was successful since students in ISBA had a higher pass rate (100%) in Math when compared to the institutional baseline (53 % passing rate) during the first year of college. Also, 100% students who participated the ISBA were retained in fall when compared to the 69% institutional retention rate. The learning experiences using technology in our multidisciplinary ISBAs provided Hispanic students the tools to strengthen their resilience and a guided path towards achieving their academic goals.

Acknowledgements

References

Bir, B., & Myrick, M. (2015). Summer bridge's effects on college student success. *Journal of Developmental Education, 39*(1), 22-30.

Boroch, D., Fillpot, J., Hope, L., Johnstone, R., Mery, P., Smith, B., & Serban, A. (2007). Basic Skills as a foundation for student success in California community colleges. A review of literature and effective practices. *Journal of Applied Research in the Community College*, *15*(1), 81-85.

Hake, R.R. 2007. Design-based research in Physics Education research: A review in A.E. Kelly, R.A. Lesh, & J.Y. Baek, eds. (in press), *Handbook of Design Research Methods in Mathematics, Science, and Technology Education*. Erlbaum; online at https://web.physics.indiana.edu/hake/PERC2002h-Hake.pdf

Howard, B. L., & Sharpe, L. (2019). The summer bridge program: An effective agent in college students' retention. *Journal of Interdisciplinary Studies in Education, 7*(2), 20-30. EJ1267019.pdf (ed.gov)

Nissen, J., Talbot, R., Thompson, & Van Dusen, B. (2016). A comparison of Hake's g and Cohen's d for analysing gains on concept inventories. arXiv:1612.09180v2

Thakur A. (2020). Mental Health in High School Students at the Time of COVID-19: A Student's Perspective. *Journal of the American Academy of Child and Adolescent Psychiatry*, *59* (12), 1309–1310. https://doi.org/10.1016/j.jaac.2020.08.005

Turner, M., McCallum, C., & Benson, J. (2021). Beyond the Bridge: Exploring the Experiences of a Summer Bridge Program Through Student Voices. *Journal of College Orientation, Transition, and Retention*, *28*(1). https://doi.org/10.24926/jcotr.v28i1.3540

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Analysis of the Chinese Calligraphy Using Kansei Engineering

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

Chinese calligraphy is closely related to the Chinese cultural circle, and it is also the most important part of Chinese art history. "Regular script" is regarded as the morphological standard of Chinese characters, while "cursive script" has a strong artistic quality. For the analysis of Chinese calligraphy, this study uses the cursive script "Autobiography" and the regular script "The Inscription on the Sweet Spring in the Jiucheng Palace" as representative samples. 28 representative characters of regular script were selected as samples through the principle of Chinese character components; 24 characters were selected as samples of cursive script through the principle of Chinese character outline. The Kansei vocabulary is screened according to the structure and shape of the two types of calligraphy, and the Kansei engineering analysis is carried out in the form of relevant expert questionnaires. the Grey Relational Analysis (GRA) method is used to calculate the importance sequence of the related Kansei vocabulary of the two Chinese calligraphy. The analysis results can be used as an entry direction for Chinese calligraphy aesthetic education, as well as an important reference for metalworking design and creation courses, and provide a basis for product designers to use calligraphy as design elements.

Keywords: Analysis of Chinese Calligraphy, Chinese Character Components, Chinese Character Outline, Kansei Engineerin, Grey Relational Analysis (GRA)

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Introduction

Calligraphy is an art of writing, which has both practical and aesthetic aspects. Along with the continuous evolution of the history of Chinese civilization, Chinese calligraphy is the most important part in the history of East Asian art. In the history of calligraphy, from the pictographic oracle bone inscriptions, the structure of Chinese characters has been constantly changing, until the official script has been roughly finalized. The subsequent regular script and cursive script have pushed the artistry of calligraphy to its peak in the pens of calligraphers of all dynasties. Calligraphy is still active in every corner of the Chinese cultural circle. Therefore, we hope to understand the sensibility of the two representative fonts, regular script and cursive script, and apply them in the fields of design and teaching.

This study selects two masterpieces, "The Inscription on the Sweet Spring in the Jiucheng Palace" and "Autobiography" as samples, and samples and screens the works for words. Collect suitable adjectives as Kansei vocabulary, and collect data through expert questionnaires. Finally, Gray Relational Analysis (GRA) is used to obtain the ranking of the importance of adjectives. The analysis results are used as the basis for discussing the application of the two calligraphy styles and the form of educational entry.

Literature review

This chapter focuses on the research and discussion of important related literature, and the scope is divided into four aspects: The basic theory of research methods, Chinese characters appearance, Overview of Chinese calligraphy and Chinese Calligraphy Education, which serve as the basis for the relevant discussion, analysis, and development of this research.

The basic theory of research methods

This study uses the Kansei vocabulary derived from "Kansei Engineering" to measure the feelings and evaluations of regular script and cursive script for calligraphy viewers, and mainly uses the gray relational analysis (GRA) calculation analysis to rank the importance. In "Research on the Evaluation of Product Intrinsic Aesthetic Design Elements. (Jung-Chin.Liang, 2013)" and "Application of professional design perspectives in the design research of the external beauty of products" (Jung-Chin .Liang 2012), the method of applied kansei engineering combined with the gray relational analysis method is applied to the basis of product shape design; In "Application of Educational Measurement and Statistical Methods to Metalwork Design and Courses Strategy Analysis" (Hsiu-Jye .Chiang, 2016), it shows the flexibility and possibility of combining the Gray Entropy theory with various analysis methods.

Kansei Engineering

The theory of "Kansei Engineering" was proposed by Mituo Nagamachi (1970), which is a science that prioritizes the human point of view. "Kansei" is a Japanese phonetic word, and its meaning is the same as Sensitivity, Feeling, and Impression. Kansei is a cognitive expression based on feelings, and Mituo Nagamachi defines Kansei engineering as: "The technology that transforms the feelings or images consumers have about products into design elements" (Huang, 2014). When we see the appearance of a product, there will be many perceptual associations, among which the visual image association is the most obvious (Wang, 2002). We use adjectives to evaluate the shape, line, color, structure and other factors

of items, and these adjectives are called "Kansei vocabulary". After Kansei vocabulary is quantitatively analyzed through engineering methods, the perceptual elements of objects can be detected, which can be used as a strategy to convey and apply human psychology.

Grey Relational Analysis

Gray system theory was proposed by J. L. Deng in 1982. Its theory is mainly to conduct relational analysis for the ambiguity or incompleteness of the system model, and to explore the overall system by methods such as prediction and decision-making. Gray relational analysis is based on the change of each factor, combined with mathematical methods, to analyze the similarity of the geometric shape of the change curve, and develop a set of theories to solve the incomplete information system to judge the degree of correlation between factors. It can effectively deal with uncertain, multi-variable, discrete, and incomplete data. Gray relational analysis is the most effective analysis tool of gray system theory (Chiang, 2016).

Gray relational analysis has the following characteristics: (1) The established model is a non-functional sequence model; (2) The calculation method is simple and easy; (3) There is no excessive requirement on the number of samples; (4) It is not required that the sequence data must conform to the normal distribution; (5) It will not produce contradictory conclusions that are different from qualitative analysis (Chen 2021).

This study uses Nagai Masatake's gray relational formula to calculate Gamma. The advantage is that the calculated results will all Gamma values fall between 0 and 1. This method takes the origin as the coordinate distance, and the values can be correctly positioned and compared (Chiang, 2016). The gray relational method is widely used in various fields, especially for the clarification and sorting of ambiguous affairs. Gray relational analysis has the characteristic of sorting the importance of data, which is very suitable for screening and sorting design elements sorted out by Kansei Engineering.

Chinese Characters Appearance

There are many different angles for the analysis of Chinese characters. This section of the study discusses from two parts: Chinese character components and Chinese character outline. The relevant research on Chinese character components is based on the composition and structure of Chinese characters. The systematic study of Chinese character components was first published in "Analysis of Chinese Character Component" (Hsieh, 1972) and published in the journal of National Chiao Tung University. The Chinese character outline focuses on the shape of the text frame, which is more common in font design related research. Especially in "The knowledge of fonts" (Chiu, 1991) and "Chinese Typographers since 1949" (Liao, 2014).

Chinese Character Components

Chinese characters are composed of one or more components, while Chinese character components refer to the relative positional relationship between components. Taking the word "剖" in Figure 1 as an example, the whole can be disassembled into a horizontal structure "音" + "刂", and then "音" can be disassembled into a combination of "立" + "口". There are many classification and induction methods for Chinese character components, here is the classification of structure based on regular script characters in "Analysis of Chinese Character Component" (Hsieh,1972). The component structure is divided into four categories:

single body, horizontal structure, vertical structure and surrounding structure, as shown in the Chinese component structure form in Figure 2 (Hsieh, 1972). It is worth mentioning that there are also types of combination and change among the four categories. At this time, the classification is based on the sequence of disassembly. If you encounter a shape that can be divided into "田", the completeness of the radicals or the components connected by the radicals should be given priority for disassembly. For example, "鬍" is first disassembled into "髟" + "胡", and then further disassembled into "镸" + "彡" and "古" + "月".

Figure 1: *The components of "剖"*

Figure 2: *Chinese components structure*

Chinese Character Outline

Chinese characters are famous for their square characters, but the stroke composition of Chinese characters also makes the characters visually produce different outlines. Yung-Fu and Chiu (1991) divided Chinese characters into six types of characters according to their geometric shapes: square, rectangle, triangle, rhombus, pentagon, and hexagon in Figure 3. Characters with different outlines will affect the visual size and the center of gravity of the font. For example, the center of gravity of the regular triangle sinks and has a sense of stability and strength, while the inverted triangle has a strong sense of dynamics. Miao-Yi, Huag (2012) mentioned in her research that teaching Chinese characters through the

combination of lines and geometric shapes can make it easier for learners to recognize and write Chinese characters.

Figure 3: *Types and Examples of Chinese character Outlines*

回 月 上 下 今 士 巾

Overview of Chinese Calligraphy

Calligraphy and Chinese characters are closely combined and are inseparable from the life of the Chinese cultural circle. Different calligraphy styles have different temperaments. This section discusses the discussion related to calligraphy. It begins with a discussion of the history of calligraphy, followed by the aesthetics of calligraphy and calligraphy education. In this way, we can understand the current situation of calligraphy in a general way. "A Brief History of Calligraphy" edited by Lin.Ma tells the evolution of calligraphy art in order of Chinese dynasties. "Introduction to calligraphy fonts" written by Chien-Jung .Hsu describes the characteristics and changes of each calligraphy in detail. In terms of calligraphy aesthetics, the book "Chinese Calligraphy" edited by Jhen-Lian and Chen in 1994 has quite in-depth theoretical analysis and discussion on calligraphy aesthetics, calligraphy appreciation and calligraphy creation and techniques. "The Beauty of Chinese Calligraphy: Dancing Cursive" edited by Hsun, Chiang explains the evolution and charm of calligraphy in a more life-like way.

A Brief Hhistory of Calligraphy

Since the beginning of Chinese characters, calligraphy has entered the enlightenment. From the oracle bone inscriptions and bronze inscriptions in the pre-Qin period, the large seal script in the Western Zhou and Warring States periods, to the small seal script in the Qin Dynasty, a unified and standardized calligraphy art has emerged (Ma, 2005). The official script developed in the Qin Dynasty simplifies the structure and strokes of the small seal script, opening the era of calligraphy today, and the shape of Chinese characters was roughly the same at that time. During the Han Dynasty, the development of official script reached its peak, and the brushwork of regular script gradually took shape. The emergence of Wang Xizhi and Wang Xianzhi in the Wei and Jin Dynasties perfected the brushwork of regular script and created a precedent for "cursive script". Regular script reached its peak in the Tang Dynasty. It was easy to write and the fonts were regular, and it reached the peak in terms of practicality. "From the perspective of calligraphy art, the special style of brushwork is adopted, and regular script is the most exemplary meaning, which also makes the evolution of characters come to an end. (Hsu, 2004)" Regular script has hardly changed from the Tang Dynasty to today's computer standard script. Later calligraphers in the Song, Yuan, Ming and Qing Dynasties created different and interesting writing styles based on the scriptures left by the previous dynasties.

Calligraphy Aesthetics

"The same origin of calligraphy and painting is a beautiful talk in the history of Chinese art. It has two meanings. The origin of both calligraphy and painting is based on the imitation of

objects; the tools and materials used in both are the same. (Shao,2006)" Chinese characters are characters that combine shape, sound, and meaning. Due to the pictorial structure of Chinese characters, Chinese characters and visual arts have gradually established a connection after a long period of use and evolution. Starting from the initial image, it is gradually symbolized, gradually breaking away from the category of image and reaching the peak of structure and norms in regular script. Cursive script, on the other hand, is gradually departing from the norms and moving towards an aesthetic dimension of emotion and abstraction with more artistic conception. Calligraphy aesthetics is mainly an aesthetic artistic conception composed of external shape and internal meaning. The aesthetics of shape lies in the image formed by the interrelationships of brushwork, structure, composition, and ink. The internal meaning refers to the emotion and character contained in calligraphy. Both internal and external constitute the basic model of calligraphy aesthetics (Xie, 2003).

Chinese Calligraphy Education

Calligraphy was designated by Confucius as one of the "six arts", and it was an essential skill for a gentleman in ancient times. Most calligraphy education in ancient times began with writing education. In addition to school education, it also included family education and social education. In ancient school education, Chinese character writing education was a key subject set by almost all schools (Lo, 2016). The perception and application of calligraphy in today's society is also very different from the situation monopolized by class in the past.

Current Situation of Calligraphy Education in Taiwan

Taiwan and Hong Kong are the only countries where traditional characters are used as characters, and calligraphy education was one of the basic courses in elementary schools in the early days. However, with the changes of the times, calligraphy teaching has gradually developed from the original emphasis on writing techniques to the cultivation of temperament and aesthetic education (Lo, 2016). In terms of calligraphy education in Taiwan, the strength of the society is the main force supporting calligraphy education. The development of most calligraphers almost all come from private school-style folk calligraphy education. The education and inheritance of many calligraphy are advocated and promoted by non-governmental organizations (Lin, 1999). Calligraphy education has always been between the two subjects of Chinese and art in the education system. In the department of the university system that focuses on literature and history, its calligraphy course design is mostly based on traditional Chinese culture, emphasizing the continuation of calligraphy history and calligraphy theory, and focusing on cultivating students' cognition and literacy. Departments with art as the core of the curriculum tend to investigate the essence of calligraphy art, and it is difficult for ordinary people to study in depth. Such differences make it difficult for many people to deeply understand and appreciate calligraphy.

The Revolution of Modern Calligraphy

"Chinese calligraphy is a special case in the history of world art, and the reason why it is a special case is because it uses words as a medium to get involved in the field. The readability of calligraphy art has become the biggest feature compared to other art types. However, this feature has gradually encountered challenges and breakthroughs in modern calligraphy" (Li, 2000). However, the pure visual state of modern calligraphy after removing the meaning of words is closer to the essence of Chinese characters (Li, 2008). The biggest difference in the form of "modern calligraphy" is that it puts the importance of shape and space first. It is

"space, not recognition and reading" (Chiu 2008). Such changes have made the art of calligraphy more emphasis on spiritual symbolism and visuality, making the creation more inclined to less words, abstract, and unreadable development. This also enables the art of calligraphy to start to break away from paper, brush and ink, and to combine more different media. With the development of electronic equipment and the development trend of modern calligraphy art, perhaps the education and interpretation of calligraphy art may have more angles.

Method

The research process is roughly divided into three parts, the first is the collection and screening of regular script samples and cursive script samples, the second is the collection and screening of Kansei vocabulary, and the last is to make samples and Kansei vocabulary into expert questionnaires to collect data.

Chinese Calligraphy Sample Collection

Table 1 shows the samples of regular script, using "The Inscription on the Sweet Spring in the Jiucheng Palace" as the sample source, and screening by Chinese character components. Among them, the most common 14 kinds of components structures are selected, and in each structure, the two characters with the least strokes and the most strokes in the sample are selected, a total of 28 characters are used as samples.

Table 2 is based on "Autobiography" from the National Palace Museum collection in Taipei as the sample source. Use Chinese character outline as the screening basis. After discussion, 6 kinds of character outlines were selected, and the most obvious four characters were selected as samples, a total of 24 characters.

Table 1: *Samples screened from "The Inscription on the Sweet Spring in the Jiucheng Palace"*

Types of Components	Representative sample	Types of Components	Representative sample
	炎　覺		京　實
	架　聖		昆　窮
	加　樸		砌　榭

Types of Components	Representative sample	Types of Components	Representative sample
	勃 頹		始 鏡
	戒 載		在 属
	風 闕		延 還
	国 圖		之 帝

Table 2: *Samples screened from "Autobiography"*

Types of Outlines	Representative sample

Types of Outlines	Representative sample

Screening of Kansei vocabulary

After collecting 50 Kansei vocabulary from reference books and Internet materials. Discuss with experts on the screening of appearance characteristics of regular script and cursive script, and finally screen out the most suitable 20 Kansei vocabulary and make it into Table 3.

Table 3: *Kansei vocabulary table*

(1)Dynamic	(2)Heavy	(3)Density	(4)Harmonious
(5)Interspersed	(6)Hierarchical	(7)Precision	(8)Rigid
(9)Dignified	(10) Clear	(11) Balanced	(12) Delicate
(13) Structural	(14) Contrastive	(15) Stable	(16) Lively
(17) Symmetrical	(18) Plump	(19) Curved	(20) Rational

Questionnaire making and data collection

We divided the calligraphy samples into groups of 4 as shown in Figure 4. A total of 13 groups of calligraphy samples and 20 adjectives were made into questionnaires. A 5-point Likert scale was used to measure the subjects' scores for each Kansei vocabulary. Record gender, age, and experience with design or calligraphy as basic information. The questionnaire invites experts with more than 3 years of experience in calligraphy teaching and design to conduct the test. The final number of questionnaires is 16, one of which is an invalid questionnaire; the years of contact with design or calligraphy are distributed between 4 and 24 years; 7 males and 5 females. Finally, the questionnaire survey results are input into the gray relational data analysis program, and the final ranking is calculated.

Figure 4: *Image Sample for Questionnaire*

Results and analyses

In this research, 15 effective expert questionnaires were collected. First, all experts performed gray relational calculation and analysis on the Kansei vocabulary questionnaire results of individual images, and then integrated the Kansei vocabulary gray relational value (Gamma) of each image into the gray relational data table. in the calculation. The gray relational analysis method distributes the degree of correlation between the final perceptual vocabulary and all samples between 0 and 1, where 1 is the highest correlation and 0 is the lowest correlation.

GRA of Regular Script

The correlation between regular script and Kansei vocabulary is shown in Table 4. Through analysis and results, we define a vocabulary with a Gamma value greater than 0.7 as high correlation, and a vocabulary lower than 0.3 as low correlation. We found that in all Kansei vocabulary, the order of Gamma value is Clear (1.00), followed by Rational (0.82), and then Structural (0.73) and Stable (0.71); On the other hand, Kansei vocabulary with low correlation is Curved (0), Dynamic (0.15), Lively (0.17), Interspersed (0.19), Contrastive (0.29). From the analysis results, it can be seen that as a design element, regular script can be used to express information and give people a stable and clear image. It is difficult to express a dynamic feeling. Regular script is the entry point for almost all calligraphy learners. From the perspective of aesthetic education, we can focus on introducing the **structural relationship** and **composition changes** of the various parts of regular script. By analyzing the graphic space, it can be used as a good entry point for calligraphy aesthetic education.

Table 4: *GRA of Regular Script*

Adjectives	Gamma	Adjectives	mma
Clear	*1.00*	Delicate	0.50
Rational	*0.82*	Symmetrical	0.42
Structural	*0.73*	Hierarchical	0.34
Stable	*0.71*	Density	0.31
Precision	0.68	Heavy	0.30
Rigid	0.65	*Contrastive*	*0.29*
Harmonious	0.63	*Interspersed*	*0.19*
Dignified	0.61	*Lively*	*0.17*
Balanced	0.58	*Dynamic*	*0.15*
Plump	0.52	*Curved*	*0.00*

GRA of Cursive Script

The correlation between cursive script and Kansei vocabulary is shown in Table 5. Through analysis and results, we define a vocabulary with a Gamma value greater than 0.7 as high correlation, and a vocabulary lower than 0.3 as low correlation. We found that among all Kansei vocabulary, the ranking of Gamma value is Curved (1.00) the highest, followed by Dynamic (0.90) and then Lively (0.83), Interspersed (0.78) and Density (0.71);；; It is worth noting that there are as many as 10 items in the Kansei vocabulary part with low correlation, among which the four items with the lowest correlation are Precision (0), Heavy (0.01), Dignified (0.01) and Rigid (0.02). It can be seen from the analysis results that As a design element, cursive script can work well with curves or curved surfaces or on soft surface, giving people an organic, ornamental features. It is relatively difficult to express the feeling of being rigorous and rational.

The strokes of cursive script are connected to each other, making it difficult to read. Therefore, it is recommended to look at the whole work and analyze the shape, connection and texture changes of the lines in another aesthetic way.

Table 5: *GRA of Cursive Script*

Adjectives	Gamma	Adjectives	mma
Curved	*1.00*	*Structural*	*0.29*
Dynamic	*0.90*	*Stable*	*0.24*
Lively	*0.83*	*Symmetrical*	*0.18*
Interspersed	*0.78*	*Plump*	*0.17*
Density	*0.71*	*Clear*	*0.16*
Hierarchical	0.56	*Rational*	*0.13*
Delicate	0.55	*Rigid*	*0.02*
Harmonious	0.51	*Dignified*	*0.01*
Contrastive	0.46	*Heavy*	*0.01*
Balanced	0.43	*Precision*	*0.00*

GRA of Comprehensive Chinese Calligraphy

Finally, we collected all the sample data, and made a gray correlation analysis on the sample data of regular script and cursive script, trying to find out the common correlation between the two. The final results are shown in Table 6. Similarly, Kansei vocabulary with a Gamma value greater than 0.7 are defined as high relevance, and with a Gamma value lower than 0.3 are defined as low relevance. The correlations, starting from the highest, are Harmonious (1.00), Delicate (0.87), Balanced (0.84), Structural (0.80) and Stable (0.71). Those with low correlation are Curved (0.22) and Heavy (0.00). Kansei vocabulary with high correlation can be understood as the common basic aesthetics of both regular script and cursive script, both of which are biased towards the overall balance and harmony of the shape. Heavy is a property that needs to be avoided, but a low value of Curved is a phenomenon worthy of further investigation. From Figure 5 GRA Result Comparison, we can see that there are obvious correlation differences among the three sets of data. This is a good representation of the characteristics expressed by different calligraphy, and the level of the comprehensive data represents the common characteristics of the two calligraphy.

Table 6: *GRA of Comprehensive Chinese Calligraphy*

Adjectives	Gamma	Adjectives	mma
Harmonious	*1.00*	Lively	0.50
Delicate	*0.87*	Dynamic	0.48
Balanced	*0.84*	Contrastive	0.47
Structural	*0.80*	Plump	0.44
Stable	*0.71*	Symmetrical	0.35
Clear	0.70	Rigid	0.35
Density	0.69	Precision	0.34
Hierarchical	0.63	Dignified	0.31
Rational	0.61	*Curved*	*0.22*
Interspersed	0.52	*Heavy*	*0.00*

Figure 5: *GRA Result Comparison*

Conclusions and suggestions

This study uses Kansei Engineering to analyze the difference in sensitivity between regular script and cursive script, conducts surveys with expert questionnaires and uses gray relational analysis to analyze the data. The analysis results serve as the basis for the learning and application of calligraphy in the field of design, and explore the possibility of applying it to calligraphy education. Considering that there is a cognitive threshold for calligraphy and modeling in the research process, data is collected through expert questionnaires, and the data is analyzed through gray relational analysis. The findings of the study are divided into three parts. First of all, regular script has the characteristics of clarity, rationality, and clear structure, and clarity is the most relevant feeling. When designing, you can use this feature to strengthen the design style, and it is very suitable as a starting point for understanding characters; then, cursive script is Full of the characteristics of Curved, Dynamic and Lively, this well explains the excellent adaptability of cursive script in combining fashion design and modern dance. In terms of aesthetic education, it is more difficult to identify, but it may be possible to start from the direction of graphic art, from pure modeling and aesthetics; the third part is to explore the common characteristics between cursive script and regular script, from the analyzed data As a result, it can be known that Harmonious, Delicate, and Balanced are the basic aesthetic cognitions that both styles must possess.

From the research results, we have a clearer understanding of regular script and cursive script, and can have more data support in application and education. The two kinds of calligraphy have the same structure of random characters, but the writing methods are completely different. A breakthrough in the process of this research is to find out the corresponding screening method through the difference in the appearance of the two calligraphy. In the way that regular script uses Chinese character components, cursive script uses Chinese character outline as the basis for screening samples. After this study, the feasibility of such a classification method can be preliminarily confirmed. Perhaps in the future, more in-depth research can be conducted on the difference in perception brought about by the composition of different Chinese character components and the difference in sensitivity brought about by different glyph outlines.

References

Chen, C. H. (2021). *Apply Kansei Engineering in the Narrative Metalwork Design ━━ Using Gathering and Separating as the Them.* Master thesis. https://hdl.handle.net/11296/fwaq8j

Chen, J. L. (1994). *Chinese Calligraphy*. Shanghai: Shanghai Painting and Calligraphy.

Chiang, H. J. & Yeh,Y.J. & Li, C. J. & Chang, Y. C. (2016). Kansei engineering applied to the study of the shape and style design of metal teapots. *International Conference on Grey System Theory and Kansei Engineering Conference* (GSAKE 2016).

Chiang, H. J. (2016). *Application of Educational Measurement and Statistical Methods to Metalwork Design and Courses Strategy Analysis*. PhD thesis.http://ntcuir.ntcu.edu.tw/bitstream/987654321/10657/2/CMS101107.pdf

Chiang, H. (2009). *The Beauty of Chinese Calligraphy: Dancing Cursive*. Taipei: Ylib

Chiu, C. W. (2008). Persistence and Long Journey - Viewing the Artistry of Traditional Calligraphy and Modern Calligraphy from the "Shape".*Arts Exploration,22*(4),131-132.

Chiu, Y. F. (1991). The *knowledge of fonts*. Taipei: Yi Fong Tang.

Chuang, M. Y. (2020)*. Analysis on Components of Characters in Elementary Chinese Teaching .*Master thesis.https://hdl.handle.net/11296/z74aqd

Hsu, C. J. (2004)*. Introduction to calligraphy fonts.* Taipei: Rock .

Hsu, C. J. (2004). *How to Watch Chinese Calligraphy.* Taipei: Rock .

Hsieh, C. J.& Huang, Y. W. & Lin, S. (1972). Analysis of Chinese Character Component.*Journal of National Chiao Tung University*.

Huang, M.Y. (2012). New Perspective of International Chinese Character Education - Deconstruction of Geometric Points, Lines and Surfaces "558 Character Search", "Geometric Literacy", "Sound and Shape Input".*International Symposium on "Chinese Characters and Chinese Character Education"*.

Huang, S. F. & Chiang,H.J. & Nagai,M. (2014). A Discussion on the Sensitive Design of Gold Works for Solo Exhibitions.*2014 New Century Leisure and Creativity Forum and International Symposium*.319-330.

Li, H. K (2005). *The Art of Calligraphy in Space.* Taipei: Rock .

Li, S. S. (2000). *The New Orientation of Contemporary Calligraphy and the Dialogue of Modern Chinese Calligraphy.* Taichung: National Taiwan Museum of Fine Arts Press

Li, S. S. (2008). *Observation on the Development of Contemporary Calligraphy in Taiwan-Interdisciplinary Research and Review of Modern Calligraphy.* Taichung: Da Xiang Art Space.

Liang. J. C. & Chiang.H.J. & Hsu,I.C. &Nagai, M. (2012). Application of professional design perspectives in the design research of the external beauty of products. *Journal of Quantitative Management*,9(2),39-50.

Liang, J. C & Hsu, I. C & Chiang, H. C & Nagai, M. (2013). Research on the Evaluation of Product Intrinsic Aesthetic Design Elements.*Journal of Quantitative Management,10*(1),93-106.

Liao, J. L. (2014). *Chinese Typographers since 1949*. Taipei: Lion Art.

Lin, L. E. (1998). *The Present Circumstances and Evaluation of Calligraphy Education in Taiwan.* Taipei: National Chengchi University. https://ah.nccu.edu.tw/bitstream/140.119/4599/1/882411H004012.pdf.2022.10

Lo, N.W. (2016)*. Research on the Development of Calligraphy Education in Taiwan.*Master thesis.https://hdl.handle.net/11296/54549c

Ma, L. (2005). *A Brief History of Calligraphy* .Taipei: Rock.

Mituo, N. (1995). *Talking about Kansei Engineering.Tokyo:* Japanese Standards Association.

Shao, J.& Hsu, C. J. (2006). *The relation between calligraphy and other arts.* Taipei : Rock.

Wang, C. H. (2002). *A Study on the Influence of the Features of a Bicycle's Frame Form on the Image perception.*Master's thesis. https://hdl.handle.net/11296/cxu46e

Xie, Y. Z. (2003). *Research on Calligraphy Education in Art Museum*.Master thesis. https://hdl.handle.net/11296/7ebr8f

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"That Was a Masterpiece!":
Crafting Effective Workshops for Japanese Pre-Service Teachers of English

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

The implementation of the new Course of Study Guidelines in Japan has increased the demands on teachers at elementary, junior, and senior high schools. Regrettably, the support structure for English teachers in the public system is sadly lacking. Every day, novice English teachers in Japan are facing challenges for which their pre-service training has failed to prepare them (Mouri, 2020; Tahira, 2012). This paper explicates a research project that aims to understand and support the practical needs of pre-service English teachers who intend to teach at junior high schools and senior high schools in Japan. Pre-service teachers of English (n=20) were asked to identify what topics they would like to be included in teacher-training workshops designed to address their needs. In 2022, two workshops were held taking into account these perceived needs. This paper focuses on the efficacy of the first workshop which was based on the participants' (n=12) informal and written feedback. This research project aims to provide realistic solutions to practical problems which English teachers in Japan face every day. It is hoped that fellow educators will find this paper useful when considering making changes to their own educational contexts.

Keywords: Practical Needs, Pre-Service, Support, Teacher Training

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Introduction

All teachers, regardless of the country in which they teach, need support. Many English teachers in Japan are struggling to overcome the challenges that they face and the existing support structure leaves much to be desired (Okumura, 2017). This paper outlines a research project which aims to understand the needs of pre-service English teachers in Japan and to provide meaningful support. Initially, the challenges which English teachers in Japan face are laid out after which the rationale and design of the research project is explicated. The authors outline the details of the first workshop in a series of workshops designed to meet the needs of pre-service English teachers.

Background

Nanzan University is a private Catholic university in Nagoya, Japan. It has a student body of just under 10,000 students. The Department of British and American Studies (known as *Eibei* in Japanese) at Nanzan University is renowned for the high English level of its students. Many of the *Eibei* students join the English teaching profession after they have graduated.

Past research – Supporting in-service teachers of English

The motivation for applying for a Japan Society for the Promotion of Science (JSPS) Kaken grant to support in-service teachers of English stemmed from the Principal Investigator's (PI - Professor Cripps) frustration at seeing many of his seminar students struggle when they began their in-service teaching. In 2015 a JSPS Kaken B research grant (15H03481) was awarded to Professor Cripps and his research team, and teacher-training workshops were held as part of this four-year research project. Five workshops were held in total, with the first four workshops focusing on topics that were chosen by in-service teachers: '*Motivation*,' '*Intercultural Communication*,' '*Teaching English in English*,' and '*Creativity in Education*.' (For more detailed information on these workshops and the research project as a whole see Cripps et al., 2017, 2018). For the final workshop, it was felt that the focus should be on the needs of pre-service English teachers to help them make the transition from being a learner to a teacher.

Transitioning from a learner to a teacher

In 2018 Dr. Saori Doi from the University of Hawaiʻi at Mānoa was invited to give the final workshop of the Kaken B research project. On May 26, 2018, Dr. Doi gave a workshop entitled *'Transitioning from a learner to a teacher'*. The purpose of this workshop was to help pre-service English teachers at Nanzan University reflect on the challenges that they would face once they become English teachers after they graduate (for more details on this workshop see Cripps & Doi, 2020). The success of this workshop was one of the motivations that spurred the PI to apply for funding to support pre-service English teachers in Japan, especially considering the significant obstacles that aspiring teachers need to overcome.

Challenges for pre-service teachers

Pre-service English teachers in Japan face numerous difficulties. Arguably the main three challenges are: (1) meeting the demands of the New Course of Study (NCoS); (2) inadequate pre-service training and practical experience; and (3) a poor support structure once they enter the teaching field. The Japanese Ministry of Education, Sports, Science and Technology

(MEXT) requires English teachers in Japan to, 'in principle', teach English in English. This, and other NCoS demands, places a great deal of responsibility on novice and experienced English teachers and many feel that they cannot meet these demands (Cripps, 2019, 2021; Mouri, 2020). Teacher license courses which are held at universities in Japan tend to focus on less practical aspects of teaching such as the history of English teaching and legal issues connected to teaching. Although there is a focus on teaching methodology, pre-service English teachers receive little practical training in the form of teaching practicums.

To further exasperate this unsatisfactory situation, the practical training that pre-service teachers receive at junior and senior high schools is wholly inadequate (Kikuchi & Browne, 2009). As part of the teaching license course students return to their former junior or senior high school and receive three weeks 'on-the job' teacher training (in the case of those who want to receive a junior high school teaching license), and two weeks teacher training (for those who want to obtain a high school teaching license). During this time, student teachers are assigned a teacher mentor from whom they receive advice and shadow. In practice, however, students are given little advice and are often left to their own devices regarding how to prepare for classes and how to teach. Although student teachers do get guidance regarding how to write a sample lesson plan but, typically, they only have the chance to teach three or four practice classes during their time at their designated school. Once teachers pass the teaching license course and enter the teaching field after graduating from university the support that they receive at their new school is almost non-existent. This has led to increasing levels of stress, dissatisfaction, and a high attrition rate within the first few years of teaching. Many experts in teacher education agree that the shortage of qualified English teachers in Japan is problematic and that effective teacher-training programmes can contribute to lowering the attrition rate (Fukushima, 2018; Steele & Zhang, 2016; Tahira, 2012).

Outline of the Kaken B research project

The precarious situation for pre-service English teachers explained above was the impetus behind the current research project. This project aims to research and support the practical needs of pre-service English teachers who intend to teach at junior and senior high schools in Japan. Through intensive workshops and the provision of online support, pre-service English teachers will enhance their methodological knowledge and practical teaching skills. Support will be provided in three main ways by: (1) holding a series of intensive practical teaching workshops focusing on teaching methodology and practice; (2) creating an 'English Knowledge Lab' (EKL) website which will house useful audio and video files, as well as a host of other teaching support material such as lesson plans, grammar activities, communication activities and ICT implementation activities; and (3) producing practical teaching handbooks based on the teaching workshops.

This paper focuses on the first of the practical teaching workshops which was held in June 2022. Before designing this workshop, pre-service teachers of English (n=20) were asked through an online questionnaire and a group interview on Zoom, what topics they would like to be included in the proposed teaching workshops. A summary of the most popular suggestions is shown in Table 1 and this was used as the basis for the design of the first workshop.

Table 1: Suggested topics for pre-service workshops

No.	Suggested topics for pre-service workshops
1	How to use information technology in and outside the classroom.
2	English education in other countries.
3	The pros and cons of different teaching styles.
4	Creativity in teaching.
5	How to work with Assistant Language Teachers (ALTs).
6	How to make lesson plans.
7	How to make effective activities for use in the classroom.

The section below gives an overview of the first workshops and its focus. This is then followed by an analysis of the written feedback which the participants provided at the end of the first workshop.

The first pre-service English teaching workshop

In May 2022, the PI approached two experienced English teachers and asked them if they would consider giving a session as part of the first workshop. Professor Sean Toland from The International University of Kagoshima is an expert teacher and worked at Nanzan University for four years. During this time he worked closely with the PI and created a series of textbooks for first-year students at *Eibei* (Cripps et al., 2018). Professor Uchida is the Dean of the Graduate School of Global Communication and Language at Akita International University, Japan which is famous for its teacher training programme. Both professors were informed of the topics suggested by the pre-service teachers and were asked if they could give sessions which addressed these needs. The first workshop was held at Nanzan University on Saturday, June 25, 2022. Twelve pre-service teachers attended along with four professors. More pre-service English teachers wanted to attend but they were not allowed to because of they were in the middle of their teacher training and were instructed to avoid crowded places because of Covid-19 guidelines.

Professor Toland's session

The title of Professor Toland's session was: *'Cultivating English language learners' creativity'*. During his session, Professor Toland concentrated on the following areas: (1) what is creativity?; (2) challenges related to fostering creativity; (3) how to teach creatively; and (4) creativity and digital literacy – practical lesson ideas. Professor Toland concluded his session with a group activity.

Figure 1: Professor Toland's session on 'Cultivating English language learners' creativity'

Professor Uchida's session

The title of Professor Uchida session was: *'Why can't they write?'* During his session, Professor Uchida concentrated on the following areas: (1) getting Japanese students to write in English; (2) getting Japanese students to think critically; and (3) getting students to keep a conversation going in English.

Figure 2: Professor Uchida's session on 'Why can't they write?'

Feedback

At the end of the workshop a feedback sheet was given to each participant (see Appendix A). The pre-service English teachers were told that their feedback was anonymous and they were encouraged to give their honest comments. Below the feedback on both sessions is discussed, and illustrative comments from the participants. Pseudonyms are used in this paper to protect the identity of the workshop participants.

Feedback on Professor Toland's session

The pre-service teachers appreciated the practical focus provided by Professor Toland's session. For example, Miki wrote: *"He gave us specific class ideas, which were very helpful. I want to make creative classes, too. I'll make students use PowerPoint or video editing apps!"* The participants were very interested in how to weave ICT use into their teaching and the practical advice provided by Professor Toland was widely appreciated. Yuki commented: *"I have been interested in how to make classes exciting with ICT devices so I got a lot of practical ideas from your session. Thank you!! I especially became interested in recording conversation maybe all Japanese junior high or high students have iPad now so I want to try it in my future. Thank you!"*

Professor Toland's session examined how creativity could be fostered in the classroom. The importance of creativity for both teachers and students was also highlighted. Kaoru stated that: "*I learned that creativity is so important and I should have it entire my life. Also, I got some interesting ideas about teaching. ICT makes class more interesting when the students can use it effectively.*" Rie, who had already completed her teaching practice, reflected on the importance of creative thinking which was raised by Professor Toland:

> *Because I've experienced my teaching practice, Professor Toland's session made me realize the importance of creative thinking. As I prepared for my class, it was really difficult for me to make my class creative and active, so hopefully after I actually become a teacher I want to try out some of the activities which Professor Toland has shared with us today.*

Feedback on Professor Uchida's session

Professor Uchida's session focused on critical thinking. Ayumi was very positive about the session, and through the workshop came to realize the importance of helping students develop their critical thinking skills in Japanese: "*I was amazed to know why the Japanese students can't write English sentences well. I learned that it is important to improve the critical thinking skills in Japanese before writing English.*" Haru reflected on how he needed to improve their teaching ability: "*It was really interesting. I learned what the critical thinking is. I thought I should keep studying to improve my teaching skill. There are a lot of ways to teach English.*" Professor Uchida's session also helped some of the students reflect on their own teaching experiences. Fune explained her feelings:

> *It was really fun presentation and it also interesting topic for me. I especially interested in the J-E [Japanese to English] exercise. I'm working at cram school and I feel that many students can't come up with their opinions. The exercise we did today was interesting and also effective for students to develop students' thinking skills. Thank you for the wonderful experience.*

How to raise students' motivation is a major concern for pre-service (and in-service) English teachers. Professor Uchida gave some practical examples of how to get students engaged in class and the importance of creating 'comfortable pressure'. Rie reflected on this: "*Raising students' motivation was one of the problems I have faced, so Professor Uchida's session has given me a good idea of how to get the students more interactive in the English class.*"

Both sessions given by Professor Toland and Professor Uchida were received enthusiastically by the participants. In their written feedback many participants wrote that they were looking forward to attending future workshops.

Suggested topics for future workshops

The workshop outlined in this paper received considerable positive feedback from the participants. When asked to suggest possible topics for future workshops the pre-service English teachers provided many recommendations (Table 2 below shows their suggestions). The column on the left shows suggestions from students who had already completed their teacher training (all fourth-year students) and the column on the right shows suggestions from those who had yet to experience the on-site teacher training as part of the teacher training course (i.e., third-year students).

Table 2: Suggested topics for future workshops

No.	Suggestions for future workshop topics made by students who had completed their teacher training	No.	Suggestions for future workshop topics made by students who had yet to experience teacher training
1	How to make opportunities to communicate in English in class.	1	Teaching methods, ICT, speaking activities, and presentation skills.
2	Activities for each reading, listening, speaking, writing skills and how to teach grammar in a fun way.	2	How to be good a teacher in difficult situation such as dealing with monster parents and bullying.
3	Manners, icebreakers with students, how to start a new unit and handout ideas.	3	How to improve Japanese students' speaking skills.
4	How to teach in order to make students focused.	4	How to design speech activities and use presentations in class.
5	How to make a teaching plan. How to make students actively.	5	How to motivate students. How to teach English in an interesting way. How to teach grammar.
6	How to teach grammar effectively.	6	How to provide students with active learning in English classes.

Analysis of the feedback related to possible future workshop topics helped determine the theme for the second workshop (Cripps et al., 2023). This 'feedback loop' is one essential element to the crafting of workshops which are tailored to the pre-service teachers' needs.

Conclusion

This paper has outlined the evolution of a research project that aims to support pre-service teachers of English in Japan. The impetus for seeking funding was borne out of frustration from the PI as he wanted to his seminar students when they became English teachers. After successfully securing JSPS funding, the research team has been working to ascertain the needs of pre-service English teachers and design workshops to meet these needs. As demonstrated in this paper, the first workshop which was held in June 2022 was a resounding success. In fact, the title for this paper was inspired by one of the participants in the workshop who expressed their satisfaction with one of the workshop sessions. Post-workshop feedback was overwhelming positive and suggestions were made regarding possible topics for future workshops. It is clear that pre-service English teachers in Japan need a great deal of help before they enter the teaching field, and the workshop described in this paper is the first step to providing significant and meaningful support for aspiring English teachers.

Acknowledgements

Appendix A

Feedback Sheet

<u>Feedback Sheet – Pre-service Teaching Workshop No. 1</u>

Thank you for agreeing to complete this short survey. It should take about 10 minutes to complete. Your answers will be used to help understand pre-service English teachers' needs, to aid research, and to help design future workshops.

Your answers will be treated with strict confidentiality and at no time will your identity be revealed. The questionnaire is anonymous. Once again, thank you for your help.

Tony Cripps

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1. Please provide some feedback about Professor Toland's session:

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2. Please provide some feedback about Professor Uchida's session:

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3. **For students who have <u>NOT</u> done teaching practice yet** - What topics would you like to see included in future workshops? Please give some examples.

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4. **For students who have <u>NOT</u> done teaching practice yet** - What skills do you think you need to learn to help prepare you for becoming a teacher? Please give some examples.

5. **For students who have <u>NOT</u> done teaching practice yet** - What is your opinion of the teaching license course?

6. **For students who <u>HAVE</u> completed their teaching practice** - What is your opinion of the training/support that you received while at your junior high or senior high school?

7. **For students who <u>HAVE</u> completed their teaching practice** - Please write about your experience of teaching at your junior high or senior high school.

8. **For students who <u>HAVE</u> completed their teaching practice** - Considering your experience of teaching at your junior high or senior high school what topics would you like to see included in future workshops?

9. When is the best day/time to hold future teaching workshops? How long would you like the workshops to be?

10. If you have any questions/comments please e-mail me or write them here:

Once again, thank you for your time!

References

Cripps, A. C. (Ed.). (2019). *Perspectives on English language education in Japan (Vol. 2).* KD Publishing.

Cripps, A. C. (2021). What skills do pre-service English teachers think they need? In *Hawaii International Conference on Education (HICE) 2021 International Conference Proceedings*, (pp. 518-531).

Cripps, A. C., & Doi, S. (2020). Addressing the needs of pre-service English teachers through a one-day workshop. *Academia 108*, 69-84.

Cripps, A. C., Imai, T., & Toland, S. H. (2023). Designing teaching workshops for pre-service teachers of English in Japan. *The 18th Education and Development Conference (EDC 2023) Proceedings.* (In-press).

Cripps, A. C., Miles, R., & O'Connell. (2017). Motivating instructors and learners of English: A teacher-training workshop. *Academia 102*, 105-124.

Cripps, A. C., Miles, R., & O'Connell. (2018). Integrating content with English language education in Japan: The perspectives of in-service and trainee teachers. *Academia 103*, 259-268.

Cripps, A. C., Sakamoto, F., & Toland, S. (2018). Innovations in EAP design. *OnCUE Journal 11*(2), 108-115.

Fukushima, M. (2018). English for elementary school teachers in Japan: Ways of enriching teachers' experience in Learning and using English. 富山国際大学子ども育成学部紀要 第9巻 第2号, 39-56.

Kikuchi, K., & Browne, C. (2009). English educational policy for high schools in Japan: Ideals vs. reality. *RELC Journal*, *40*(2), 172-191. https://doi.org/10.1177/0033688209105865

Mouri, T. (2020). 少子化の中の教員養成と教育学: 教員養成系大学・学部の挑戦 [Teacher training, pedagogy, and the declining birth rate: The challenges facing Japan's teacher training faculties and universities], *教育学研究所 [Educational Research]*, *87*(2), 203-213. https://doi.org/10.11555/kyoiku.87.2_203

Okumura, S. (2017). Homeroom teachers or specialist teachers?: Considerations for the workforce for teaching English as a subject at elementary schools in Japan. *Asian Journal of Education and Training, 3*(1), 1-5.

Steele, D., & Zhang, R. (2016). Enhancement of teacher training: Key to improvement of English education in Japan. *Procedia - Social and Behavioral Sciences,* 217, 16-25. https://doi.org/10.1016/j.sbspro.2016.02.007

Tahira, M. (2012). Behind MEXT's new course of study guidelines. *The Language Teacher, 36*(3), 3-8.

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Effect of Self-Leadership on Higher Education Students' Life Satisfaction and Quality of Life: A Bruneian Mixed-Methods Case Study

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract
Physical, emotional, and psychological problems are among the core issues experienced by adolescents transitioning into adulthood and graduate students, particularly when pursuing higher education. As such, the stressors can adversely impact the higher education students' quality of life (QoL) and life satisfaction, especially if they lack self-leadership. Hence, the purpose of this explanatory sequential mixed-method study was to determine the effect of self-leadership on QoL and life satisfaction, moderating the impact of emotional and spiritual intelligence. The bottom-up spill over theoretical model guided this study. In the first phase, quantitative data on self-leadership, QoL, and life satisfaction were collected from 396 higher education students in Brunei. The qualitative data were analysed using Statistical Package for Social Sciences (SPSS) version 26. In the second phase, qualitative data were collected from 32 students using a semi-structured interview protocol. NVivo was used to support the content analysis, helping explore the students' perception of the influence of spiritual and emotional intelligence on life satisfaction, QoL, and self-leadership. The quantitative findings were that self-leadership significantly influences the students' QoL and life satisfaction. Six themes, self-awareness, self-regulation, self-acceptance, help-seeking, holistic approaches, and achieving control, were retrieved in the second phase.

Keywords: Self-Leadership, QoL, Life Satisfaction

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Introduction

The need for a skilled workforce, development, and innovation has prompted the increase of students admitted to higher education institutions. According to World Bank (2021), more than 220 million students were admitted to higher education institutions as of October 2021, representing a 100 million surge from 2000. Young adults admitted to higher learning institutions are exposed to subjective norms that influence their capabilities and enthusiasm to be proactive, especially academically (Sany et al., 2021). Exposure to and engaging in varied activities affects the students' physical, social, and mental health as they are related to their self-esteem, individualism, mental well-being, social, hope, self-efficacy, emotional loneliness, and emotional intelligence, influencing their quality of life (QoL) and life satisfaction (Sany et al., 2021).

Most decisions made by college students tend to involve difficult emotional choices that impact their mental and physical well-being (Hagenauer et al., 2017; Hernandez-Torrano et al., 2020). In addition, the emotional-based decisions made by the students affect their commitment to academic performance (Hagenauer et al., 2017). It is unknown if a positive, statistically significant association between self-leadership practices and Bruneian higher education students' QoL and life satisfaction exists. In educational settings, the importance of self-leadership is emphasized as a skill and way of thinking that students need to excel academically and be prepared for their future employment. In addition, self-leadership affects people's work ethics and is connected to learners' concentration, motivation, and enthusiasm (Goldsby et al., 2021). In addition, Maykrantz and Houghton (2020) found that self-leadership can be applied to effectively manage stress among students by controlling the environment and associated causes of stress.

Higher education students encounter changes after admission to a university or other higher learning institution, including autonomy, decision-making, adjusting to a new environment, academic pressure, and engaging with various people (Hernandez-Torrano et al., 2020). Transitioning from childhood to adulthood can result in emotional, psychological, and social challenges during learning. Mental disorders associated with the transition include depression, anxiety, and stress (Hernandez-Torrano et al., 2020). Depression prevalence among university students in Brunei was 43.36%, with Thailand having the highest prevalence at 47%, while the least was Ethiopia at 21.06% in 2013 (Islam et al., 2018). Notably, depression rates are higher among males (67.35%) when compared to females (32.65%) (Islam et al., 2018).

The high depression rate among the students was attributed to factors such as sedentary behaviours (62.24%) and poor academic performance (76.78%) (Islam et al., 2018). Additional causative factors include poor sleeping patterns, life satisfaction, and post-traumatic stress disorders (Islam et al., 2018). Similarly, Ahmed et al. (2018) highlighted financial difficulties, sex, lack of social support, parental guidance, family conflicts, poor academic performance, physical abuse, substance use, satisfaction, and mental illness history as causes of depression among students. Students' QoL scores during the COVID-19 pandemic were lower than those of the general population (Abdullah et al., 2021). The sudden disruption, the COVID-19 pandemic, and a high prevalence of mental problems were linked to the low QoL scores. Notably, variables such as school environment, depression, number of years spent studying, and chronic illness are indicators of students' QoL. As stated, self-leadership can be applied to effectively manage stress among students by controlling the environment and associated causes of stress (Maykrantz & Houghton, 2020). The focus of the

study was to assess the impact of self-leadership on the QoL and life satisfaction when controlling for spiritual and emotional intelligence.

In the published literature, self-leadership competencies have been supported to be essential among higher education students because they (a) promote the learners' capability to cope with stress, (b) supports the students' probability of benefiting from the pedagogical techniques used in universities and colleges, (c) reduce procrastination, (d) promote critical thinking, and (e) underpin participation in entrepreneurship activities (Ay et al., 2015; Durnali, 2020; Houghton et al., 2012; Sampl et al., 2017; Song et al., 2018; Wang et al., 2021). The students' QoL is impacted by different stressors such as the fear of failure, time management problems, pressure to study, academic overload, COVID-19, reluctance to seek help, lack of motivation to study, and perception of incompetence (Dessauvagie et al., 2021; Idris et al., 2021; Ting & Essau, 2021). As such, the adverse outcomes of the stressors include anxiety, depression, stress, academic failure, and substance abuse (Islam et al., 2018; Jung et al., 2021). Among higher education students, the factors that determine life satisfaction are health, gender, participation in physical activities, place of residence, level of study, support, and spiritual intelligence, supporting the need for differentiated approaches to promote contentedness (Ading et al., 2012; Fakunmoju et al., 2016; Hoh et al., 2018; Hoh, 2020; Rogoswka et al., 2021).

Self-leadership is an essential skill among higher education students because it influences the learners' QoL and related components, particularly understanding of self, communication, and sense of coherence (Jooste & Maritz, 2014; Kim & Kim, 2017; Lee & Ka, 2017; Shek & Leung, 2016). In addition, sufficient literature supports that students or people who possess self-leadership can control their feelings, behaviour, and thoughts, which is associated with more life satisfaction (Maya & Uzman, 2019; Qudsyi et al., 2020; Uzman & Maya, 2019a). Emotional intelligence is also directly associated with self-leadership, which results in enhanced cognitive capabilities and improved coping approaches among higher education students (Amzat et al., 2018; Vann et al., 2017; Wang et al., 2016). Notably, limited literature exists on the correlation between self-leadership and spiritual intelligence (Ronthy, 2013; Samul, 2020).

Applying the bottom-up spill over theory provided this case study with a scholarly underpinning. According to the bottom-up spillover theory, life events can be positive or negative (Andrews & Withey, 1976; Campbell et al., 1976; Sirgy, 2002, 2021). Positive events result in favourable outcomes in an individual's life, while negative ones have adverse consequences, influencing life satisfaction. Life events impact individuals' subjective wellness, meaning that the ability to control the influence of positive or negative events influences life satisfaction. Life satisfaction depends on individuals' contentedness with life domains (Sirgy, 2002, 2021).

For instance, in higher education, students' life satisfaction is influenced by domain contentedness such as education, wellness, and social. Accordingly, the students' satisfaction with education is determined by self-leadership competencies and spiritual or emotional intelligence. In this case study, it was conceptualised that self-leadership and spiritual or emotional intelligence can positively influence higher education students' health, education, and social domain contentedness, resulting in life satisfaction and improved QoL (see Figure 1). Individuals with self-leadership apply mindful and purposeful thinking while applying reflective practices (Browning, 2018; Neck et al., 2019). Subsequently, emotional intelligence influences the students' capability to manage stress, communicate, or overcome

conflict and issues that impact their education, health, and social domains (Gilar-Corbi et al., 2019; O'Connor et al., 2019). Spiritual intelligence influences higher education students' capacity to manage their thoughts, actions, and attitudes to live fulfilling life (Skrzypinska, 2021).

Figure 1: Conceptual framework

Methodology

The quantitative research questions that were investigated included:
Research Question 1: Does self-leadership among higher education students predict their quality of life, controlling for emotional and spiritual intelligence?
Research Question 2: Does self-leadership among higher education students predict their life satisfaction, controlling for emotional and spiritual intelligence?

The study's objectives were (a) to identify the impact of self-leadership on predicting the QoL of higher education students controlling emotional and spiritual intelligence and (b) to identify the impact of self-leadership on predicting the life satisfaction of higher education students controlling emotional and spiritual intelligence.

An explanatory sequential mixed method was utilized in the project as it entails the collection and analysis of quantitative data, followed by obtaining qualitative data and performing analysis (Creswell & Creswell, 2018). In the study, the design was employed to help assess and conclude the relationship between self-leadership, life satisfaction, and QoL. A mixed-method approach is essential in overcoming the bias and weakness associated with a mono approach (Cohen et al., 2018). Likewise, mixed-method approaches effectively enhance the

reliability and accuracy of the data obtained through data triangulation, bias reduction, and complementary and completeness benefits of the methodology strategies (Cohen et al., 2018). The study was conducted in three higher institutions in Brunei (Universiti Brunei Darussalam (UBD), Universiti Teknologi Brunei (UTB), and Politeknik Brunei (PB). The inclusion criteria for the students included the (a) students enrolled at either UBD, UTB, or PB; (b) studying in their first to fourth years, and (c) having English proficiency levels ranging from intermediate to proficient. Respondents who did not complete the survey or withdrew their willingness to participate were excluded. A random sampling technique was applied to recruit participants for the quantitative study. A total of 396 students were recruited for the study.

The data collection process commenced after receiving the three institutions' authorization (UBD, UTB, and PB). Quantitative data collection involved obtaining numeric data on the student's life satisfaction, QoL, and self-leadership scores. A Google link was sent to the recruited participants to their email addresses. The demographic characteristics of the participants, such as age, gender, marital status, year of study, study program, and highest education level, were collected. The demographic data were collected to aid in determining the distribution, dispersion, and representativeness of the sample. The Revised Self-Leadership Scale (RSLS) was used to obtain self-leadership data, the Quality-of-Life Scale (QoLS) for quality-of-life scores, and the Satisfaction with Life Scale (SWLS) for life satisfaction.

Descriptive analysis such as mean, standard deviation, frequencies, and percentages was performed using Statistical Package for Social Sciences (SPSS) version 26 to assess the distribution of the sample. Inferential statistics were performed at a 0.05 significance level. A regression analysis was performed to assess the association between the independent and the dependent variables. The independent variable (X) was self-leadership, while the dependent variables (Y) were life satisfaction and QoL. The regression analysis model used was; $Y = \beta_0 + \beta_1 x_1 + \ldots + \beta_n x_n + \epsilon$, where y denotes the dependent variable, β is the population parameters, x is the independent variable, and ϵ is the error term. In the study, two dependent variables were used separately; thus, the outcome regression model was: $y = \beta_0 + \beta_1 x_1 + \epsilon$. However, the sample was used to estimate the population parameters; hence, the regression model based on the statistics is: $\hat{y} = \widehat{\beta o} + \hat{\beta} 1 x 1 + \hat{\epsilon}$.

Equation (i) = quality of life = $\beta 0 + \beta 1 self - leadership + \epsilon$ (error term)
Equation (ii) = life satisfaction = $\beta 0 + \beta 1 self - leadership + \epsilon$ (error term).
Hence equations (i) and (ii) were used in the data analysis.

In the second phase of the explanatory sequential mixed method, qualitative data were collected using interviews. A conveniently sampled population of 49 participants agreed to participate, but saturation was achieved at the 32nd participant. The interviews were conducted via email using a semi-structured interview protocol. Accordingly, a qualitative approach was suitable because it enabled collecting higher education students' perceptions on how their emotional and spiritual intelligence help explain the positive or negative relationship between self-leadership on QoL and life satisfaction. The third research question was:
Research Question 3: How do themes emerge in Bruneian higher education students' emotional and spiritual intelligence responses help explain the positive or negative relationship between self-leadership on QoL and life satisfaction?

The thematic data analysis was conducted in a five-step process. First, the researcher organised the data and imported the transcripts into NVivo 12 (https://www.qsrinternational.

com/nvivo-qualitative-data-analysis-software/home) to facilitate data management (NVivo, 2022). In the published literature, researchers have supported the efficacy of NVivo in promoting the rigour and transparency of the data analysis process (Dalkin et al., 2021; Maher et al., 2018; Swygart-Hobaugh, 2019). Second, the researcher read and re-read all the transcripts to comprehensively understand the collected data. Third, inductive coding was conducted, which supported in identifying In Vivo terms. Fourth, the formulated codes were combined to create themes. Fifth, the themes' definitions were formulated, and verbatim responses were assigned.

Results

Descriptive Statistics

The average age of the participants was $M = 22.17(SD = 4.072)$. Most participants were females (65.6%), and 95.7% were single. Most of the participants were also pursuing a bachelor's degree ($n = 185$), 46.3% of the respondents had studied for three years, and 41.5% had attained a GCE A education level. Forty-nine participants were willing to participate in the study's second phase (see Table 1).

Variable		Frequency	Percentage
Gender	Male	136	34.4
	Female	259	65.6
Marital status	Married	17	4.3
	Single	378	95.7
Program	PHD	14	3.5
	Masters	14	3.5
	Bachelor	185	46.8
	Diploma	113	28.6
	Others	69	17.5
Duration of the study	Less than 3 years	27	6.8
	3 years	183	46.3
	4 years	174	44.1
	More than 4 years	11	2.8
Highest education level	GCE O level	51	12.9
	GCE A level	164	41.5
	Level 5 Diploma	111	28.1
	Others	69	17.5
Willing to participate in the second phase	Yes	48	12.2
	No	168	42.5
	Maybe	179	45.3
Age		$M = 22.17(SD = 4.072)$	

Note. M = mean, SD = standard deviation.

Table 1: Descriptive Statistics

Inferential Statistics

Regression analysis was conducted at a .05 significance level to assess the relationship between the independent (self-leadership) and the dependent variables (QoL) and life satisfaction). The first research question was:

Research Question 1: Does self-leadership among higher education students predict their quality of life, controlling for emotional and spiritual intelligence?

The first equation was: Quality of life = $\widehat{\beta 0} + \widehat{\beta 1}$self-leadership + ϵ. There was a statistically significant relationship between self-leadership and QoL ($p = 0.000$). The degree of correlation was 0.423, indicating a high correlation between self-leadership and students' QoL. Approximately 18% of the QoL (dependent variable) is predicted or can be explained using self-leadership (independent variable), suggesting a small variation. There was a positive relationship between self-leadership and QoL. Hence, they are directly proportional; that is, as the self-leadership score increases, it results in a surge in the level of QoL (see Table 2).

Variable	Model 1			
	B	SE B	β	t
Constant	32.104	5.302		6.055
Self-leadership	.360	.039	.423	9.286
R	.423			
R square	.179			
Df	395			
F	86.235***			

Note. B = unstandardized coefficients, SE B = standard error coefficients, β = beta. N = 396
*$p < .05$, **$p < .01$, ***$p < .001$

Table 2: Regression Analysis of Association between Self-leadership and Quality of Life

The second research question was:
Research Question 2: Does self-leadership among higher education students predict their life satisfaction, controlling for emotional and spiritual intelligence?

The second equation was: Life satisfaction = $\widehat{\beta 0} + \widehat{\beta 1}$self-leadership + ϵ. A regression analysis was conducted to assess the relationship between self-leadership and satisfaction with life at a 0.05 significance level. There was a statistically significant association between the independent and the dependent variable ($p = 0.001$). The degree of correlation was 0.170, indicating a low correlation between self-leadership (independent variable) and life satisfaction (dependent variable). Approximately 2.9% of the dependent variable (life satisfaction) can be explained by the independent variable (self-leadership), suggesting a small variation. The regression model predicts the dependent score as the $p = 0.001$ obtained is less than the 0.05 significance level. Hence, the regression model is a good fit for the data. There is a positive correlation between self-leadership and students' satisfaction with life. They are directly proportional; that is, an increase in self-leadership score results in a surge in the level of satisfaction with life (see Table 3).

Variable	Model 1			
	B	SE B	β	t
Constant	12.548	2.597		4.831***
Self-leadership	.065	.019	.170	3.430***
R	.170ᵃ			
R square	.029			
Df	395			
F	11.766***			

Note. B = unstandardized coefficients, SE B = standard error coefficients, β = beta.
*$p < .05$, **$p < .01$, ***$p \leq .001$

Table 3: Regression Coefficients of Self-leadership and Life Satisfaction

Qualitative Findings

The third research question was:
Research Question 3: How do themes emerge in Bruneian higher education students' emotional and spiritual intelligence responses help explain the positive or negative relationship between self-leadership on QoL and life satisfaction?

The thematic analysis helped answer the third research question. Six themes; self-awareness, help-seeking, self-acceptance, holistic approaches, self-regulation, and achieving control, were derived from the thematic analysis. A discussion of the themes was included in the subsequent sections.

i.   Self-Awareness

Based on the thematic analysis, it was identified that the students understood the self, specifically their behaviours, feelings, and traits. The higher education students were adequately aware of their overthinking habits, the probability of tone varying based on the situation, and the likelihood of experiencing challenging emotions and feelings that have an appositive or negative impact. For instance, BP1 indicated, "…I found it hard to convey what I was thinking whenever I felt like I am overwhelmed with any form of emotions, especially anger…." Another respondent BP13 posited that "…whenever I feel anxious or upset, it hinders my communication ability and causes me to keep quiet and cut off all communications..." BP2 noted that "…sometimes I have a bad habit of overthinking. There have been times when my overthinking has led to poor quality of work..." BP9 acknowledged that "I also realised that the tone of how I talk or convey information to others changes depending on my emotions. For instance, it is more lenient and friendlier when I feel good, but demanding and vice versa."

ii.   Self-Regulation

It was identified that higher education students could overcome stress, manage problems, and avoid conflict, attributed to their self-awareness. As such, the participants reported applying adaptive self-regulation approaches such as crying, negotiating, logical thinking, listening to music, journaling, positive thinking, and self-soothing. For instance, BP10 indicated that "…if in a positive mood, I might be open to negotiating conflict, but if I am in a negative mood, i.e., if I am angry or sad, I will walk away until I have a better grasp; on myself..." BP5 explained that "…I regard myself as the object of analysis. I objectively clarify my pressure and difficulties, and finally, objectively list the solutions..." Another respondent,

OP10, said, "…when I realised how much pressure I was under, I would cry it out and let myself feel all the thoughts that were pressuring me, and after an hour, I would calm myself down and deal with it effectively..." OP5 responded, "…to manage this stress, I usually do whatever I enjoy to improve my mood, for example, journaling with colouring pens or just doing my work while listening to chilling songs…."

iii.　　Self-Acceptance

The respondents recognised their strengths and weaknesses, which supported them in comprehensively accepting themselves. The reposted strengths were the ability to work under pressure, belief in Allah, being contented, the capacity to maintain composure, and gratitude. BP9 explained their belief by indicating that "…Allah would not burden a soul beyond what it can bear. When I fail to achieve a certain goal, I always think it is not the end of the world. I can do better next time…." BP11 stated, "…I can work under pressure or maintain composure in the most stressful times…." BP9 responded that "… Yes, there are so many more things I want. However, I can't stop being thankful for every little I have in life…." On the contrary, the weaknesses were neuroticism, overthinking, and negative thoughts/emotions. For instance, BP10 indicated that "…I tend to overthink. Other life incidents outside higher education learning can also bring in stress, which sometimes can't be resolved in the short term….." Another respondent, BP7, said, "…I would describe myself as a person with high neuroticism (easily influenced by high anxiety and high levels of negative emotion)…."

iv.　　Help-Seeking

Based on the assessed data, the participants acknowledged the importance of having a support system. The students reported receiving support from professors, peers, friends, and lecturers. BP1 said, "…having friends who are my support system, we [have] the same academic problem[s]; thus, our stress is shared…." BP12 indicated, "…I go to my family and friends when I need help..." OP19 indicated that "…[in the case of challenges in which I am unable to work out myself, I usually ask my close friends and lecturers.

v.　　Holistic Approaches

The respondents inculcated that they use different approaches to improve their physical, emotional, spiritual, and mental wellness. The approaches included sports, journaling, pet ownership, social media, praying, writing poetry, listening to music, watching, hiking, going to the gym, playing badminton, videogames, cooking, learning new things, swimming, walking, gathering, skating, doing art, reading a book, colouring, basketball, painting, and learning music. For instance, BP1 said, "…I fill my time with weekly sports, journaling, taking care and spending time [with] my pet, and indulging in social media…." BP11 continued by saying that, "…listening to music helps build my focus and motivation…." GP1 indicated that "…I perform *solat* five *waktu* [the five obligatory Muslim prayers], sleep well, drink plenty of water, eat nutritious foods, exercise for 15-30 minutes, play games, and watch shows…."

vi.　　Achieving Control

The higher education students recognised how their spiritual and emotional intelligence influenced their capability to manage stress, communicate, overcome issues, and live

purposeful and meaningful lives. For example, BP9 indicated that "…I am living a life with minimal conflicts, and it helps me build a good rapport with many people throughout my journey of achieving human excellence…." GP1 expressed that "…managing my stress gives me a sense of control that increases my self-esteem, lessens depression, and gradually improves my quality of life..." GP7 indicated that "…alhamdulillah, I managed to pick up myself and perform daily prayers and read the Quran and perfect my knowledge on becoming a good Muslim..."

Discussion

The results were consistent with Sampl et al. (2017), Durnali (2020), Bozyigit (2019), and Maykrantz and Houghton (2020) on the positive impact of self-leadership on different aspects of higher education students. Additionally, Uzman and Maya (2019b) assessed the impact of self-leadership on the life satisfaction of university students and determined that there was a positive correlation and that self-leadership explained 15% of life satisfaction, congruent with the study findings. Although no study evaluated the direct correlation between self-leadership and QoL, several articles assessed the impact of self-leadership on the factors that affect students' QoL in higher education institutions. For example, Maykrantz and Houghton (2020) assessed the impact of coping skills on the students' stress levels, moderating self-leadership. The authors concluded that self-leadership was effective in stress management among the students.

Grimard (2017) reported that self-leadership is essential because it enables higher education students to become aware of their attitudes and emotions, supporting their capacity to mitigate challenges, overcome problems, and interact with others. The study added to the existing literature that self-leadership significantly influences students' QoL and life satisfaction in higher learning institutions. Similar to this study's findings, Carden et al. (2022) acknowledged that self-awareness is essential in promoting emotional intelligence development and enhancing leadership efficacy. Browning (2018) defined self-leadership as understanding one's ability and capacity to influence communication, emotion, and behaviour. The self-awareness theme in this case study is consistent with the self-leadership construct discussed in published literature (Carden et al., 2022).

The participants' responses are consistent with the arguments in the published literature because self-awareness is associated with self-regulation as it promotes decision-making (Turi et al., 2020). Carden et al. (2022) and Grimard (2017) also noted that self-regulation enables individuals to control their actions and thoughts. Consistent with published literature self-acceptance is associated with emotional intelligence because both concepts influence one's thoughts and moods (Sogolitappeh et al., 2018). Self-acceptance is also associated with self-regulation and self-awareness because the concepts influence individuals' beliefs (Hatami et al., 2019).

The findings in this study show individuals who possess emotional and spiritual intelligence are aware of their feelings, which underpins their help-seeking practices (Sogolitappeh et al., 2018). The results have congruence with those in the published literature because individuals with emotional intelligence apply psychological, cognitive, and behavioural components to achieve control and overcome problems (Rogowska et al., 2021; Sogolitappeh et al., 2018). Consistent with the published literature, individuals who have self-leadership enjoy activities that promote self-control (Kujawa & Kamiński, 2019; Neck et al., 2019).

Conclusion

The findings revealed that self-leadership is influential and significantly impacted life satisfaction and QoL, moderating spiritual and emotional intelligence among students in higher education institutions. The recommendations made are based on the significant positive findings obtained. The first recommendation is that higher education institutions should introduce self-leadership training, especially or mandatory for first-year students transitioning from adolescence to adulthood: This will help equip the students with skills and competencies to cope with the new environment and academic expectations positively. The second recommendation is to form social groups and active clubs that the students can engage in or be involved with to build and develop a social support system.

Thirdly, higher learning institutions should develop policies that sustain self-leadership practices to aid in enhancing the QoL and life satisfaction of the students, which will, in turn, benefit the establishment because of better performance, reduced rate of dropout, and increased workforce output. Fourth, future researchers should assess the effects of self-leadership on life satisfaction and QoL, moderating spiritual and emotional intelligence separately. The fifth recommendation is to effectively integrate emotional and spiritual intelligence into academic practices and culture. Emotional and spiritual intelligence were identified as positive predictors of the relationship between self-leadership, QoL, and life satisfaction. Despite the essence of emotional and spiritual intelligence, the concepts are ignored and not perceived as pre-requisite factors in the teaching and learning processes (Kornas-Biela et al., 2020).

Based on phase two findings, it is evident that the interviewed higher education students possessed spiritual and emotional intelligence, which underpins the understanding of self. In addition, the students were identified as self-aware, applied self-regulation, and engaged in self-acceptance, practices that promoted help-seeking or adopting holistic approaches to control their life. The qualitative results imply that emphasising the essence of spiritual and emotional intelligence among higher education students could promote improved life satisfaction.

The study's strengths include using students from three different institutions and, ensuring representativeness, promoting data triangulation. A mixed-method approach was also used, which helped mitigate the biases or weaknesses associated with mono-method bias. Another strength is that validated and reliable data collection instruments were used in the first phase, increasing the results' rigour. In addition, during the second phase, NVivo was applied, supporting effective data management and systematic analysis.

Implications

The RSLS, QoLS, and SWLS questionnaires were used in the project, and the findings showed that self-leadership significantly impacts life satisfaction and quality. Consequently, the tools can be used in various cultures and contexts. The outcomes confirmed that self-leadership significantly impacted students' QoL and life satisfaction in higher education institutions. As a result, higher education institutions can use self-leadership techniques to help students transition to maturity. The explanatory sequential mixed-method approach can be applied to minimize the limitations of using a single methodology and obtain concise evidence that can be utilized to support the stated hypothesis. The bottom-up spill over theory was applied in the study, which advanced its application in explaining the correlation

between the QoL and life satisfaction, which is influenced by education, health, and social domains connected to self-leadership, emotional intelligence, and spiritual intelligence.

References

Abdullah, M., Mansor, N. S., Mohamad, M. A., & Teoh, S. H. (2021). Quality of life and associated factors among university students during the COVID-19 pandemic: A cross-sectional study. *BioMed Journal Open*, *11*(10), Article e048446. https://doi.org/10.1136/bmjopen-2020-048446

Ading, C. E., Seok, C. B., Hashmi, S. I., & Maakip, I. (2012). Religion and gender differences in stress, happiness and life satisfaction. *Southeast Asia Psychology Journal*, *1*(2012). 46-55. http://www.cseap.edu.my/sapj/index.php/journal/full/010.pdf

Ahmed, G., Negash, A., Kerebih, H., Alemu, D., & Tesfaye, Y. (2020). Prevalence and associated factors of depression among Jimma University students. A cross-sectional study. *International Journal of Mental Health Systems*, *14*(1), 1-10. https://doi.org/10.1186/s13033-020-00384-5

Amzat, I. H., Al-Ani, W. T., & Yusuf, H. A. (2018). The effect of student's emotional intelligence on self-leadership in Malaysian public university. *Al-Shajarah: Journal of the International Institute of Islamic Thought and Civilization*, *24*, 191-216. https://journals.iium.edu.my/shajarah/index.php/shaj/article/download/761/355

Andrews, F. M., & Withey, S. B. (1976). *Social indicators of wellbeing: America's perception of life quality*. Plenum Press. https://books.google.com/books?id=h_QWAwAAQBAJ&printsec=frontcover&dq

Archibald, M. M., Ambagtsheer, R. C., Casey, M. G., & Lawless, M. (2019). Using zoom videoconferencing for qualitative data collection: Perceptions and experiences of researchers and participants. *International Journal of Qualitative Methods*, *18*, 1-8. https://journals.sagepub.com/doi/pdf/10.1177/1609406919874596

Ay, F. A., Karakaya, A., & Yilmaz, K. (2015). Relations between self-leadership and critical thinking skills. *Procedia-Social and Behavioural Sciences*, *207*, 29-41. https://doi.org/10.1016/j.sbspro.2015.10.147

Bozyigit, E. (2019). The importance of leadership education in university: Self-leadership example. *International Education Studies*, *12*(4), 1-8. https://doi.org/10.5539/ies.v12n4p1

Browning, M. (2018). Self-leadership: Why it matters. *International Journal of Business and Social Science*, *9*(2), 14-18. https://ijbssnet.com/journals/Vol_9_No_2_February_2018/2.pdf

Campbell, A., Converse, P. E., & Rodgers, W. L. (1976). *The quality of American life: Perceptions, evaluations, and satisfactions*. Russell Sage Foundation. https://books.google.com/books?id=sEjloQEACAAJ&dq

Carden, J., Jones, R. J., & Passmore, J. (2022). Defining self-awareness in the context of adult development: A systematic literature review. *Journal of Management Education*, *46*(1), 140-177. https://doi.org/10.1177/1052562921990065

Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education*. Routledge. https://www.daneshnamehicsa.ir/userfiles/files/1/9-%20Research%20Methods%20in%20Education%20by%20Louis%20Cohen,%20Lawrence%20Manion,%20Keith%20Morrison.pdf

Creswell, J. W., & Creswell, J. D. (2018). *Research designs*: *Qualitative, quantitative, and mixed method approaches*. Sage Publications. https://www.docdroid.net/XAQ0IXz/creswell-research-design-qualitative-quantitative-and-mixed-methods-approaches-2018-5th-ed-pdf

Dalkin, S., Forster, N., Hodgson, P., Lhussier, M., & Carr, S. M. (2021). Using computer assisted qualitative data analysis software (CAQDAS; NVivo) to assist in the complex process of realist theory generation, refinement and testing. *International Journal of Social Research Methodology*, *24*(1), 123-134. https://doi.org/10.1080/13645579.2020.1803528

Dessauvagie, A. S., Dang, H. M., Nguyen, T. A. T., & Groen, G. (2021). Mental health of university students in South-Eastern Asia: A systematic review. *Asia Pacific Journal of Public Health*, *1*(1), 1-10. https://doi.org/10.1177/10105395211055545

Durnali, M. (2020). The effect of self-directed learning on the relationship between self-leadership and online learning among university students in Turkey. *Tuning Journal for Higher Education*, *8*(1), 129-165. http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165

Fakunmoju, S., Donahue, G. R., McCoy, S., & Mengel, A. S. (2016). Life satisfaction and perceived meaningfulness of learning experience among first-year traditional graduate social work students. *Journal of Education and Practice*, *7*(6), 49-62. https://files.eric.ed.gov/fulltext/EJ1092490.pdf

Gilar-Corbi, R., Pozo-Rico, T., Sánchez, B., & Castejón, J. L. (2019). Can emotional intelligence be improved? A randomised experimental study of a business-oriented EI training program for senior managers. *Public Library of Science One*, *14*(10), 1-10. https://doi.org/10.1371/journal.pone.0224254

Goldsby, M. G., Goldsby, E. A., Neck, C. B., Neck, C. P., & Mathews, R. (2021). Self-leadership: A four-decade review of the literature and trainings. *Administrative Sciences*, *11*(1), 25-46. https://doi.org/10.3390/admsci11010025

Grimard, C. M. (2017). On the ball: An experiential exercise for developing awareness about self-leadership. *In Developments in Business Simulation and Experiential Learning: Proceedings of the Annual ABSEL conference*, *44*, 44-55. https://absel-ojs-ttu.tdl.org/absel/index.php/absel/article/view/3069

Hagenauer, G., Gläser-Zikuda, M., & Moschner, B. (2017). University students' emotions, life-satisfaction and study commitment: A self-determination theoretical perspective. *Journal of Further and Higher Education*, *42*(6), 808-826. https://sci-hub.se/https://doi.org/10.1080/0309877X.2017.1323189

Hatami, A., Mahmoudi, R., Nia, D. H., Badrani, M. R., & Kamboo, M. S. (2019). The relationship between spiritual intelligence and resilience with self-efficacy of clinical performance in nurses working in Shoushtar educational hospitals. *Journal of Research in Medical and Dental Science*, *7*(3), 8-13. http://eprints.shoushtarums.ac.ir/80/1/65d799f7483354cad7d44af8bdfc12f65682.pdf

Hernandez-Torrano, D., Ibrayeva, L., Sparks, J., Lim, N., Clementi, A., Almukhambetova, A., & Muratkyzy, A. (2020). Mental health and well-being of university students: A bibliometric mapping of the literature. *Frontiers in Psychology*, Article 1226. https://doi.org/10.3389/fpsyg.2020.01226

Hoh, C. S. (2020). A study of undergraduate students' learning satisfaction in Brunei Darussalam. *Research Gate*, *1*(1), 1-19. https://www.researchgate.net/profile/Chui-Hoh-2/publication/341131437_A_Study_of_Undergraduate_Students'_Learning_Satisfaction_in_Brunei_Darussalam/links/5eb03b4e92851cb267732e62/A-Study-of-Undergraduate-Students-Learning-Satisfaction-in-Brunei-Darussalam.pdf

Hoh, C. S., Khattak, S. I., & Hui, L. I. (2018). Antecedents to students' satisfaction of higher education institutions: A case study of Brunei Darussalam. *Advances in Economics, Business and Management Research*, *54*, 345-352. https://www.researchgate.net/profile/Chui-Hoh-2/publication/326176748_Antecedents_to_Studentsr_Satisfaction_of_Higher_Education_Institutions_A_Case_Study_of_Brunei_Darussalam/links/5e76ff00299bf1892cff0bcd/Antecedents-to-Studentsr-Satisfaction-of-Higher-Education-Institutions-A-Case-Study-of-Brunei-Darussalam.pdf

Houghton, J. D., Wu, J., Godwin, J. L., Neck, C. P., & Manz, C. C. (2012a). Effective stress management: A model of emotional intelligence, self-leadership, and student stress coping. *Journal of Management Education*, *36*(2), 220-238. https://doi.org/10.1177/1052562911430205

Idris, F., Zulkipli, I. N., Abdul-Mumin, K. H., Ahmad, S. R., Mitha, S., Rahman, H. A., & Naing, L. (2021). Academic experiences, physical and mental health impact of COVID-19 pandemic on students and lecturers in health care education. *Biomedical Centre Medical Education*, *21*(1), 1-13. https://doi.org/10.1186/s12909-021-02968-2

Islam, M. A., Low, W. Y., Tong, W. T., Yuen, C. W., & Abdullah, A. (2018). Factors associated with depression among University Students in Malaysia: A cross-sectional study. *KnowledgeE Life Sciences*, *2018*, 415-427. https://knepublishing.com/index.php/Kne-Life/article/view/2302

Jooste, K., & Maritz, J. (2014). Youths' experience of trauma: Personal transformation through self-leadership and self-coaching and quality of life. *African Journal for Physical Health Education, Recreation and Dance*, *20*(sup-2), 91-106. https://uir.unisa.ac.za/bitstream/handle/10500/18436/Youths%E2%80%99%20experience%20of%20trauma%20Personal%20transformation%20through%20self-leadership%20and%20self-coaching.pdf?sequence=1&isAllowed=y

Jung, Y., Palutturii, S., Shin, D. E., & Nam, E. W. (2021). A comparative study of anxiety in Indonesia and Nepal during COVID-19 pandemic. *Research Square*, *1*(1), 1-24. https://doi.org/10.21203/rs.3.rs-243913/v1

Kim, M., & Kim, S. (2017). The effect of career preparation program on self-leadership and career locus of control among university students in Korea. *Journal of the Korea Academia-Industrial cooperation Society*, *18*(11), 399-408. https://www.koreascience.or.kr/article/JAKO201734964190133.pdf

Kornas-Biela, D., Martynowska, K., & Zysberg, L. (2020). Faith conquers all? Demographic and psychological resources and their associations with academic performance among religious college students. *British Journal of Religious Education*, *42*(4), 459-470. https://doi.org/10.1080/01416200.2020.174016

Lee, S. Y., & Ka, S. J. (2017). Relationship between sense of coherence, communication competence, self-leadership of college students. *Asia-pacific Journal of Education*, *2*(1), 141-146. http://dx.doi.org/10.21742/ajemr.2017.2.1.24

Maher, C., Hadfield, M., Hutchings, M., & De Eyto, A. (2018). Ensuring rigor in qualitative data analysis: A design research approach to coding combining NVivo with traditional material methods. *International Journal of Qualitative Methods*, *17*(1), Article 1609406918786362. https://doi.org/10.1177/1609406918786362

Maya, I., & Uzman, E. (2019). The predictive power of university students' self-leadership strategies on their self-efficacy. *Educational Research and Reviews*, *14*(11), 372-379. https://files.eric.ed.gov/fulltext/EJ1218565.pdf

Maykrantz, S. A., & Houghton, J. D. (2020). Self-leadership and stress among college students: Examining the moderating role of coping skills. *Journal of American College Health*, *68*(1), 89-96. https://doi.org/10.1080/07448481.2018.1515759

Neck, C. P., Manz, C. C., & Houghton, J. D. (2019). *Self-leadership: The definitive guide to personal excellence* (2nd ed.). SAGE Publishers. https://www.google.com/books/edition/Self_Leadership/F31ZDwAAQBAJ?hl=en&gbpv=1&dq

NVivo. (2022). *Unlock insights with the leading qualitative data analysis software*. https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home

O'Connor, P. J., Hill, A., Kaya, M., & Martin, B. (2019). The measurement of emotional intelligence: A critical review of the literature and recommendations for researchers and practitioners. *Frontiers in Psychology*, *1*(1), 1-10. https://doi.org/10.3389/fpsyg.2019.01116

Qudsyi, H., Sholeh, A., & Afsari, N. (2020). Life satisfaction among college students: The role of self-monitoring through peer education. In *International Conference on Educational Psychology and Pedagogy- "Diversity in Education,"* *300*, 95-100. https://doi.org/10.2991/assehr.k.200130.089

Rogowska, A. M., Kuśnierz, C., & Ochnik, D. (2021). Changes in stress, coping styles, and life satisfaction between the first and second waves of the COVID-19 pandemic: A longitudinal cross-lagged study in a sample of university students. *Journal of Clinical Medicine*, *10*(17), Article 4025. https://doi.org/10.3390/jcm10174025

Ronthy, M. (2013). Managing with my heart, brain and soul: The development of the leadership intelligence questionnaire. *Journal of Cooperative Education and Internships*, *47*(01), 61-81. https://ledarintelligens.se/wp-content/uploads/2017/02/9a3e78_206a34557cc34d87a77adba5273f2c19.pdf

Sampl, J., Maran, T., & Furtner, M. R. (2017). A randomized controlled pilot intervention study of a mindfulness-based self-leadership training (MBSLT) on stress and performance. *Mindfulness*, *8*(5), 1393-1407. https://doi.org/10.1007/s12671-017-0715-0

Samul, J. (2020). Emotional and spiritual intelligence of future leaders: Challenges for education. *Education Sciences*, *10*(7), 178-188. https://doi.org/10.3390/educsci10070178

Sany, S. B. T., Aman, N., Jangi, F., Lael-Monfared, E., Tehrani, H., & Jafari, A. (2021). Quality of life and life satisfaction among university students: Exploring, subjective norms, general health, optimism, and attitude as potential mediators. *Journal of American College Health*, *1*(1), 1-8. https://doi.org/10.1080/07448481.2021.1920597

Shek, D. T. L., & Leung, H. (2016). Developing self-leadership and responsibility and moving away from egocentrism. *International Journal on Disability and Human Development*, *15*(2), 157-164. https://dx.doi.org/10.1515/ijdhd-2016-0705

Sirgy, M. J. (2002). *The psychology of quality of life.* Springer. https://www.google.com/books/edition/The_Psychology_of_Quality_of_Life/HBQB6U2e2M0C?hl=en&gbpv=1&dq

Sirgy, M. J. (2021). *The psychology of quality of life: Wellbeing and positive mental health*. Springer. https://www.google.com/books/edition/The_Psychology_of_Quality_of_Life/rrsyEAAAQBAJ?hl=en&gbpv=1&dq

Skrzypinska, K. (2021). Does spiritual intelligence (SI) exist? A theoretical investigation of a tool useful for finding the meaning of life. *Journal of Religion and Health*, *60*(1), 500–516. https://doi.org/10.1007/s10943-020-01005-8

Sogolitappeh, F. N., Hedayat, A., Arjmand, M. R., & Khaledian, M. (2018). Investigate the relationship between spiritual intelligence and emotional intelligence with resilience in undergraduate (BA) students. *International Letters of Social and Humanistic Sciences*, *82*, 10-18. https://pdfs.semanticscholar.org/44bd/b08bd02ba13a2d65b396d780ea750df7e394.pdf

Song, D. G., Im, J. H., Lee, J. H., & Kwon, H. (2018). The impact of entrepreneurial spirit on the willingness to start up via utilising knowledge and information by college students: Focused on self-leadership's mediating effect and regulating effect of gender. *International Journal of Knowledge Content Development & Technology*, *8*(4), 33-53. https://www.koreascience.or.kr/article/JAKO201828951542747.pdf

Swygart-Hobaugh, M. (2019). Bringing method to the madness: An example of integrating social science qualitative research methods into NVivo data analysis software training. *International Association for Social Science Information Service and Technology Quarterly*, *43*(2), 1-16. https://doi.org/10.29173/iq956

Ting, C. H., & Essau, C. (2021). Addictive behaviours among university students in Malaysia during COVID-19 pandemic. *Addictive Behaviours Reports*, *14*, 1-10. https://doi.org/10.1016/j.abrep.2021.100375

Turi, J. A., Rani, A. A., Abidin, I., Mahmud, F., & Al Adresi, A. (2020). Correlating spiritual and emotional intelligence with academic performance among Pakistani students. *International Journal of Evaluation and Research in Education*, *9*(2), 278-284. http://dx.doi.org/10.11591/ijere.v9i2.20476

Uzman, E., & Maya, I. (2019a). The predictive power of university students' self-leadership strategies on their self-efficacy. *Educational Research and Reviews*, *14*(11), 372-379. https://files.eric.ed.gov/fulltext/EJ1218565.pdf

Uzman, E., & Maya, I. (2019b). Self-leadership strategies as the predictor of self-esteem and life satisfaction in university students. *International Journal of Progressive Education*, *15*(2), 78-90. https://doi.org/10.29329/ijpe.2019.189.6

Vann, V., Sparks, B., & Baker, C. (2017). A study of emotional intelligence and self-leadership. *Society for Advanced Management Journal*, *82*(3), 18-25. https://www.researchgate.net/publication/327235638_A_Study_of_Emotional_Intelligence_and_Self_Leadership

Wang, Y., Xie, G., & Cui, X. (2016). Effects of emotional intelligence and self-leadership on students' coping with stress. *Social Behaviour and Personality: An International Journal*, *44*(5), 853-864. https://doi.org/10.2224/sbp.2016.44.5.853

Wang, Y., Gao, H., Liu, J., & Fan, X. L. (2021). Academic procrastination in college students: The role of self-leadership. *Personality and Individual Differences*, *178*, Article 110866. https://doi.org/10.1016/j.paid.2021.110866

World Bank. (2021). *The impact of COVID-19 on education. Recommendations and opportunities for Ukraine*. https://www.worldbank.org/en/news/opinion/2021/04/02/the-impact-of-covid-19-on-education-recommendations-and-opportunities-for-ukraine

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Dare to Imagine: Creative Scaffolding for Transformative Teachers' Praxis

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

The purpose of the proposed paper is to generate the discussion of teachers' learning as transformative praxis that leads to the development of teachers' commitment to social change. In this interdisciplinary qualitative study such learning is conceptualized as a sequence of socially constructed and culturally mediated joint learning activities. Scaffolded with the mastery of such mediational means (Wertsch, 1998) and cultural tools (Vygotsky, 1987) as dialog, schema, narrative, and joint artmaking, purposefully designed reflexive learning activities allow teachers to collaboratively examine the problems of practice through dialog, joint artmaking, and co-writing. Such learning as transformative praxis, scaffolded the shift in values and consciousness of the beginning teachers and empowered them to act as transformational agents - question the status quo of the neo-liberal contexts of schooling, deconstruct the codes of the dominant cultures prevalent in their classrooms, and commit to action, advocate for the communities of practice, and create liberating and supportive learning that leads development. Presenters will share research findings and discuss the transformational potential of teachers' meaning making as aligned with the mastery of mediational means (dialog, narrative, artmaking) of reflexive praxis. This cycle scaffolded a disruption in thought, impacted the development of teachers' critical reflection, thus, emancipating them to act on the critical events in their classrooms. Interdisciplinary, technologically fluid, creative scaffolding inspired and supported teachers to deconstruct the dominant schooling practice and to re-imagine their practice and themselves.

Keywords: Transformative Praxis, Creative Scaffolding, Mediational Means, Joint Artmaking, Teacher Learning

Introduction

The purpose of this paper is to discuss the process of learning as transformative praxis that is socially constructed in joint activities, and culturally mediated (Vygotsky, 1987) with cultural tools of the mind. Teachers' learning as transformative praxis supports their development as transformative agents who can assure "quality education as a human right" (UNESCO, 2021, p.2). Such learning generates a different knowledge of teaching and learning as it stems from teachers' continuous inquiry of practice as distinctive and important way of knowing about teaching and learning, students, and their communities (Cochran-Smith, Lytle, 1993).

Although there is a growing interest of teacher transformative agency in teacher education research and policy, there is lack of research-based teacher education models that are designed to engage teachers in learning as praxis, continuous inquiry that empowers them to theorize their practice and transform it. Previous research shows that sustained opportunities for teachers' professional inquiry as a joint collaborative activity of teaching and learning to develop shared expertise through co-construction of shared meanings and knowledge, enhanced not only teachers' professionalism and agency, but also student learning (Cochran-Smith & Little, 2009; Lampert-Shepel, Sullivan-Rubin, Rabinovitch, 2021; McLaughlin, Talbert, 2001, 2006).

Authors also discuss research-based strategies to engage beginning teachers in learning as praxis, and use mediational means (Wertsch, 1998) and cultural tools (Vygotsky, 1987) to scaffold a continuous inquiry into teaching. The beginning teacher approaches to learning as transformative praxis were developed in a course of a qualitative case study that was conducted at Touro University Graduate School of Education, NY, USA. One of the findings of the study, a sequence of mediational means to scaffold learning as praxis, was also explored further with diverse professionals and generated similar findings. Thus, the findings and conclusions are drawn from the ongoing study with beginning teachers at Touro University Graduate School of Education and a workshop conducted with diverse professionals at 2022 Arts Education Partnership Annual Convening.

Call for teachers as transformative agents

With humanity facing major environmental challenges (Steffen et al., 2007), and the increasing complexity and uncertainty of the world we live in, the role of teachers as transformative agents becomes key to ensure their ability to effectively serve their students and communities, and to support continuous sustainable change in education and beyond. In addition, understanding how the agency of individuals can contribute to a sustainable future should therefore be a vital task of scholarship in the domain of resilience thinking (Westley, 2006; Folke et al., 2003).

The test-driven neo-liberal reforms in education around the world often focus teacher on efficiency and technical implementation, rather than on meaning-making and inquiry. As in the current educational context the view of a teacher as a technician has failed as simply ineffective, there is a need in teachers as critical educators, active agents, who are capable and willing to disrupt the dehumanizing contexts of schooling to transform educational practice for empowerment of students' learning and development.

Although the view of teachers as agents rather than technicians is not new in educational research and practice, there are multiple conceptualizations of teacher agency. Cultural-

historical psychology of Lev Vygotsky (1983) and activity theory (Leontiev, 1978) and their followers offer conceptualization of agency that is instrumental for its development. Agency is conceptualized as ability to be self-conscious, master one's own behavior, the generative capacity of humans to distance themselves from the constraints of immediate stimuli and generate in socially constructed and culturally mediated joint activities the visions and tools for transformative actions. Without agency humans would be "compelled to act by stimuli in the immediate situation" (Gillespie, 2012, p 32).

From such a perspective one could argue that development of transformative agency is supported with mastery of the mediational means and cultural tools embedded in human activities that can be mastered during continuous joint inquiry.

Conceptualizing creative scaffolding

How can we support the development of transformative agency? In our view, one of such supports can be a process of creative scaffolding, that is intended to provide a toolkit for an author and an agent of action to not only support the development of an emerging idea, but also to be able to transform it into the directions that might not have been anticipated. What kind of tools of the mind can mediate imagination and thinking and not only shape the emerging ideas for the project but also map the new directions for the development and transformation of the initial meanings?

Although widely attributed to Lev Vygotsky (1962), the term scaffolding in psychology and education was coined by Jerome Bruner (Wood, Bruner, Ross, 1976) around 1976. He grounded his conceptualization of scaffolding on Vygotsky's concept of the zone of proximal development, i.e. socially constructed learning that leads development. Bruner used the metaphor of scaffolding to describe the support the adult or a more knowledgeable peer can provide in the structured social interaction to facilitate learning. This process reminds scaffolding that supports construction of the building and is dismantled as the task is completed. In joint activity such understanding of scaffolding represents limiting the choices an agent of action might face to focus only on mastering a specific skill or concept. Thus, unlike the concept of scaffolding and the model discussed in this essay, Bruner's theory of scaffolding focuses on the auxiliary means to support a specific learning that vanishes when the task is completed. The appeal of Bruner's theory is that scaffolding can be applied across all fields, for all ages and for all topics of learning.

Lev Vygotsky (1962) distinguished psychological tools from mediational means (Wertsch, 1998). Mediational means are external; they can be thought of in connection with the human hand. With the help of the mediational means, we can transform *external* objects or processes. They are auxiliary and can help complete a certain task or perform a specific activity. Scaffolding with mediational means is temporary and, it vanishes when the specific task is completed.

Psychological tools, in contrast, are *internal* tools supporting thought in the same way physical tools support labor. Psychological tools, Vygotsky claimed, support an internal mastery - a mastery of oneself (Vygotsky, 1998). Psychological tools are semiotic and are products of cultural development. As semiotic means enable authors and agents of action to remain spontaneous but intentionally navigate multiple venues to explore an emerging idea. Semiotic tools (metaphor, image, concept, model) embed the cultural meanings coined historically and shared locally and sometimes globally. As abstract tools of the mind, they

have a potential of transforming the initial idea and empowering authors to discover and paint an array of possible venues they can develop the project. Psychological tools are signs that are socially constructed in joint human activities and when internalized and mastered, they transform thinking, imagination, memory and other higher psychological functions. They are multiple and inherently situated culturally, institutionally, and historically; they can be construed as the carriers of social, historical, and cultural transformations (Lampert-Shepel & Murphy, 2018). The mastery of psychological tools, "culminates in internalized ability to guide and self-regulate one's own activity" (Arievitch, 2017, p. 56). Psychological tools serve to transform the flow of thinking, changing too, the action itself and the agent. Thus, creative scaffolding has a transformational potential and enables the agent of action to internalize the cultural tools of the mind that are not situational but stay and can be applied for future actions.

Creative Scaffolding Model

Figure 1. Creative Scaffolding Model. Created by Clive Jacobson, 2021

The model presents the process of internalization of a semiotic cultural tool (triangle shape), that is quite flexible (points in at least three different directions), and, therefore, allows the agent to explore various venues for the development of an initial idea. The dynamic movements of the multiple triangles support the scaffolding itself, but at the same time represent the symbolic flow of thought that shapes a new idea as a circle. Scaffolding with semiotic cultural tools of the mind, as triangles in the model, does not vanish, but is rather transformed into internal ability to apply them at author's will.

The process of creative scaffolding of transformative praxis

The researchers used the process of creative scaffolding to design teachers' learning as praxis. The sequence of scaffolded culturally mediated and socially constructed joint activities were organized for the participants as a cycle of inquiry into practice with additional initial purpose in 2019 to explore how beginning teachers' master mediational means and cultural tools of reflective practice. During the study, we discovered that a particular sequence of scaffolded joint activities mediated by different cultural tools engaged the participants into the sequence of meaning making and empowered them to not only

envision the multiple ways of conceptualizing the problem of practice, but also plan and implement different future actions to address it. The model below represents the four stages of meaning-making embedded different types of activity that was mediated by a different mediational means.

The Process of Creative Scaffolding

| **Meaning Articulation:** Problem Articulation of Critical Event in Practice. | **Meaning negotiation:** Dialogical Reflection Developing Covision. | **Meaning Deconstruction:** Joint Activity of Artmaking. | **Meaning communication:** Visual Narrative Presentation- re-negotiation through symbolic representation |

Figure 2. The Process of Creative Scaffolding

Stage 1. *Meaning articulation.* Participants describe in writing the critical event in practice that puzzled them and that was important for them to address. Verbal narrative was a mediational means at this stage.

Stage 2. *Meaning negotiation.* Participants were asked to have a dialogical reflection in pairs and create a co-vision of their critical events in practice, i.e. find out the underlying bigger issue that could be common for their different critical events in practice. The mediational means at this stage was a co-vision dialog.

Stage 3. *Meaning Deconstruction.* Participants engaged into joint activity of artmaking that was facilitated with The Collective Image Graphic Organizer (CIGO) (Sullivan-Rubin, 2021). CIGO guided participants in creating metaphors of their co-vision and engaged participant in using the language of art to deconstruct the initial understandings of the critical event in practice as they unearthed their assumptions, dissonance, and ambiguities about issues in their professional practice. As a result, each pair of the participants used media/art materials to create an artistic representation of their co-vision of the critical event in a form of a collage or tryptic. The mediational means at this stage was the CIGO and the joint activity of artmaking.

Stage 4. *Meaning Communication.* Participants presented their artwork and discussed the new meanings and plans for future actions to implement the new visions of practice. The mediational means at this stage is a visual narrative of the artwork created and communicated.

The following examples explore the participants' journey through these four stages of meaning making sequence to come to different visions of problem of practice and enact them in the future. The participants felt empowered as agents of action to transform their practice.

In this first example two participants, who are beginning teachers, describe their critical events in practice to each other in the co-vision dialog and understand that their critical events, although different, both focus on student engagement and motivation.

Participant 1: My journal entry was about a kid who I thought could vocalize [make utterances], but he doesn't say anything about what's going on around him…   I don't know if he's speaking English when he mutters… It might be a different language that they speak at home. I found him in the class singing the greater-than-less-than-equal song that I presented for my lesson, and he was doing the movements. And I was … wow I got through to this kid, I taught him something. I don't know if he understands conceptually/mathematically what it means, I don't know if he'll be able to apply it, but there was something in the lesson that appealed to him, something that he retained when the lesson was done and something that he was still repeating when the lesson was over. So, I felt like I made an impression on this kid, I was able to *engage* him.

Participant 2: I had a situation where we were doing a social-emotional unit and we were talking about motivation, what motivates us, and the kids didn't really have anything to share. They were not motivated to do anything related to the [task]. They seemed unmotivated to talk to you [engagement], and when I was telling them about my own assignment [clinical observation] I had to do for tomorrow, because I tried to share, as much as possible in the socio-emotional unit. They started getting super excited to be a part of it and help-out. It makes me wonder, why would they be motivated, for me, for my benefit, but not [for themselves], and how do I instill that [*motivation*]?

The critical events were different for each participant, but through meaning negotiation they reinterpreted the original event through a broader lens of motivation as they worked towards the second stage of the co-vision. The co-vision was first explored through dialog and then revisited in the CIGO through symbolism and metaphors. The first participant who thought that his issue was engagement and concluded that it was motivation with a different interpretation and vision of what that meant.

When [Participant 2] first told me the   story of his critical event, my impression was that it had a very clear theme. That theme, which he identified, was "motivation." At the time I thought of it as a good theme to work with but hadn't really contemplated its implications. I was struck by the fact that [he] seemed to think of it through the lens of a lack of motivation, whereas my feelings about the topic of "motivation" are more positive. When I think of "motivation," I think of empowerment. I planned to use the iconic image of the Superman shield. I am now thinking more about the ongoing struggle, which it takes to establish and work towards goals. I am reminded of a famous image of Superman bursting out of Kryptonite chains. I think I am thinking of "motivation" more as a struggle.

However, Participant 2 discussed how he sees motivation to view students' inner ability to motivate themselves as lacking, and that he has to find ways to motivate them. He notes that students have personal challenges, which inspires him to consider the connection to his instructional decision making.

Planning for the piece made me rethink what an utter struggle finding motivation can be for many students. Planning the piece also helped me conceptualize my role in

instilling motivation in the students. Verbally I could not articulate what I should do, or what questions I should ask. But visually, I began to see the students as whole beings who come with many inner challenges and struggles that do not linger on the surface. They are buried deep inside. Considering all these different elements helps me better plan my *interventions* and making lessons more engaging for all students.

Thus, both participants at the date of meaning deconstruction, not only deepened their understanding of motivation, but also planned their ways to transform their practice. Through the sequence of joint activities of meaning making, using metaphors, they note how they interpreted their individual circumstances with students differently, but at the end of the process, become empowered with the plans for transformative future actions for working with their students.

> Participant 1: Superman symbol, which stands for motivation, pure intrinsic motivation, the empowerment to do anything. But it's breaking out of a brick wall…kryptonite chains. So, there is a struggle, the idea of being held back, getting stopped with the red, with the brick, with the chains. There's also this idea that motivation is intermittent, which is why everything is kind of breaking up, and you've got motivation, so you keep on moving. There's a lot of motion in it with the empty space between the bricks and the alternating colors of the bricks...

> I wanted the centerpiece to be all this struggle, from the brick, from the chain, from glasses, to be overcoming it. I wanted the students in the center of the image. In Participant's 2 image with the arms crossed in our head down - we want to enable people to fly.

> Participant 2: I have a picture of one of my students in the middle. And he's got his head down on his desk and on the left side, we have a bunch of different positive **motivators** that are pulling to one direction. It seems more positive using bright warm colors. Some of the ropes are broken because those motivators are not working. One is a piece is his report card, and the other is a graduation cap, but there's still a thread that's still connected. So, the coil pieces of rope represent the strategies that I haven't thought of yet, that we haven't tried yet… The other strands that go off the canvas are unknowns, different things that are going on with the child that we don't know about. While I was creating, I realized, there are some traumas and experiences that we will never know, that the child will never share with us, and we must remember that.

In this example, we begin to see the emergence of the use of symbols and the language of art as a scaffold to think and act differently such as "more positive using bright warm colors. Some of the ropes are broken, because those motivators are not working, which leads his thought to broaden to "there are some traumas and experiences that we will never know, that the child will never share with us, and we have to remember that". And "**motivation is intermittent**, which is why everything is kind of breaking up… I wanted the centerpiece to be all this struggle, from the brick, from the chain, from glasses, to be overcoming it. I wanted the students in the center of the image". In Participant's 2 image "with the arms crossed and our head down - we want to enable people to fly".

Figure 3. Left – Participant 2 Artwork. Right – Participant 1 Artwork.

At the meaning deconstruction and the meaning negotiation stage of creative scaffolding sequence, the development of participants as transformative agents and their mastery of mediational means becomes more evident. The participants use the first 3 steps in Feldman's (1987) art criticism model to describe, analyze, and interpret to scaffold and organize the presentation of their artwork. It is double stimulation since participants use both symbolism and metaphors as a linguistic tool of the mind, and image representation of the metaphor they created. The dialog during the presentation led to opening different meanings, meaning communication encouraged to go deeper, see and think differently.

Participant 2:…seeing a challenge represented visually definitely opened me to more avenues of looking at it and reflecting upon it. Particularly the first one, with the threads… and some of them are partially broken…because I find there's just some situations at work where I'm at my wit's end, but knowing that I have multiple avenues to attempt, you know, different strategies and… seeing that represented visually made me feel more confident that… I'm not out of options, but there's always other threads to pull on.

> Participant 1: I would say my perspective on both of my critical events is shifted. I will say that for my first critical event, I worked with participant 2 on both of them. For my first critical event our theme was motivation, and I will say that I see it differently. I think before I was thinking is motivation, if something that you do once and then you're done, the students should just be motivated. But I realized that it's a constant ebb and flow, and that you must be motivating your students through the entire process. And for my second co-vision we talked about flexibility, and I just became aware of different teaching strategies, different tactics to use, and when to be aware [of] which one [worked].

In another example of meaning articulation and meaning negotiation stages of creative scaffolding, 2 higher education art educators were discussing issues surrounding the limited amount of time allocated for art in K-12 schools. The pair made broader connections to policy issues impacting schedules and curricular decision making. Through dialog and meaning negotiation, they move toward the co-vision and explore it further using metaphors and symbols.

LG: Stephanie and I were on the table that was talking about the issues we have where we all watching arts time decrease in schools. It was largely in an educational context as we see *erosion* happening [and] what we're noticing is that the arts policies that are in place aren't stopping any of that. There's nothing preventing administrators or school boards from taking time away.

They refer to the metaphoric/symbolic language and image connection, which helped them unpack and articulate the bigger underlying issues of the policies.

LG: I came up with a few metaphors, we use the word erosion and then also talking about the distance, so we created a visual distance between a bunch of little kind of package policies [pointing to the packages on the drawing] around teacher preparation or about graduation policies or about the amount states might have. So, what we decided was that the things that are eroding some arts experiences for students are traditional views about what students need, and some outdated assumptions about those things, [such as] academic preparedness… [and] they need more time for core subjects that are not included in the arts, [these are the reasons] that they would take time away and accountability pressures.

Figure 4. Higher Education Art Educators LG and SLF from
Arts Education Partnership Workshop 9/14/23

LG: …tested subjects [are] receiving some priority in the hiring - so these kinds of things are starting to eat away at the arts…. What we were hoping for, which is representative of this flag, is maybe there are ecosystems and barriers, and other things that folks can put up to stop erosion. There are strategies that we have, and we were just thinking about policy as a strategy to keep that erosion from continuing to happen, policies that would demand a certain level of accountability from stakeholders. We started to visualize the distance of the erosion.

What is also significant about this example is we begin to see where the application of visual symbolism begins "We started to visualize the distance of the erosion". Thus, even within a limited workshop time of one and a half hours, the art educators using creative scaffolding process and mediational means embedded in it, managed to start envisioning steps to

prevent" the erosion from continuing to happen", to look for the ways to ensure that art education is a part of the curriculum for K-12 children.

Conclusion

Transformative agency is the capacity of humans to distance themselves from their immediate surroundings and restrain from reactive behavior. It implies recognition of the possibility to intervene and transform the meaning of situated activities. Transformative teacher agency is not the state or ability of the individual, it is a socially constructed, culturally mediated collaborative activity of meaning making and joint action. Developing transformative agency depends on the opportunity to engage in learning as praxis, experience of continuous culturally mediated collaborative inquiry into practice, and mastery of the mediational means and psychological tools of transformative praxis. Creative scaffolding can be applied in multiple professional contexts to generate spaces for learning as praxis. Creative scaffolding of joint activities with a particular sequence of mediational means – narrative, dialog, artmaking, visual narrative – supports the development of ongoing inquiry into practice and empowers agents of action to question, disrupt, and dare to imagine teaching and learning different.

References

Arievitch, I. M. (2017). *Beyond the brain: An agentive activity perspective on mind, development, and learning*. Rotterdam/Boston: Sense Publishers.

Cochran-Smith M., Lytle S. L. (1993). *Inside/outside: Teacher research and knowledge*. Teachers College Press.

Cochran-Smith, M. & Lytle, S. (2009). Inquiry as stance: Practitioner research for the next generation. New York: Teachers College Press.

Feldman, E. B. (1987). *Varieties of visual experience*. New York: Abrams.

Folke, C., J. Colding, and F. Berkes. (2003). Synthesis: building resilience and adaptive capacity in social-ecological systems. In: F. Berkes, J. Colding, and C. Folke, editors. *Navigating social-ecological systems: building resilience for complexity and change.* (pp. 352-387). Cambridge University Press, Cambridge, UK. http://dx.doi.org/10.1017/CBO9780511541957.020

Gillespie, A. (2012). Position exchange: The social development of agency. New Ideas in Psychology, 30, 32–46.

Lampert-Shepel, E., & Murphy,C. (2018). Learning to reflect: Teachers' mastery and development of mediational means and psychological tools of reflective practice. *Journal of Cognitive Education and Psychology, 17(3*), 278-300.

Lampert-Shepel, E., Sullivan-Rubin, S., & Rabinovich, I. (2021). *Teacher Learning to Craft a Vision of Reflexive Praxis.* In: Wellner, L., & Pierce-Friedman, K. (Eds.), Supporting Early Career Teachers with Research-Based Practices (pp. 232-259). IGI Global. http://doi:10.4018/978-1-7998-6803-3.ch012

Leontiev, A. (1978). *Activity, consciousness, and personality*. Englewood Cliffs, NJ: Prentice-Hall. (Originally work published 1975)

McLaughlin, M. W., & Talbert, J. E. (2001). *Professional communities and the work of high school teaching*. IL: University of Chicago Press.

McLaughlin, M. W., & Talbert, J. E. (2006). *Building school-based teacher learning communities: Professional strategies to improve student achievement*. IL: University of Chicago Press.

Steffen, W., P. J. Crutzen, and J. R. McNeill. 2007. The Anthropocene: are humans now overwhelming the great forces of nature. *AMBIO* 36(8):614-621. http://dx.doi.org/10.1579/0044-7447(2007)36[614:TAAHNO]2.0.CO;2

UNESCO (2021). Reimagining our futures together: A new social contract for education. Retrieved on February 2, 2023 from https://unesdoc.unesco.org/ark:/48223/pf0000379707

Vygotsky, L. (1962). *Thought and language.* MIT Press, 1962.

Vygotsky, L. (1998) *Collected works,* vol. 5. New York: Plenum.

Vygotsky, L.S. (1987). Thought and word. In R.W.Rieber and A.S. Carton. (Eds.) The collected   works of L.S.Vygotsky, Vol.1: Problems of general psychology (pp.243-285). New York: Plenum Press.

Wertsch, J. V. (1998) *Mind as action.* New York: Oxford University Press.

Westley, F., B. Zimmerman, and M. Q. Patton. (2006). *Getting to maybe: how the world is changed*. Random House, Toronto, Ontario, Canada.

Wood, D. J., Bruner, J. S. and Ross, G. (1976). The role of tutoring in problem solving., *Journal of Child Psychiatry and Psychology, 17.2, 89-100.*

Zeichner, K., Payne, K. A., & Brayko, K. (2015). Democratizing teacher education. Journal of Teacher Education, 66(2), 122–135.

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Automated Proctoring Solutions: Modern Techniques to Evade & Lure Computerized Proctoring Systems

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

Automated proctoring solutions are popular tools across multiple types of instruction, including online, hybrid, and face-to-face. Choosing the correct application to proctor online assessments is a tedious process that involves discussions about securing the integrity of examinations and who should absorb the cost of the chosen proctoring solution. Modern automated proctoring solutions are customizable; in most cases, the student absorbs the total cost. Diverse vendors promote using artificial intelligence to detect movement, excessive noise, other persons in the room, or instances of impersonation. We present different scenarios to elude the built-in security features of the Respondus Lockdown Browser and compromise the integrity of online assessments. Windows Remote Assistance, Executable File Analysis, Screen Capture, and Virtual Webcams are practical methods to evade & lure the proctoring application's lockdown capabilities. Moreover, while each procedure may not apply in every scenario, Windows Remote Assistance facilitates the process of impersonation. The application is part of Windows 10 distributions, has no limitations, and setting up a screen-sharing session takes no time and effort. Furthermore, it is possible to leak the content of an online assessment using specific screen capture software.

Keywords: Lockdown Browser, Online Proctoring, Assessment Integrity, Online Learning

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Introduction

Online proctoring solutions are a valuable resource for face-to-face and online instructors. Different vendors claim the innovative use of algorithms, but there is no evidence to prove the effectiveness of their software. Increasing enrollment in distance education courses demands alternate solutions to proctoring. Allocating resources for testing is not within the possibilities of institutions that depend on state funds and run under limited budgets. Therefore, instructional departments evaluate solutions with pricing and security being among the deciding factors before implementing a specific proctoring system across the institutions.

Previous work targets academic dishonesty in the form of plagiarism, downloading papers from the internet, paying a third-party platform to write documents, and online sales of test banks and solutions manuals. However, it is essential to consider that all technology, such as web pages, mobile applications, and online banking, may have flaws and limitations within the code. Furthermore, we often read about how big corporations are easy targets for data breaches and attacks from hacktivist groups. Nonetheless, online proctoring solutions are not exempt from flaws or bugs within the code. Many of the proctoring applications are executable files or browser plug-ins, which opens the room for vulnerabilities.

To evaluate the effectiveness of the security measures in Respondus, we demonstrate proof of how to nullify the embedded security mechanisms of the Respondus Lockdown Browser. An online student intending to cheat will attempt to receive help from an external entity. The first successful simulation shows the effectiveness of Windows Remote Assistance. Moreover, Respondus blocks secondary displays, but we exhibit how to enable a second monitor and use lecture notes during an examination. Then, we transition into screen recording, a valuable method to leak the content of online examinations to the entire class. Finally, we mount a virtual webcam and pre-record the verification process. All four methods work with no warnings.

The rest of the paper is structured as follows: background and related studies in section II, definitions and tools in section III, methodology in part IV, simulation results in part V, and conclusion with ideas for future work in part VI.

Literature Review

Cai & King (2020) discuss how the application of instructional technology aids in delivering instruction, such as online assessments during times of crisis. The proposed framework for evaluating proctoring services covers three different types of proctoring services. First, they provide an overview of automated proctoring solutions, which use a combination of features such as machine learning and artificial intelligence to validate the authentication of the exam. Second, we see an overview of the technology behind browser lockdown applications, limiting the number of devices a student can use during a given assessment. As a third option, live proctoring solutions are also available, and they rely on the human factor to authenticate the session before an exam takes place. Even though we have several features to consider in proctoring systems, factors such as cost, training, and support are among the factors that can aid in deciding on adopting a proctoring solution. The main recommendation is to use a combination that implements several features to validate the integrity of the exam.

In research from Lubarda et al . (2021), Oral examinations demonstrate success for high enrollment courses within the engineering and mechanical fields of study. The goal of switching from traditional testing methods to oral examinations led to preserving academic integrity. Moreover, the results show that oral examinations improve the interaction between faculty and student. The experiment occurred during the quarter term of 2021, during which the form of instruction was remote. The examination consists of questioning the student in an interrogative manner via Zoom video conference. Three surveys serve as evidence to measure the effectiveness using the Likert scale. During the pre-exam study, data shows that students had no previous experience with oral examinations. However, studying for an oral examination strengthens the technical speaking skills of the student. The results proved that oral examinations are an effective method to promote academic integrity while also helping to raise student engagement.

Phillip Dawson (2015) discusses five different types of attacks against e-exams. The first type of attack involves copying the content of the USB drive into the student's hard disk. The second type of attack consists of the use of virtualization software. Most proctoring solutions nowadays have the functionality to detect instances of virtualization. However, some workaround may enable the student to load the contents of the exam into a virtual machine. The third type of attack is by using a USB key injector. A USB key injector is available at a reasonable price in many online stores, and the student customizes the functions. Finally, the fifth method to defeat BYOD e-exams is creating a memory dump and storing the file on the hard disk (Dawson, 2015).

The University of the Philippines Open University surveyed 52 students enrolled in the Master of Information System program. The survey consisted of three questions concerning academic dishonesty. Research shows that academic dishonesty is challenging for face-to-face and online courses (Ravasco, 2012). Although, the results showed more instances of academic dishonesty in face-to-face classes. Several factors, such as achieving a higher rank among classmates, reducing the time of the study materials, and being able to find a job, are among the reasons why students decide to cheat. Some suggested ideas are using a search engine, copying and pasting questions into the search engine, creating custom scripts, and running unauthorized processes. Others told the concept of hacking the university portal.

Moore et al. (2017), from the University of Tennessee, talk about how Respondus Lockdown Browser has shown not to be enough for online exam proctoring. Although Respondus also allows the instructor to activate the Respondus Monitor for each exam. Webcam testing with Respondus was not part of the pilot program, but the evidence shows screenshots of students being able to cheat with this application. The recommendation is to use remote proctoring, which may turn expensive for the average community college student. Besides relying solely on online proctoring, they also recommend strategies such as showing only one question at a time, changing the wording on the publisher's test banks, adding a letter to each answer choice, and protecting access to the examination with an access code.

Moten et al. (2013) present online cheating methods, such as waiting for answers, fraudulent error messages, collusion, and essay plagiarism. In distance education courses, instructors give the flexibility to take an assessment. Some students wait until others have an opportunity to take an exam to get the answers (Moten et al., 2013). Other students, who are not preparing for the examination, will try to preview the assessment and produce a fraudulent message. Moreover, students may also choose to provide login credentials to another individual. Furthermore, they discuss methods to prevent academic dishonesty in an online environment.

Policy dissemination, surveillance, proctoring, and statistical analysis are some countermeasures effective in preventing cheating.

Diedenhofen and Musch (2016) developed PageFocus, a new JavaScript that can detect and prevent cheating on unproctored internet tests by registering whether test takers abandon the test page by switching to another window or tab. In addition, a second function displays a pop-up as a warning message for the student. The implementation leads to the observation that students need at least three seconds to cheat on a question. In addition, PageFocus revealed that participants cheated when performance-related incentives were given (Diedenhofen & Much, 2016). The software is available for distribution on GitHub at the time of this writing. While it may be a valuable resource for proctored assessments, not all computer systems can run JavaScript.

Sullivan (2016) suggests alternative strategies to proctoring solutions. His integrated approach focuses on quiz design techniques to preempt cheating. Presenting students with multiple versions of the quiz, allowing multiple attempts, using a variety of question formats, and quiz frequency are among the recommendations. Nowadays, most learning management systems offer built-in features like the ones discussed. The findings confirm that technology tools, such as randomizing questions, shuffling response sets, and monitoring timestamps, reduce expectations that cheating pays off (Sullivan, 2016). Relying solely on quiz features may not be an option for other institutions, as protecting the integrity of online assessments is a requirement for accreditation agencies (Southern Association of Colleges and Schools Commission on Colleges, 2018).

Alessio et al. (2017) examine the effects of proctoring on online test scores. The scores of proctored examinations with webcam recordings are significantly lower than none proctored examinations (Alessio et al., 2017). Students who take the proctored exam with webcams are less likely to access unauthorized testing materials and commit academic dishonesty. Moreover, students who tested with lockdown software and no webcam recording had less impact on grading. Lockdown Browser and Secure Software offer several options for proctoring online exams. Both technologies assisted faculty with the review process. However, reviews are only based on abnormalities and do not cover issues of impersonation or unauthorized alterations of the testing software.

Definitions & Tools

Definitions

- Artificial Intelligence or AI – The theory and development of computer systems that perform tasks typically requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages (Lexico, n.d.a).
- Impersonation – Pretending to be another person for entertainment or fraud (Lexico, n.d.b).
- Automated Proctoring – The recording of online test takers at the assessment time. Usually with a third-party application or browser plug-in. The footage is generally available for review twenty-four hours after the last submission (if multiple submissions are allowed).
- Remote Desktop – Accessing a computer system from a distance. For this research, remote desktop means granting access to the test-taker system before an exam.

Another person will take control of the mouse and keyboard remotely. Details of this technique and how it allows impersonation are described in the methodology section.

- Executable File – A file or program can be run by a computer (Lexico, n.d.c).
- Executable file Analysis – The process of exploring the internal structure of the executable file. This technique is crucial for static malware analysis. We can see how the program will behave by looking into the resources table without loading the application into memory.
- Vulnerability – The process of exposing, finding, or exploring flaws within the application. The term is also common for other areas of cybersecurity. However, we are probing for vulnerabilities within the proctoring software.
- Virtual Webcam – The term virtual means that the product does not exist physically. Instead, we are replacing the existence of the hardware with simulation software.

Tools

- Respondus Lockdown Browser – We are choosing Respondus Lockdown Browser as the target for our experiment. The solution is currently in use by 1,500 institutions (Respondus, n.d.). The cost varies per number of students using the platform, which makes it affordable for institutions that choose to absorb the proctoring cost for the student. Additionally, it integrates seamlessly with Blackboard, Brightspace, Canvas, Moodle, Sakai, and Schoology. Moreover, we present working methods to bypass Respondus Monitor, the non-proctored add-on of Respondus Lockdown Browser.
- Windows Remote Assistance – Windows Remote Assistance is a tool included in recent releases of Windows OS. It does not require special licensing, is free to use, and is mainly intended to let someone fix a Windows computer system from a distance (Microsoft, n.d.).
- CFF Explorer – This application includes tools that might help reverse engineers and programmers (Pistelli, 2012). We will conduct executable file analysis with File Walker, a tool included within CFF explorer.
- e2eSoft Vcam – The application offers a wide variety of uses. However, we are using Vcam to install our virtual camera, and stream pre-recorded footage to our exam session with Respondus Monitor enabled (vcam, n.d.).
- FreeCam8 – Screen Capture software that remains undetectable by Respondus Lockdown Browser.
- A different computer system – Optional for optimal simulation results. Respondus Lockdown Browser disables any secondary displays; it is best to try Windows Remote Assistance and Quick Assist with another physical system.

Methodology

Our experiment proves the concept that instructional technology applications, specifically automated proctoring solutions with browser lockdown capabilities, are not safe from vulnerability researchers and bad actors. Our approach simulates the mindset of a student with a high determination to cheat, regardless if there is some motivation behind it. Exploring methods to break or bypass the multiple restrictions of proctoring software is limited. Some instructions are outdated in web forums and public video platforms. Therefore, we present modern working methods on how an online student can void the functionalities of proctoring applications. While our intention is not to promote academic dishonesty, it is vital to bring awareness to this matter.

Impersonation

First, we expose how the student version of the Respondus Lockdown Browser fails to detect instances of remote desktop software running as a process in our system. We must mention that a warning message will appear for every function that may assist the student while taking an exam. Also, the application can detect commercial software, such as Teamviewer. A student determined to cheat will plan days ahead of the examination. The process to start Windows Remote Assistance is simple. The student may invite a friend, classmate, or family member to take the exam on their behalf. This type of aid is fraud or impersonation, and no knowledge of network configuration, such as IP or MAC addresses, is needed. We start by creating an invite file and sending the file to the other end by e-mail. Then, we provide the session password to the test taker and grant complete control of the mouse and keyboard. Once the other person is in power, the student can launch the Respondus Lockdown Browser and enter login credentials into the learning management system.

Exploring for Flaws and Vulnerabilities

Respondus Lockdown Browser includes built-in functionalities to block features such as keyboard combinations, access to more than one screen, access to third-party websites, and other applications that are not authorized while a test is in progress. However, the application displays a "Loading…Please Wait" message before the institution's landing page. An in-deep look with CFF Explorer and File walker shows the system files and functions used by Respondus Lockdown Browser. Our experiment reveals that we can use keyboard combinations and take advantage before the application loads all the necessary system components into memory. A significant discovery with this technique is that Respondus Lockdown Browser blocks secondary displays by opening a second application with a purple background, which blocks all other monitors except our primary display. Pressing the ALT + TAB key is typical in Windows Systems to switch between applications. However, we discover that it takes between zero to three seconds for Respondus Lockdown Browser before it blocks all attempts to launch applications. Pressing the ALT + TAB key during "Loading…Please wait" allow us to cancel the application that blocks secondary displays, and we can have full access to any material we may need to search for test answers.

Unblock A Secondary Display and Use Lecture Notes

A secondary alternative to null the efforts of blocking the secondary display is by doing a left click on the purple blocking window and pressing ALT+F4. Respondus utilizes two windows when a secondary display is in use. The first window is our exam session, which we use to authenticate to the LMS and take the exam. On the other hand, the second window serves as a blocking mechanism to disable a second monitor. However, it is possible to have a full view by closing the window with the key combination. Now, any click outside the testing window will result in a warning. After a second warning, the session ends and sends a report to the instructor. However, we need the secondary display to read notes only. We make this possible by inserting our lecture notes into a Windows 10 gadget named 'Sticky Notes. To our surprise, we can start a Respondus session, and Sticky Notes can remain running as a background process without warning and any detection by Respondus Lockdown Browser. Therefore, it is possible to have lecture notes available, although the course instructor may not allow the use of notes.

Leak exam Content Via Screen Capture or Streaming

Respondus Lockdown Browser claims that it does not allow screen-sharing sessions while an exam is in progress. However, our extensive testing showed that Respondus could only block a limited set of applications that would enable the student to record the exam. Through extensive testing of applications, we found Free Cam8, a desktop capture software that goes undetectable by Respondus. Therefore, the use cases are almost endless once the student can utilize a screen capture application. We can start by saving the video and sending it through a third-party group chat like WhatsApp. Moreover, another alternative is to stream the video footage via a private link using YouTube or Google Drive. With the methods previously mentioned, a student can leak the content of any assessment by providing actual footage of the session.

Virtual Webcam and Pre-recorded Exam Footage

In most cases, instructors start the course with an ungraded practice quiz. It allows the student to prepare the system with any requirements and become familiar with the testing software. However, this also gives ample time for the student to develop a strategy and cheat without any red flags. After installing VCam, we set up a virtual camera with the intention of submitting an exam with pre-recorded footage. We can identify and time all the pre-exam steps by taking the pre-exam. Respondus Lockdown Browser has a sequence of steps, including taking a student picture, performing a 360-environment scan, showing a valid ID to the camera, and recording five seconds of audio and video. Our experiment shows that it is possible to submit an exam with footage that is not live. In other words, we recorded a session with enough time to pass the pre-exam screen successfully. Students may record footage for an extended period to mimic an entire session. Most learning management systems will display the time limit as part of the exam instructions.

Results

Figure1: Windows Remote Assistance (Test taker view).

Figure 1 displays the remote test taker assisting the student with the exam. This is the impersonation method, where the student sends an invitation file to the test taker, and the remote user can request complete control and take the examination on behalf of the student.

Figure 2: Finding flaws using CFF File Explorer.

Figure 2 illustrates an in-depth look at the file structure of the Respondus Lockdown Browser. The application allowed us to examine what was happening in our Windows 10 system once we launched Respondus Lockdown Browser into memory. This specific method proved that the Respondus Lockdown browser only uses a secondary purple window to block a system with a dual monitor configuration.

Figure 3: Respondus Lockdown Browser blocking access to a secondary display.

Figure 3 presents how Respondus Lockdown Browser utilizes two screens when detecting dual monitors. The first monitor on the right side is the student's view of the examination. Ideally, we are under the impression that we cannot use external resources during an

examination. We can see how a purple window is launched on the secondary display, which is located on the right side.

Figure 4: Answering questions on behalf of the student with Quick Assist.

Figure 4 shows one of the major security flaws built within the Respondus Lockdown Browser. This example eliminates the blocking mechanism that disables our secondary monitor. We achieve this by pressing ALT+F4 on our keyboard. Also, we are under the impression that students cannot utilize external resources. This preview shows how Respondus fails to identify that Sticky Notes is running as a background process. As a result, the student can access lecture notes and take advantage of this significant security flaw.

Figure 5: Preview of our output file used to distribute and leak assessment content.

Figure 5 presents our output file that resulted from the screen capture experiment. A closer look to figure 5 displays the playback controls at the bottom. Once a video file is generated, a student can have multiple options to leak examination content into several group chats or use a private link to disburse the content among classmates.

Figure 6: Loading a prerecorded video to VCam.

Figure 6 shows how we can use a webcam with Respondus Monitor. Here, we can load prerecorded video footage. The advantage of this method is that it eliminates the need to be recorded live when taking an assessment. Moreover, the most distinct feature is allowing the student to use any external device such as a tablet or laptop. Remember that this will not be shown to the instructor because the footage has been pre-recorded.

Figure 7: Using Vcam to take our assessment.

Figure 7 shows how we utilize a virtual webcam with a prerecorded video to take our assessment. Also, it is possible to bypass the webcam check sequence by following the pre-exam webcam check. Moreover, we can also utilize a video that covers the entire session. For example, an exam with a time limit of one hour will require a pre-recorded video of one hour.

Conclusion and Future Work

Our simulations prove several effective methods to assist a student, even when a security mechanism is in place to prevent academic dishonesty. In this case, we lure several security features built-in the Respondus Lockdown Browser. Windows Remote Assist allows an external person to take an examination on behalf of the student. This impersonation method works best when the exam only requires Lockdown Browser with no webcam. On the other hand, we explore the executable file to get an in-depth idea of the security mechanisms. This method allowed us to identify the blocking mechanism of a secondary display. Furthermore, we demonstrated how to bypass the mechanism that blocks a dual monitor configuration and take advantage of external resources such as lecture notes. We explore the endless possibilities that may result once a student uses video capture software to leak examination materials. Finally, we also exhibit how to lure and prevent a live recording of a student while an examination is taking place. We sincerely invite anyone in the academic community to keep testing which applications and methods are not currently detected by your proctoring solutions used in other institutions. We know Respondus Lockdown Browser has been in the market for several years and several institutions commonly utilize it.

References

Alessio, H. M., Malay, N., Maurer, K., John, B. A., & Rubin, B. (2017). Examining the effect of proctoring on online test scores. *Online Learning*, *21*(1), 146–161. https://eric.ed.gov/?id=EJ1140251

Cai, H., & King, I. (2020). Education Technology for Online Learning in Times of Crisis. *2020 IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE)*. https://doi.org/10.1109/tale48869.2020.9368387

Dawson, P. (2015). Five ways to hack and cheat with bring-your-own-device electronic examinations. *British Journal of Educational Technology*, *47*(4), 592–600. https://doi.org/10.1111/bjet.12246

Diedenhofen, B., & Musch, J. (2016). PageFocus: Using paradata to detect and prevent cheating on online achievement tests. *Behavior Research Methods*, *49*(4), 1444–1459. https://doi.org/10.3758/s13428-016-0800-7

E2ESoft. (n.d.). *VCam – Easy to Enjoy.* Retrieved July 20, 2022, from https://www.e2esoft.com/vcam/#google_vignette

E2ESoft. (n.d.). *Free Cam – Free Tool for Creating Screencast.* Retrieved July 20, 2022, from https://www.freescreenrecording.com/

Küppers, B., Kerber, F., Meyer, U. & Schroeder, U. (2017). Beyond lockdown: Towards reliable e-assessment. In *Lecture notes in informatics* (pp. 191–196). Gesellschaft für Informatik.

Lexico. (n.d.a). Artificial intelligence. In *English Dictionary, Thesaurus, & Grammar Help*. Retrieved July 20, 2022, from Lexico Dictionaries: https://www.lexico.com/definition/artificial_intelligence

Lexico. (n.d.b). Impersonation. In *English Dictionary, Thesaurus, & Grammar Help*. Retrieved July 20, 2022, from Lexico Dictionaries: https://www.lexico.com/definition/impersonation

Lexico. (n.d.c). Executable file. In *English Dictionary, Thesaurus, & Grammar Help*. Retrieved July 20, 2022, from Lexico Dictionaries: https://www.lexico.com/definition/executable

Lubarda, M., Delson, N., Schurgers, C., Ghazinejad, M., Baghdadchi, S., Phan, A., Minnes, M., Relaford-Doyle, J., Klement, L., Sandoval, C., & Qi, H. (2021). Oral exams for large-enrollment engineering courses to promote academic integrity and student engagement during remote instruction. *2021 IEEE Frontiers in Education Conference (FIE)*. https://doi.org/10.1109/fie49875.2021.9637124

Microsoft. (n.d.). *Use Remote Assistance to let someone fix your PC*. https://support.microsoft.com/en-us/help/4026516/windows-use-remote-assistance-to-let-someone-fix-your-pc

Moore, H., Derrick, H. J., & Griffin, R. B. (2017). Impeding students' efforts to cheat in online classes. *Journal of Learning in Higher Education*, *13*(1), 9–23. https://eric.ed.gov/?id=EJ1139692

Moten, J., Fitterer, A., Brazier, E., Leonard, J., & Brown, A. (2013). Examining online college cyber cheating methods and prevention measures. *Electronic Journal of E-Learning*, *11*(2), pp139-146–pp139-146. https://academic-publishing.org/index.php/ejel/article/view/1664

Pistelli, E. (2012). *Explorer Suite*. NTCore. https://ntcore.com/?page_id=388

Ravasco, G. G. (2012). Technology-aided cheating in open and distance e-learning. *Asian Journal of Distance Education*, *10*(2), 71–77. https://www.learntechlib.org/p/185226/

Respondus. (n.d.). *Lockdown browser.* Retrieved July 20, 2022, from https://web.respondus.com/he/lockdownbrowser/

Sullivan, D. P. (2016). An integrated approach to preempt cheating on asynchronous, objective, online assessments in graduate business classes. *Online Learning*, *20*(3), 195–209. https://eric.ed.gov/?id=EJ1113346

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Pert Analytic Effect of Psycho-Demographic Factors as Determinants of Secondary School Teacher Effectiveness in South-West, Nigeria

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

Teacher effectiveness is a critical factor in the teaching and learning process as it facilitates academic achievement and socially desirable behaviours of students. Extant studies have shown that secondary school teachers in the South-West Nigeria have low teacher effectiveness. Previous studies have focus largely on teacher's personality, self-esteem, self-efficacy, work experience, job satisfaction, age and gender with little attention given to causal explanation to TE. This study, therefore, was carried out to examine causal explanation for the psycho-demographic (personality, self-efficacy, self-esteem, LoC, work experience, gender, age) factors as determinants of TE in secondary schools in south west Nigeria. The survey design was adopted for the study and multi-stage sampling technique was used to select the study sample. The simple random sampling was used to select four out of the six states in the South-West, Nigeria. The proportionate to size sampling technique was used to select thirty-six local government areas in the four states and the simple random sampling technique was used to select 360 secondary schools. The purposive sampling technique was used to select 1,650 teachers. The instruments used to obtain data for the study were Teacher Job Satisfaction scale ($\alpha= 0.72$); Neo Five-Factor Personality inventory ($\alpha=0.83$), Teacher Self-efficacy ($\alpha=0.73$), Rosenberg Self-esteem ($\alpha=0.76$), Teacher Locus of Control ($\alpha=0.82$) scale and TE ($\alpha= 0.76$). Causal modeling technique involving path analysis was used to establish and estimate the linkages among independent and dependent variables at 0.05 level of significance. The predictor variable (age, EQ, gender and LoC) jointly accounted for 93.5% of the total direct effect whereas (age, EQ and personality) accounted for 6.5% of total indirect effect on teacher effectiveness.

Keywords: Teacher Personality, Self-Efficacy, Teacher Effectiveness

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Introduction

Teaching is as old as man is, and is an occupation in which the teacher serves multiple roles of an instructor, a parent, a caregiver, an adviser, a mentor and a model. The importance of the teacher in the transformation of the child is acknowledged since teachers are involved at every stage of a child's educational attainment. Teacher effectiveness [TE] is conceptualized to include teachers' mastery and delivery of the subject, pedagogical knowledge, utilization of teaching resources and assessment strategies, teachers' personal quality and motivation. TE is also viewed in terms of changes, which takes place in the knowledge, attitude, and behaviors of learners because of teacher engagement (Goe, Bell and Little, 2008). Globally, TE is affected by challenges of quality classroom delivery, inadequacies of qualified teachers to prepare the next cohort of instructors, organizational factors that affect teachers' productivity and instructional qualities among others (Ghavifekr and Rosdy 2015). The status of teachers in Nigeria primary and secondary school has affected the system because the working condition does not favour teachers and in return, teachers seek for better opportunities outside the teaching profession which affects their commitment and classroom's participation (Mahmoud, 2013).

Based on the challenges of teacher quality and their link to students' academic achievement, anti-social conducts and absence of standardized measures of TE, it became relevant that the researcher conduct this study. More so, studies reviewed have investigated TE as a subject matter or combined with one or more independent variables. This study therefore examined some of the determinant variables of TE, which include gender, work experience, personality, self-esteem, self-efficacy, LoC, educational qualification, job satisfaction, age and school climate.

Bhardwaj (1998) clarified that teacher personality has for some time been important to researchers in the field of instruction. Bhardwaj expressed that in six studies directly utilizing the sixteen personality factor as an indicator of teacher assessments, three of the studies found that TE is directly connected to uprightness, receptiveness to experience and extroversion. Buela and Joseph (2015) researched connection between personality and TE of secondary school teachers. Results were obtained utilizing purposive examination of 58 secondary school teachers in government schools. Two research instruments (NEO-five factor personality scale and TE scale) were utilized to acquire information for the study. The finding showed there is a connection between teacher personality and their effectiveness. Nonetheless, experienced teachers are fundamentally higher in TE that less experienced one.

Teacher efficacy is connected to teachers' conduct, exertion, objectives, desire, receptiveness to new thoughts, inventiveness, association, steadiness, versatility, willingness to utilize analysis, energy, eagerness to work with troublesome students and commitment to teaching profession (Tschannen-Moran, Woolfolk-Hoy and Hoy 1998; Ashton and Webb, 1986; Guskey and Passaro, 1994). Tai, Hu, Wang and Chen (2012) investigated the effect of teacher self-efficacy on understudy learning result, and found that teacher self-efficacy and the training procedure shows a connection with students' happiness. The proposed model records for 47.8% of the distinction in learning happiness and teacher self-efficacy. The training procedure and learning satisfaction all demonstrated a strong relationship with learning outcome.

Mustaq, Shakoor, Azeem and Zia (2012) noticed that; teachers from higher secondary school have higher scholastic accomplishment than teachers from lower secondary schools. Also,

grade school teachers when contrasted with elementary school teachers have higher scholarly execution; Secondary and higher secondary school teacher have self-esteem extending from 51% to 53% and secondary school teachers are moderately more amicable in their deduction than grade school teachers. Tabassum and Ali (2012) reported that there is no noteworthy distinction in the degree of professional self-esteem of vocational and science teachers at secondary level, that is both craftsmanship and science teachers have equivalent degree of professional self-esteem.

Sherman and Gile (1981) contrasted teachers of five years of internal LoC with under five years' teaching experience. The outcome indicated that teachers with at least five years of experience were more internal than those with five years or less experience. Sheard (1996) affirmed that teachers with internal LoC could be separated from teachers with external LoC in their impacts on student accomplishment.

Udousoro (2012) demonstrated a huge distinction among male and female in their perspectives concerning factors that advance gender lopsidedness in the teaching of arithmetic for male teachers. Jatol (2008) observed some social characteristics for male and female educators and conclude that male teachers' are business minded but experienced female teachers performed very well contrasted with students instructed by male teachers with lower educational qualification. Lahiri (2010) found that instructing in higher classes is controlled more by male teachers and in this manner considered as male ruled occupation. In all, female teachers are evaluated only for attempting to fit in non-customary field. Female educators are appraised dependent on lady like stereotyped characteristics.

Adeyemi (2008) found that there was a noteworthy linkage between teachers' experience and students learning results as estimated by their accomplishment in senior secondary learning outcome. The outcome likewise demonstrated that schools that have teachers with experience of twelve years or more performed better contrasted with schools with under twelve years.

Adedeji and Olaniyan (2011) argued there is a developing tension about the nature of teachers and teaching, especially in the provincial zones where roughly 70% of the African populace dwells. The shortage of qualified teachers and poor state of instruction are the central point influencing the nature of training offered in numerous governments funded schools indicating there in an association between the teachers' professional advancement and students' academic achievement.

Nganzi (2014) demonstrated that: compensation is an indicator of the degree of teacher job satisfaction; a domain which considers self-awareness builds one degree of satisfaction; acknowledgment and encouragement has an association with level of teachers' job satisfaction; chance to meet individual objectives and destinations is a commitment to the representative's degree of job satisfaction; individual relationship with the school is a factor that has been found to impact job satisfaction; democratization of the dynamic procedure in schools is a factor that upgrades teacher inspiration and job satisfaction. Payani and Seghieri (2003) noted that effectiveness, which is a part of instructing, is affected by a blend of teacher characteristic; For example, clearness, ability to spur the students, capacity to sort out the exercises, gender, age, past experience and physical part of the classroom among other factors.

Afolabi (2012) examined the impact of gender, age and experience on teachers' inspiration in Ado and Efon local Government Areas, utilizing a basic size of 500 teachers. The

consequence of the study indicated a critical distinction among youthful and old teachers as far as their degree of inspiration; youthful teachers are spurred at the beginning time of section into the educating profession. Amadi and Allagoa (2017) examined demographic factors as determinants of TE in home management in secondary schools. The consequence of the study indicated that age, educational qualification, training experience had huge impact on teachers' home management. Alufohai and Ibhafidon (2015) uncovered that students' scholarly accomplishment is essentially impacted by teacher's age and conjugal status, though teacher's gender didn't show huge effect on understudy learning result.

Statement of the Problem

The challenges TE in secondary schools in the southwestern Nigeria could be traced to poor content mastery and delivery, pedagogical inefficiency, negative attitude towards the teaching profession, poor remuneration, low self-worth, inadequate teaching facilities, equipment and supplies among others and this is linked to dwindling academic performance, reading problems and students' engagement in anti-social behaviours.

Consequently, previous studies indicate that TE has been investigated separately with some set of variable(s) such as TE and job satisfaction (Tomar, 2015); teacher personality and TE (MacCann, 1987); and effect of certification on TE (Kane, Rockoff and Stagier, 2006). This study therefore, investigated the path analytic effect of psycho-demographic factors as determinant of TE.

Purpose of the Study

The main purpose of this study is to investigate the path analytic effects of psycho-demographic (teacher self-efficacy, self-esteem, LoC, personality, age, work experience, educational quality, gender, job satisfaction, school climate) factors on TE among secondary schools in South-west, Nigeria. Specifically, to evaluate the pathways indicating direct and indirect effects of the ten independent variables on TE.

Research Question

The following research question was answered in this study at 0.05 level of significance:
1. What are the significant pathways indicating direct and indirect effects of the ten independent variables on TE?

Design

This research adopted a descriptive research design of *ex-post facto* type. The rationale is based on seeking to establish cause effect relationship among the independent and dependent (personality type, self-esteem, self-efficacy, LoC, work experience, gender, age, job satisfaction, school climate, and TE) variables of interest.

The target population for this study comprised all the seventy-six thousand, three hundred and eighty teachers (76,380) across three thousand two hundred and fifty-one (3251) secondary schools in southwest, Nigeria. The randomly selected states for data collection included; Ekiti, Ogun, Lagos and Oyo state. The study population comprised both male and female teachers in public secondary schools in south-west, Nigeria. Data was also obtained from principals, head of units and students concerning the TE. The respondents for this study

were chosen from the four (4) states randomly selected out of the six states in the South-west using the Multistage Sampling Technique.

The following research tools were used to obtain information from the respondents in the study. However, TE questionnaire and school climate survey were adapted for the study while teacher self-efficacy, big five factor personality inventory, teacher LoC scale, self-esteem scale and teacher job satisfaction questionnaire were adopted for the study. All the instruments were revalidated using the test- retest reliability.

The researcher engaged ten research assistance in the distribution and administration of the instrument to the teachers within the chosen schools. The scales were collected back within 2-3 days after distribution. The data obtained were analyzed using a causal modeling technique that involved path analysis.

Research Question 1: What are the significant pathways indicating direct and indirect effect of the ten independent variables on the TE?

Table 1: Path Coefficients and Zero Order Correlations among Variables in the Hypothesized Model.

Path	B	R	Std Error	Sig	Decision
P51	-0.038	-0.038	1.728	NS	Delete
P52	-0.017	-0.033	1.841	NS	Delete
P53	-0.029	-0.041	1.406	NS	Delete
P54	-0.023	-0.039	0.901	NS	Delete
P61	0.013	0.003	0.333	NS	Delete
P62	0.098	0.110	0.355	S	Retain
P63	0.066	0.086	0.271	S	Retain
P64	0.001	0.053	0.174	NS	Delete
P65	0.197	0.190	0.005	S	Retain
P71	0.058	0.056	0.377	S	Retain
P72	0.024	0.012	0.402	NS	Delete
P73	-0.054	-0.041	0.307	S	Retain
P74	-0.042	-0.034	0.196	NS	Delete
P75	-0.016	0.023	0.005	NS	Delete
P76	0.199	0.192	0.028	S	Retain
P81	-0.007	-0.025	0.211	NS	Delete
P82	0.003	-0.001	0.225	NS	Delete
P83	0.022	0.002	0.172	NS	Delete
P84	0	-0.016	0.11	NS	Delete

P85	0.62	0.638	0.003	S	Retain
P86	0.087	0.223	0.016	S	Retain
P87	0.083	0.113	0.014	S	Retain
P91	0.038	0.065	1.702	S	Retain
P92	-0.014	0.017	1.817	NS	Delete
P93	-0.018	-0.019	1.387	NS	Delete
P94	0.023	0.004	0.886	NS	Delete
P95	0.028	0.146	0.032	NS	Delete
P96	0.208	0.332	0.129	S	Retain
P97	0.506	0.560	0.112	S	Retain
P98	0.107	0.226	0.199	S	Retain
P101	0.012	0.014	0.994	NS	Delete
P102	0.042	0.023	1.06	S	Retain
P103	-0.014	-0.037	0.81	NS	Delete
P104	0	-0.015	0.517	NS	Delete
P105	0.477	0.573	0.018	S	Retain
P106	-0.035	0.188	0.078	NS	Delete
P107	0.228	0.348	0.077	S	Retain
P108	0.181	0.476	0.014	S	Retain
P109	0.113	0.394	0.116	S	Retain
Pt1	0.048	0.053	0.489	S	Retain
Pt2	-0.077	-0.084	0.522	S	Retain
Pt3	-0.068	-0.08	0.398	S	Retain
Pt4	0.012	-0.032	0.255	NS	Delete
Pt5	-0.058	-0.033	0.01	NS	Delete
Pt6	0.052	0.031	0.038	S	Retain
Pt7	-0.003	0.017	0.039	NS	Delete
Pt8	-0.001	-0.017	0.007	NS	Delete
Pt9	-0.001	0.018	0.058	NS	Delete
Pt10	0.022	-0.002	0.012	NS	Delete

S = Significant at $p < 0.05$; NS = Not Significant, $p > 0.05$

Result presented in Table 1 shows the path coefficients and associations among the variables. In order to arrive at a model that would best explain the causal relationships under

investigation, the path coefficients and the associations are required. Only paths that are significant in line with comparative Structural Equation Modeling benchmarks are considered to necessary to be included in a model that can explain causal relationships among a number of variables. Judged based on the p-value of $p < 0.05$ for significance, otherwise not significant, Table 1 shows that paths P62, P63, P65, P71, P73, P76, P85, P86, P87, P91, P96, P97, P98, P102, P105, P107, P108, P109, Pt1, Pt2, Pt3, Pt6 were significant at $p < 0.05$ and are thus to be retained in the most meaningful causal model. All other paths were not significant and were to be deleted from the hypothesized model, so that its re-specification will give the most meaningful causal model for explaining TE.

Table 2: Meaningful Causal Paths and their Path Coefficients

Path	B	R	Std Error	Sig	Decision
P62	0.098	0.110	0.355	S	Retain
P63	0.067	0.086	0.271	S	Retain
P65	0.196	0.190	0.005	S	Retain
P71	0.057	0.056	0.377	S	Retain
P73	-0.058	-0.041	0.307	S	Retain
P76	0.197	0.192	0.028	S	Retain
P85	0.618	0.638	0.003	S	Retain
P86	0.09	0.223	0.016	S	Retain
P87	0.081	0.113	0.014	S	Retain
P91	0.039	0.065	1.702	S	Retain
P96	0.208	0.332	0.129	S	Retain
P97	0.504	0.560	0.112	S	Retain
P98	0.124	0.226	0.199	S	Retain
P102	0.034	0.023	1.06	S	Retain
P105	0.473	0.573	0.018	S	Retain
P107	0.228	0.348	0.077	S	Retain
P108	0.109	0.476	0.014	S	Retain
P109	0.171	0.394	0.116	S	Retain
Pt1	0.051	0.053	0.489	S	Retain
Pt2	-0.069	-0.084	0.522	S	Retain
Pt3	-0.065	-0.08	0.398	S	Retain
Pt6	0.044	0.031	0.038	S	Retain

S = Significant at $p < 0.05$

Table 2 shows the meaningful paths to be included in building the most meaningful model for explaining teacher effectiveness. It is worthy of note at this point that in the present study the significance of the path coefficient as well as correlation were tested for a path to be judged as significant or not significant. This was in line with Backblock, cited in Kerlinger and Lee, (2000), who stipulated that both path coefficient and correlation must be significant at $p < 0.05$ for the path to be both significant and meaningful. The no-significant paths were deleted based on this criterion in order to obtain the most meaningful causal model for explaining TE.

Figure 1: Re-specified Recursive Path Model for Explaining Teacher Effectiveness
Key: X_1 = Gender; X_2 = Age; X_3 = Educational qualification; X_4 = Work experience; X_5 = Personality; X_6 = LoC; X_7 = Teacher self-efficacy; X_8 = Self-esteem; X_9 = Job satisfaction; X_{10} = School climate Y_t = TE.

Figure 1 shows the re-specified path model including only the significant paths presented in Table 2 above. The path coefficients are indicated on the path model. The re-specified model depicts a close affinity with the data collected and thus is consistent with the empirical data as will be demonstrated later with the fit indicators. The researcher therefore concluded that the re-specified recursive path model is the most meaningful model for explaining causal effects among gender, age, educational qualification, work experience, personality, LoC,

self-efficacy, self-esteem, job satisfaction, school climate and teacher effectiveness. The new structural equations for estimating the parameters of the model are as shown below:

$$X_6 = P_{62}X_2 + P_{63}X_3 + P_{65}X_5 + e_6 \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots Eqn\ 1.1$$
$$X_7 = P_{71}X_1 + P_{73}X_3 + P_{76}X_6 + e_7 \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots Eqn\ 1.2$$
$$X_8 = P_{85}X_5 + P_{86}X_6 + P_{87}X_7 + e_8 \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots Eqn\ 1.3$$
$$X_9 = P_{91}X_1 + P_{96}X_6 + P_{97}X_7 + P_{98}X_8 + e_9 \dots\dots\dots\dots\dots\dots\dots \quad \dots Eqn\ 1.4$$
$$X_{10} = P_{102}X_2 + P_{105}X_5 + P_{107}X_7 + P_{108}X_8 + P_{109}X_9 + e_{10} \dots\dots\dots\dots\dots\dots Eqn\ 1.5$$
$$Y_t = P_{t1}X_1 + P_{t2}X_2 + P_{t3}X_3 + P_{t6}X_6 + e_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots Eqn\ 1.6$$

Table 3: Significant Pathways of Direct and Indirect Effect on TE

Endogenous Variable	Direct Effects	Indirect Effects
X1	Pt1	-
X2	Pt2	P62Pt6
X3	Pt3	P63Pt6
X4	-	-
X5		P65Pt6
X6	Pt6	
X7	-	-
X8	-	-
X9	-	-
X10	-	-

Key: X1 = Gender; X_2 = Age; X_3 = Educational qualification; X_4 = Work experience; X_5 = Personality; X_6 = LoC; X_7 = Teacher self-efficacy; X_8 = Self-esteem; X_9 = Job satisfaction; X_{10} = School climate

Table 3 shows the significant pathways indicating direct and indirect effects of the ten Psycho-demographic factors on the TE. The table further confirms that four of the independent variables; Gender (X_1), Age (X_2), Educational qualification (X_3) and LoC (X_6) had direct effects on the criterion variable (teacher effectiveness). The table shows the pathways of the significant direct effects to be P_{t1}, P_{t2}, P_{t3}, and P_{t6}. These pathways are represented by the standardized path coefficients (Beta weights) indicating the direct causal effects of the independent variables on TE see (table 4.7). The table also shows the pathways of the significant indirect effects of the three independent variables Age (X_2), Educational qualification (X_3) and Personality (X_5) on TE. Age is shown by the pathway $P_{62}P_{t6}$ to have an indirect effect on TE through the variable LoC. The indirect effect on gender on age is therefore gotten by the AMOS programme with the computation $P_{62} \times P_{t6} = (0.098 \times 0.044) = 0.004$. Similarly, Educational qualification have an indirect effect on TE through LoC as indicated by the pathway $P_{63}P_{t6}$. The indirect effect of educational qualification on TE through LoC was also computed using $P_{63} \times P_{t6} = (0.067 \times 0.044) = 0.003$. Finally, Personality was also found to have a significant indirect effect on TE, also through LoC as indicated by the pathway $P_{65}P_{t6}$. The indirect effect of personality on TE through LoC was also computed using $P_{65} \times P_{t6} = (0.0196 \times 0.044) = 0.009$.

Discussion of Findings

What are the significant pathways indicating direct and indirect effect of the ten independent variables on the TE?

The result obtained from the study and illustrated on table 1, 2 and 3 established significant causal linkages between the independent variables and criterion variable. In all there are seven (7) pathways. This is made up of 4 direct pathways (Gender, Age, Educational qualification and LoC) and 3 indirect pathways. The result (Age, Educational qualification, Personality) showed that X_2 (Age) made the highest total effects of 29.79% to Y_t (TE). This is followed by X_3 (Educational qualification) with 27.76%, X_1 (Gender) with 20.82% and X_6 (LoC) with 17.76%. This result confirmed existing findings of Afolabi (2012) who reported that there is a significant difference between young and old teachers in terms of their level of motivation. Furthermore, Payani and Seghleri (2003) revealed that TE is influenced by a combination of teachers' characteristics including age. Within the context of this study, X_3 (educational qualification) ranked second highest in terms of its direct and indirect causal linkage to TE. It is important because one of the greatest challenges of teaching in Africa and Nigeria in particular is the lack of qualified teachers in schools especially in the rural areas (Adedeji and Olaniyan, 2011). For X_1 (Gender), studies such as Lahiri (2010); Udousoro (2012) and Jatol (2008) affirmed that gender difference exist in schools for both men and women, with male teachers using more physical punishment compared to female and male teachers been more prone to teaching STM as compared to female who are more likely to find fulfillment in the arts, social sciences and commercial subjects. With regards to rating, male teachers are perceived to be dynamic, energetic and enthusiastic compared to female teachers who are rated as affectionate, sympathetic, sensitive to the need of others, understanding and compassionate. X_6 (LoC) within the context of this investigation is considered a major contributor and this is compatible with the finding of Sheard (1996) who reported that with respect to job performance/effectiveness, internal LoC is among the best predictors of job performance. X_2 (Age), X_3 (Educational qualification) and X_5 (Personality) through X_6 (LoC) accounted for 6.53% of the indirect causal linkage to the criterion variable Y_t (TE). This outcome does not invalidate the strength of the independent variables rather their contribution in the study is considered minimal especially X_5 (personality). This suggests that teachers' personality has been hampered by lack of morale, incentives, welfare, motivation, improved working condition, stress or burnout, leading to higher neurotic behavior among teachers, thus affecting their personality.

Conclusion

The purpose of this study was to investigate path analytic effect of psycho-demographic factors determining TE in secondary school in South-west, Nigeria. Various research instruments were used to obtain data and results were analyzed and discussed. Based on the outcome of the study, the following conclusions were made;

Four of the selected psycho-demographic factors (Gender, Age, Educational qualification and LoC) had direct causal link with TE. Three factors (age, educational qualification and personality) had indirect causal link with TE. Also, personality was found not to possess any direct link with TE. However, work experience, teacher self-efficacy, self-esteem, job satisfaction and school climate had no direct or indirect causal linkage with TE.

Within the context of this investigation some variables are more significant than others in determining TE. For instance, age and educational qualification possess both direct and indirect causal linkage to the criterion variable indicating the highest total effects. In conclusion, personality accounted for the least contribution towards teacher's effectiveness.

Recommendations

Based on the outcome of this study, some recommendations were offered towards the enhancement of TE in southwest, Nigeria. These recommendations are based on the conclusion reached from the study. The recommendations are: schools should pay attention to all the psycho demographic factors, most significantly those that have direct or causal linkage on TE. The process of teachers' recruitment should critically consider the teachers age and educational qualification as a criterion for selection, appointment and placement. Government and stakeholders in the educational system must develop policies and guideline based on the outcome of this study towards the enhancement of TE. Furthermore, various training programmes through qualified counselor(s) should be developed and directed towards the improvements of teacher personality, their LoC and effectiveness. As a result of the finding from this study teachers' entering the teaching profession should be matured, and educationally qualified for placement in the teaching profession. Teacher LoC significantly contribute towards effectiveness of teachers and as such exploration of LoC will enable the counselor to develop appropriate counselling therapy for the strengthening and sustenance of the teachers.

References

Adeogun A.A. And Olisameka, B.U. (2011). The Effect of School Climate on Student Achievement and Teacher Productivity for Sustainable Development. *Education Review 8(4) 552-557.*

Adeyemi, T.O. (2008). Teaching Experience for Teachers and Learning Outcomes for Students in Ondo State Schools, Nigeria. *Educational Research and Review: 3(6) 204-212.*

Alufohai P.J and Ibhafidon H.E (2015). Influence of Teachers' Age, Marital Status and Gender on Student's Academic Achievement. *Asian Journal of Educational Research 3(4) 60-66.*

Amadi E.C and Allagoa I.C (2017). Demographic Variables as Determinants of Teachers' Effectiveness in classroom Management in Secondary School in Rivers State. *International Journal of Innovative Development and Policy Studies 5(4), 65-70.*

Ashton P.T and Webb, R.B (1986). *Making a difference: Teachers' Sense of Efficacy and Students Achievement.* New York, Longman.

Bhardwaj, A. (1998). The role of Personality factor for Teaching Effectiveness. *Retrieved on 12th of April 2010 from http.//www.google.searching.com.*

Buela, S., & Joseph, M.C. (2015). Relationship between Personality and Teacher.

Effectiveness of High School Teachers. *The International Journal of Indian Psychology 3(1) 57-70.*

Gharifekr, S & Rosdy W.A.W. (2015). Teaching and Learning with Technology: the Effectiveness of Integrating ICT in schools. *International Journal of Research in Education and Science. 1(2) 175-191.*

Goe, L., Bell, C & Little, O. (2008). Approaches to Assessing Teacher Effectiveness: Pooling Research. *Retrieved April* 12, 2010 from http://www.tqsource.org

Guskey, T.R & Passaro, P.D (1994). Teacher Efficacy: A Study of Construct Dimensions. *American Educational Research Journal, 31, 627-643.*

Holmlund, H. & Sund K. (2008). Is the Gender Gap in School Performance affected by the sex of the teacher? *Labour Economics 15(1), 37-53.*

Kane, T.J, Rockoff J.E & Staiger, D.O (2006). What does Certification Testify to a Teacher's Effectiveness? New York. Guide.

Kerlinger, F.N & Lee, H.B.(2000). *Foundation of Behavioural Research,* NY, Holt.

Lahiri S. (2010). Status of Female Teachers when students Evaluate Teachers. *Retrieved from http//www.isical.ac.m/wemp/paper/sudeshnalahiri.doc on 13th of November 2022.*

Maccan, C.R (1987). The Relationship between Personality Characteristics and Teaching Effectiveness of Secondary Vocational Agricultural Teacher. *Unpublished Dissertation submitted to University of Nebraka, Lincoln.*

Mahmoud A. (2013). Competency Test Report for Government Primary School Teachers in Kaduna State. *Punch newspaper on May 15, 2013.*

Mustag N., Shakoor A., Azeem M. & Zia N., (2012*). Self-Esteem difference among Primary, Elementary, Secondary and Higher Secondary School teachers. *International Journal of Humanities and Social Science. 2(1), 200-205.*

Nganzi, C. (2014). Factors Influencing Secondary School Teachers' Job Satisfaction level in legato District, Nairobi-Kenya. *International Journal of Community and cooperation studies*, 1 (2) 12-26.

Sheard, S. (1996). Classroom Management Skills and Teacher Control Center. *Unpublished thesis submitted to Rowan College.*

Sherman, T M & Giles, M.P. (1981). Development and Structure of Personal control of Teachers. *Journal of Educational Research 74 (3), 139-142.*

Tabassum, F & Ali, M.A. (2012). Professional Self-Esteem of Secondary School Teachers. *Asian Social Science 8(2), 206.*

Tai, D.W.S., Hu, Y.C., Wang, R. & Chen, J.D. (2012). What is the Impact of Teacher Self-efficacy on Students Learning Outcome? *A paper presented at 3rd WIETE Annual Conference on Engineering and Technology Education, Pattaya, Thailand, 6-10 February 2012.*

Tschannew–Moran, M.,& Woolfolk, A. (1998*). Teacher Self-efficacy: Its meaning and measures. *Review of Educational Research, 68 (2), 202-248.*

Tymms, P. (2005). Teacher Sex has no Effect on Pupil Performance. *Retrieved July 27, 2019 from http://www.teacher.org.uk*

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Sources of Research Funding and Academic Productivity

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Abstract

This study aims to explore the impact of different sources of funding on research productivity. Using a sample of 403 academics, we employ ordinal and logistic regressions to assess the different sources of funding, namely the universities, government, EU, private entities and development agencies, on three different outcomes, namely the number of articles published in the first and second quartile journals of according to Journal Citation Reports (JCR), the number of articles published in the third and fourth quartile and the binary choice whether to publish in the first and second quartile or other lower-ranking journals. The results show that EU and development agencies' funding positively affects the number of articles published in high-ranked journals. In contrast, the funding from development agencies is the only funding source that affects the number of articles published in low-ranked journals. EU is the only source of funding that affects the choice to publish in high vs lower-ranking journals. Implications for the policymakers are further discussed.

Keywords: Research Funding, Sources of Funding, Research Productivity

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1. Introduction

During the two decades following the fall of communism, Albania experienced a substantial brain drain. According to the 2013 report of the World Bank (World Bank, 2013) more than half of the professors, researchers and intellectuals who were educated abroad did not return to the country. Furthermore, over half of all lecturers and researchers emigrated during the 1991–2005 period, constituting a significant loss for the academic community (University of Sussex, Uk, 2006). Albania in 2010 had only 245 researchers per million inhabitants, a figure that accounted for only 10% of the European average (World Bank, 2013). To fill this gap from 2011-to 2013, the Albanian government approved 4827 quotas for young lecturers to be recruited in various country universities. Such an increase in young academics resulted in a growing number of publications. However, the quality of many of these publications was dubious at best.

One of the barriers to improving research productivity is the low level of funding. According to the (UNESCO, 2015), Albania spends about 0.2% of its GDP on research and has the lowest per capita spending on research and innovation in southeast Europe. However, the funding situation for research in Albania does not seem optimal. Albania remains one of the countries with the lowest level of funding and the most limited access to generate alternative income that would help raise research standards, compared to all European countries, including our closest neighbors (Papadhopulli & Miço, 2019). In 2020, Albania spent less than 0.25% on R&D as a percentage of GDP - the lowest in the region – making it very difficult to produce knowledge, retain talent, create a quality higher education system, and enable the transition to a new, more sustainable, knowledge-based economic model (UNESCO, 2020).

The importance of funding for research productivity cannot be overstated enough. Some scholars suggest that funding is significantly related to the number of citations (Myers et al., 2011). Besides, the author indicates that the citation impact is positively related to the variety of funding and negatively related to funding intensity. Similarly, (Győrffy et al., 2020) suggest that there is a significant effect of funding on the quantity of high-quality publication (i.e., publication in the first quartile (Q1) ranked journals). Controversially, some other authors argue that there is no positive relationship between the number of grants and research quality (Mijaki & Yuko, 2018; Jung et al., 2017). Besides, the relationship can be better explained by the bias toward the reputation of the researcher rather than the research quality (Ebadi & Schiffauerova, 2015). Another prominent stream of research focuses on the impact of funding on research output. Some studies suggest a small positive impact of funding on scientific output (Arora & Gambardella, 2005), especially in the earlier stages of the researcher's career. Other authors qualify their findings by suggesting a positive correlation for the younger cohort, only within one discipline and not in interdisciplinary studies (Mijaki & Yuko, 2018). Finally, some scholars argue that not all academics need funding to conduct their academic research, indicating humanities and social science as research fields that do not require funding to conduct research (Grove, 2017). In conclusion, it can be argued that the findings concerning the relationship between funding and research quality and quantity are mixed and somewhat inconclusive.

Sources of funding are viewed as another factor that affects research productivity. (Mijaki & Yuko, 2018) divided sources into two main categories, namely external and internal funds. Internal funding consists of governmental core funding and university assets and external funding, which can be defined as public and private research funding that is not part of the

core funds (Mijaki & Yuko, 2018). There is ample evidence for the effect of funding on research output, but different sources affect more than others. Scientific output is positively correlated with internal and external funding (Haven et al., 2020), while for economics, only internal funding increases productivity (Mijaki & Yuko, 2018). Some scholars identify a causal relationship between external funding and scientific output (Myers et al.; Aagaard et al., 2019), but others do not find evidence that grants positively affect research productivity (Lanser & Dalen, 2013). Further, other studies evaluate that a dual funding system, i.e., multiple sources of funding, is a reason for success (Grove, 2017; Adams & Bekhradnia, 2004). The availability of many potential sources of funding leads researchers to shift from one source of funding if they are not successful with the application (Jacob & Lefgren, 2011). Based on these arguments on the importance of funding sources, our study focuses on five common funding sources: funding from the university, government agencies (via competition-based grants), the European Union programs, private entities, and development agencies. We also control for the effect of multiple sources of funding.

Besides the factors mentioned above, research productivity is affected by the personal attributes of the researcher (Jung, 2012; Albert et al., 2015). Age is among the attributes whose effect on productivity is debated. For example, some researchers argue that there is no correlation between age and publication performance (Győrffy et al., 2020), while others argue that age has a negative impact on the quality of research (Jung et al., 2017). Similarly, research suggests that personal attributes might affect funding too.

Young and inexperienced academics and researchers in the early career stage do not receive funding unless they collaborate with senior academics and researchers (Ebadi & Schiffauerova, 2015). There appears to be a positive relationship between funding and experience (Ebadi & Schiffauerova, 2015). Hence, in this study, we control for their confounding effect.

In Albania, research productivity in general and funding sources are under-researched areas. To the best of our knowledge, no studies have explored the dynamics of such phenomena. This study aims to differentiate the effect of different sources of funding on research productivity. Moreover, we investigate whether sources of funding impact the behavior of researchers concerning the quality of journals they want to publish, i.e., whether they publish in high- or low-ranking journals.

The rest of the paper is structured as follows: Section 2 presents the data and methods used. Section 3 presents the results of the regression analyses. Finally, section 4 includes theoretical discussions, limitations, and suggestions for future research.

2. Materials and Methods

2.1 Participants and data collection

Data were collected using an online survey targeting the entire population of academics working in 37 public and non-public Higher Education Institutions. We contacted around 6500 lecturers via email, although only 1038 accessed the online questionnaire. Out of the total number of respondents, only 712 filled out the questionnaire, while a smaller number of 403 completed the questionnaire. The missing data exceeded the threshold of 20%.

2.2 Outliers and bias examination

Z-score analysis showed that there are no outliers. We tested for the non-response bias by using wave analysis. No difference between early and late respondents was found in terms of respondent attributes such as gender ($\chi2$ test, $p = 0.286$), university (private vs public ($\chi2$ test, $p = 0.128$), university degree (PhD vs MSc) ($\chi2$ test, $p = 0.499$), and title indicating the lack of non-response bias in our study.

2.3 Empirical model

Ordinal and logistic regression were used since the outcome variable is ordinal or binary.

2.4 Operationalization of variables

The five variables measuring the five sources of funding and the one measuring the whether multiple sources of funding are used or not have been operationalized using a binary variable (i.e., yes or no).

The first two outcomes, respectively, the number of articles published in the first and second quartile (respectively, Q1 and Q2) of the Journal Citation Reports (JCR) and the number of articles published in the third and fourth quartile (respectively, Q3 and Q4) of the Journal Citation Reports (JCR) were measured using a categorical variable (0 articles published was coded with 1, 1 to 3 = 2, 4 to 6 = 3, 7 to 9 =4, and more than 9 = 5). The last outcome, the binary choice of publishing in a Q1 and Q2 vs publishing in other low-ranked journals, was measured using a dichotomous variable, taking the value of 1 for the first choice and 0 for the second.

3. Results

Table 1 shows the results for three models. The first model shows the results of the effect of the independent variables on the number of articles published in the Q1 and Q2 quartiles of JCR. The second model shows the results of the effect of our predictors on the number of articles published in the Q3 and Q4 quartiles of the JCR. Finally, the last model shows the results of the same explanatory variables on the binary choice, whether to publish in Q1 and Q2 or low-quality journals.

All three models fit the data (model fit p-value < 0.0001). Further, the goodness of fit significance is higher than 0.05 for the first two models, while The Hosmer-Lemeshow test significance is above the threshold of 0.05 (p-value = 0.892). These tests indicate a perfect fit for our models. The test of parallel lines for the first two models is not significant (respectively 0 .944 and 0.334); thus, the effects of our predictors are proportional across the different thresholds.

The Nagelkerke Pseudo R-Square indicates that the first model explains around 18% of the variance, the second, almost 22% and the third, only 12% of the variance of our outcomes.

In the first model, EU and development agencies' funding are the two predictors among the five barriers that affect productivity measured as volumes of articles published in Q1 and Q2 journals. The coefficients are respectively, -0.779 (p-value = 0.033 < 0.05) and -0.716 (p-value = 0.04 < 0.05) for the lack of funding from these two sources. In the second model,

funding from development agencies predicts the number of articles published in Q3 and Q4 journals (Coeff. = -1.173, p-value = 0.001 < 0.01). Finally, in the third model, EU funding is the only funding source that affects scholars' behavior and their decision to publish in high-quality Q1 and Q2 journals or less reputable ones.

	Number of articles published in Q1 and Q2 Journals	Number of articles published in Q3 and Q4 Journals	Publishing in Q1 and Q2 Journals vs publishing in low-quality journals	
	Coeff. (s.e.)	Coeff. (s.e.)	Coeff. (s.e.)	Exp(B)
Public University	0.205 (0.239)	0.281 (0.257)	-0.140 (0.248)	0.87
Non-public University	0[a]	0[a]	N/A	N/A
Gender (female)	0.003 (0.210)	-0.339 (0.219)	-0.032 (0.223)	0.968
Gender (male)	0[a]	0[a]	N/A	N/A
Scientific title (not title)	-0.823** (0.405)	-1.487*** (0.407)	0.317 (0.202)	1.374
Scientific title (Assoc. Prof.)	0.183 (0.418)	-0.594 (0.415)	N/A	N/A
Scientific title (Prof. Dr.)	0[a]	0[a]	N/A	N/A
No P.h.D.	-0.633** (0.269)	-0.837*** (0.299)	0.782*** (0.267)	2.186
P.h.D.	0[a]	0[a]	N/A	N/A
PhD (Albanian University)	-0.051 (0.284)	0.086 (0.296)	0.126 (0.309)	1.135
PhD (abroad)	0[a]	0[a]	N/A	N/A
Experience (0-5 years)	0.051 (0.368)	0.354 (0.395)	0.004 (0.089)	1.004
Experience (6-10 years)	0.703** (0.349)	1.040*** (0.368)	N/A	N/A
Experience (11-15 years)	0.185 (0.344)	0.009 (0.369)	N/A	N/A
Experience (16-20 years)	0.552 (0.346)	0.650* (0.358)	N/A	N/A
Experience (more than 21 years)	0[a]	0[a]	N/A	N/A
No University funding	-0.262 (0.276)	-0.149578	0.495 (0.300)	1.641
University funding	0[a]	0[a]	N/A	N/A
No Government funding	-0.41934	-0.612 (0.488)	0.718 (0.582)	2.05
Government funding	0[a]	0[a]	N/A	N/A
No EU funding	-0.779** (0.366)	-0.396 (0.378)	0.870** (0.423)	2.387
EU funding	0[a]	0[a]	N/A	N/A
No Private funding	-0.625 (0.560)	-0.464 (0.578)	1.210* (0.685)	3.353
Private funding	0[a]	0[a]	N/A	N/A
No Development agencies funding	-0.716** (0.348)	-1.173*** (0.349)	0.365 (0.386)	1.44
Development agencies funding	0[a]	0[a]	N/A	N/A
No multiple sources of funding	0.687 (0.529)	0.300 (0.540)	-0.847 (0.600)	0.429
Multiple sources of funding	0[a]	0[a]	N/A	N/A

Note: '***' p < 0.01; '**'p < 0.05; '*'p< 0.1; coefficients (Coeff.); standard errors (s.e.).
Table 1: Model results

Our analysis shows that having a scientific title (Prof. Dr) makes the difference, with the coefficient for "no scientific title" being negative and significant for the first two models

(respectively, Coeff. = -0.823, p-value = .042 < 0.01 and Coeff. = -1.487, p-value < 0.001), but not the third. However, there are no significant differences between the scientific title "Prof. Dr." and "Prof. Assoc." Similarly, individuals with a PhD tend to perform better compared to those without it; the coefficient for the latter is negative and significant across the three models (respectively, Coeff. = -0.633, p-value = .019 < 0.05 for the lack of a Ph.D., Coeff. = -0.837, p-value = .005 < 0.01 for the lack of Ph.D. and Coeff. = 2.186, p-value = .003 < 0.01 for obtained Ph.D.). However, having a PhD abroad does not affect any of the outcomes in the three models. Further, experience appears to have a certain effect, at least for the first two of our models, indicating that the experienced researchers but still young (6-10 years of experience) perform better than the older generation (respectively, Coeff. = 0.703, p-value = .044 < 0.05 and Coeff. = 1.040, p-value = .005 < 0.01. Finally, gender and being part of a public university do not affect productivity.

4. Conclusions, Implications, Limitations and Further Research

This study is the first attempt in Albania to investigate the relationship between funding and research output by accounting for the quality of research. We found that EU and development agencies' funding affects the research output published in Q1 and Q2 journals. Further, funding from development agencies has a positive effect on the number of articles published in Q3 and Q4 journals. Such results are in line with some of the previous research that suggests that external sources impact the output (Myers et al., 2011; Aagaard et al., 2019). Finally, we found that the effects of EU funding extend to the choice made by researchers whether to publish in high-ranking journals (i.e., Q1 and Q2) or low-ranking ones indicating that a clear tendency of researchers funded by EU grants to increase the quality of their research. Quite surprisingly, our results on the effect of internal funding on research output are either not significant or not robust. There is an indication of a positive effect on the number of publications in low-ranking journals, but the significance level is low (p-value > 0.05 and <0.1). Such results are in contrast with findings of (Myers et al., 2011; Aagaard et al., 2019). These findings suggest perhaps that the criteria applied for grant applications do not include publications, as it is a common practice worldwide. Finally, contrary to the claims of (Grove, 2017; Adams & Bekhradnia, 2004), we found no evidence of the impact of multiple sources of funding on productivity.

Not having a scientific title or a PhD degree has a negative effect on productivity, indicating the vital role that career advancement criterion (i.e., the requirement to publish) has on research productivity. However, in line with the findings of (Arora & Gambardella, 2005), the relatively young but already experienced scholars (i.e., 6 to 10 years of experience) perform better than their older generation counterparts. Further, having a Ph.D. degree positively affects productivity across the three models. Finally, other factors such as gender, having obtained a PhD from a university abroad, and working in a public university do not affect research productivity. The results are consistent throughout the three models.

Our study has important implications for policy-making at the institutional level and, more generally, at higher-level decision-making (e.g., government). First, more efforts should be made to ensure the application of higher standards for internal funding, being that of Government agencies or universities. While anecdotic evidence suggests that there have been some efforts in the last years, much remains to be done in the future to increase accountability and transparency of the process. Our study suggests that research funding from the EU appears to be a synonym for quality. Therefore, the approach, including the criteria used by the EU, should serve as a template for these institutions in designing and

implementing grant research schemes. Second, the vital role that development agencies' funding has suggested that the collaboration between universities and these organizations should be institutionalized and not left to individual initiatives and consultancies provided by Albanian researchers.

This paper comes with several limitations. First, we did not account for the Matthew effect, i.e., a researcher that has been funded in the past will continue to be preferred for funding in the future (Győrffy et al., 2020; Ebadi & Schiffauerova, 2015; Arora & Gambardella, 2005; Bol et al., 2018). Second, we did not account for the variability introduced by other academic barriers (see Tien, H.T., & Hai, N.T., 2011), the academic discipline (see Jung, 2012) and (Albert et al., 2015), research collaboration (see Nguyen, 2015), participation in academic associations (see Valsangkar et al., 2016), and a responsible research climate (see Haven et al., 2020). Third, we measured our outcome as a categorical variable leading to loss of variability. Similarly, using a binary dependent variable in the third model leads to a loss of details. Fourth, we focused on one of the outcomes of research (i.e., publications) neglecting other possible outcomes (e.g., patents, new products, conference papers) that might have justified funding.

Acknowledgements

References

Aagaard, K., Kladakis, A., & Nielsen, M. W. (2019). Concentration or dispersal of research funding? Quantitative Science Studies, 1–33. https://doi.org/10.1162/qss_a_00002

Adams, J., & Bekhradnia, B., (2004). What future for dual support? *HEPI number 6.*

Albert, C., Davia, M. A., & Legazpe, N. (2015). Determinants of Research Productivity in Spanish Academia. European *Journal of Education, 51(4), 535–549.* https://doi.org/10.1111/ejed.12142

Arora, A., & Gambardella, A. (2005). The Impact of NSF Support for Basic Research In Economics. *Annales d'Économie et de Statistique, 79/80, 91*. https://doi.org/10.2307/20777571

Bol, T., de Vaan, M., & van de Rijt, A. (2018). The Matthew effect in science funding. Proceedings of the National Academy of Sciences, 115(19), 4887–4890. https://doi.org/10.1073/pnas.17195571

Ebadi, A., & Schiffauerova, A. (2015). How to Receive More Funding for Your Research? Get Connected to the Right People! PLOS ONE, 10(7), e0133061. https://doi.org/10.1371/journal.pone.0133061

Grove, L. (2017). The effects of funding policies on academic research. Doctoral thesis, University College London. University College London.

Győrffy, B., Herman, P., & Szabó, I. (2020). Research funding: past performance is a stronger predictor of future scientific output than reviewer scores. Journal of Informetrics, 14(3), 101050. https://doi.org/10.1016/j.joi.2020.101050

Haven, T., Pasman, H. R., Widdershoven, G., Bouter, L., & Tijdink, J. (2020). Researchers' Perceptions of a Responsible Research Climate: A Multi Focus Group Study. Science and Engineering Ethics, 26(6), 3017–3036. https://doi.org/10.1007/s11948-020-00256-8

Jacob, B. A., & Lefgren, L. (2011). The impact of research grant funding on scientific productivity. *Journal of Public Economics, 95(9–10), 1168–1177*. https://doi.org/10.1016/j.jpubeco.2011.05.005

Jung, H., Seo, I., Kim, J., & Kim, B. K. (2017). Factors affecting government-funded research quality. Asian Journal of Technology Innovation, 25(3), 447–469. https://doi.org/10.1080/19761597.2018.1436411

Jung, J. (2012). Faculty Research Productivity in Hong Kong across Academic Discipline. Higher Education Studies, 2(4). https://doi.org/10.5539/hes.v2n4p1

Lanser, D., & van Dalen, R. (2013). The Effects of Research Grants on Scientific Productivity and Utilisation. CPB Discussion Paper | 248.

Miyaki, M., Yuko, O. (2018). Do External Funding Sources Affect Research Productivity?':
    A departmental level analysis of seven former imperial universities of Japan.
    Discussion Papers in Economics and Business 18-17. Osaka University, Graduate
    School of Economics.

Myers, E. F., Parrott, J. S., Cummins, D. S., & Splett, P. (2011). Funding Source and
    Research Report Quality in Nutrition Practice-Related Research. *PLoS ONE 6(12).*

Nguyen, T. L. H. (2015). Building human resources management capacity for university
    research: The case at four leading Vietnamese universities. Higher Education, 71(2),
    231–251. https://doi.org/10.1007/s10734-015-9898-2

Papadhopulli, S., Miço,H., (2019). Higher education and research in Albania in the way of
    achieving the objectives of Bologna declaration. Higher education and research in
    Albania in the way of achieving the objectives of the Bologna declaration. 2. 20-57.

Tien, H.T., Hai, N. T. & Viet, H. T. (2011). A Case Study: Institutional Factors Affecting
    Lecturers' Research Engagement in A University in Mekong Delta Region, Vietnam.
    ASEAN/Asian Academic Society International Conference Proceeding Series.
    International Education and Research Journal, 5, 459-469.

UNESCO, (2015). "Science Report: Towards 2030," available at:
    http://uis.unesco.org/sites/default/files/documents/unesco-science-report-towards-
    2030-ex-sum-en.pdf

UNESCO, (2020). "Fact Sheet No. 59: Global Investments in R&D," available at:
    http://uis.unesco.org/sites/default/files/documents/fs59-global-investments-rd-2020-
    en.pdf

University of Sussex, UK, (2006). A policy paper for the Government of Albania Prepared by
    the Centre for Social and Economic Studies, in collaboration with the Development
    Research Centre on Migration, Globalization and Poverty. From Brain Drain to Brain
    Gain: Mobilizing Albania's Skilled Diaspora. Available:
    https://assets.publishing.service.gov.uk/media/57a08c46ed915d3cfd0012ac/Brain_Ga
    in.pdf

Valsangkar, N. P., Milgrom, D. P., Martin, P. J., Parett, J. S., Joshi, M. M., Zimmers, T. A.,
    & Koniaris, L. G. (2016). The positive association of Association for Academic
    Surgery membership with academic productivity. *Journal of Surgical Research*,
    205(1), 163–168. https://doi.org/10.1016/j.jss.2016.06.030.

World Bank, (2013). Western Balkans regional R&D strategy for innovation. Available at:
    https://www.worldbank.org/content/dam/Worldbank/document/eca/Western-Balkans-
    R&D-Albania.pdf

Research Barriers and Academic Productivity

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

This study explores the hindering effect of various research barriers on research productivity. Using a sample of 403 University lecturers, we employed ordinal regression to assess the effect of access to research funds, teaching load, personal capabilities for carrying out research, personal interest in research, and access to scientific articles databases as significant barriers to research productivity. The results of the three models created by using different measures of research productivity show that access to research funds is the only significant barrier that affects the quantity of research, whether it is Scopus ranked or not. In contrast, when accounting for quality of research, we found that access to scientific databases is the main barrier to the volume of research published in the first and second quartiles of the Journal Citation Reports. Last, lack of research methodology capacity is a crucial barrier and access to funds that negatively affect the number of articles published in the third and fourth quartiles of the Journal Citation Reports. Our results provide additional empirical evidence to the research stream focused on research barriers and some indications for policy-making.

Keywords: Research Barriers, Research Productivity, University

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1. Introduction

Albania continues to perform poorly in many education-related rankings, particularly research. In 2019, Scopus - the internationally prestigious ranking of scientific journals - ranked Albania 119th, below Montenegro for scientific publications (SCIMAGO, 2019). In terms of research output, Albania does not only lag behind OECD countries, but also other Western Balkan countries. The country has the lowest publication density, 48 per one million inhabitants, and the lowest output, with 154 articles in 2014 compared to Montenegro's 191 (UNESCO, 2015). This paper seeks to shed light on the key barriers that hinder the quantity and quality of research production in Albania and to find solutions that address these barriers.

Building on the body of existing literature, this paper focuses on both dimensions of research production, quantity, and quality. Research productivity has been measured as the quantity and/or quality of the artefacts produced by faculty Scholarship (Meho & Spurgin, 2005). More specifically, academic research productivity is measured by the number of publications of journal articles (usually articles published in "peer-reviewed" journals), books, book chapters, papers in conference proceedings, awarded research grants, and patents (Heng et al., 2020) Other scholars (Aksnes et al., 2019) focus on the quality aspect of academic research productivity. Indicators such as citation counts, citation rates, h-index and others are used to determine the scholarly impact of a specific article, author, or publication.

Current literature suggests that there are various factors affecting research productivity. On the one hand, institutional and network-related factors, such as research collaboration (Nguyen, 2016). and participation in academic associations (Valsangkar et al., 2016), can strengthen research productivity. Furthermore, a responsible research environment where heads of departments encourage their staff to develop not only their technical competencies but also to maintain their academic integrity has had a positive impact on research production (Haven et al., 2020). On the other hand, inexperienced research workforce (Tien et al., 2019), the level of university support for scholars to conduct research (Smeltzer et al., 2016), lack of research facilities (Alrahlah, 2016). lack of support, bureaucracy, suboptimal supervision of doctoral students (Haven et al., 2020) are among the factors that hinder research productivity. Furthermore, research policy and practices are vital issues to address for improving productivity (Haven et al., 2020). The authors highlight the importance of a policy framework that addresses talent development, selection, promotion, and a formal evaluation system in research institutions. Such systems should put less emphasis on citation criteria and more on the quality of research.

Many studies indicate that research productivity varies depending on the academic discipline (Jung, 2012; Albert, 2016). Jung (2012) suggests that academics in hard disciplines publish many more articles than those in soft disciplines; however, the opposite is true for books publication. A study on research productivity in the Spanish Academia found that research productivity among young academics is lower in economics compared to social sciences, particularly Humanities (Albert et al., 2016).

Numerous studies have found that the individual attributes of academics have a considerable effect on their research engagement and productivity (Heng et al., 2020; Jung, 2012; Albert, 2016; Mantikayan & Abdulgani, 2018; Carayol & Matt, 2006). Experience is considered an essential factor affecting research productivity (Jung, 2012; Albert, 2016). However, Batool et al., (2021), indicate that young scholars are more interested in conducting research and producing new knowledge than their older colleagues. Productivity decreases with age

(Albert et al., 2016); this could be explained by differences in administrative burden, which tends to be greater for older scholars (Carayol & Matt, 2006). Furthermore, many studies concluded that male scientists publish more than female scientists (Albert, 2016; Batool et al., 2021) and this remains true even after controlling for family-related factors such as child-rearing (Stack, 2004). Finally, high performing scholars may have innate scientific ability or talent, possess a sacred spark of motivation and desire, and have a specific personality or cognitive structure (Mantikayan & Abdulgani, 2018).

An important stream of research has been focused on the barriers to research productivity. One of the main barriers appears to be research funding (Nguyen, 2016), the lack of which weakens academics' research capacity (Tien et al., 2019), affecting the number of publications and citations (Jacob & Lefgren, 2011). Furthermore, Tien et al. (2019) argue that complicated research payment procedures negatively affect productivity. Another barrier affecting productivity is the teaching load, limiting the time a researcher spends on research (Nguyen et al., 2016; Tien et al., 2019; Mantikayan & Abdulgani, 2018; Smeltzer et al., 2016). Albert et al. (2016) make a more accurate prediction by indicating that teaching load over 50% of workload time decreases research productivity. Haven et al. (2020) point out the need for time to learn and improve, especially for early-career researchers. Further, there is a strong correlation between capabilities for conducting research and productivity [Babu & Singh., 1998; Obliopas, 2018]. Also, for not native speakers, proficiency in English might be a barrier (Tariq et al., 2016). Finally, the lack of mentorship within the faculty can be a substantial barrier (Shanmugam et al., 2019). Our purpose is to examine the effect of five significant barriers identified during the exploratory phase of the research, namely, access to research funds, teaching load, personal capabilities for carrying out research, personal interest in research and access to scientific articles databases. To the best of our knowledge, this is one of the few studies investigating the Albanian academic context, with Papadhopulli & Miço (2019) being an exception.

The rest of the paper is structured as follows: Section 2 presents the data and methods. Section 3 presents the results of the ordinal regression analysis. Section 4 includes discussions, implications, and limitations.

2. Materials and Methods

2.1 Participants and data collection

Data were collected using an online survey. Using the official emails of the entire population of academics of 37 public and non-public Higher Education Institutions, we contacted via email around 6500 lecturers working in the private and public sectors. The online questionnaire was accessed by 1038 respondents only. Anecdotic evidence suggests that the new email addresses provided by universities (the database of contacts we used) are not often accessed by academics who prefer to use their private accounts. Thus, we are inclined to classify these cases as unreachable. Of 1038 respondents, only 712 filled out the questionnaire. However, only 403 completed the entire questionnaire.

2.2 Missing data, outliers, response rate and bias examination

We examined the dataset for (i) missing data and (ii) outliers. Three hundred nine cases were deleted due to missing data of more than 20%. Further, Z-score analysis showed that there are no outliers.

The active response rate is reasonable, at around 69%. However, we tested for the non-response bias by using wave analysis. No difference between early and late respondents was found in terms of respondent attributes such as gender (χ^2 test, p = 0.286), University (private vs public (χ^2 test, p = 0.128), university degree (PhD vs MSc) (χ^2 test, p = 0.499), and title (Professor, Associate Professor or without a title) (χ^2 test, p = 0.648). Therefore, non-response bias is not a problem in our study.

2.3 Empirical model

Ordinal logistic regression was used since the outcome variable is polychotomous and ordinal in nature.

2.4 Operationalization of variables

The five variables measuring barriers were operationalized using multi-item self-assessed indicators on a four-point scale. One represents the assessment - not a barrier, and 4 (four) indicates the barrier as an extreme one.

The three outcomes, respectively, number of articles published despite being indexed or not in Scopus, the number of articles published in the first and second quartile (respectively Q1 and Q2) of the Journal Citation Reports (JCR) and the number of articles published in the third and fourth quartile (respectively Q3 and Q4) of the Journal Citation Reports (JCR) were measured using a categorical variable (0 articles published was coded with 1, 1 to 3 = 2, 4 to 6 = 3, 7 to 9 =4, and more than 9 = 5).

3. Results

Table 1 shows the results for three models. The first model shows the impact of the independent variables on the overall number of articles, despite their quality and whether they are being published in Scopus indexed journals or not. The second shows the results of the same predictors on the number of articles published in the Q1 and Q2 quartiles of JCR. Finally, the third shows the results of our predictors on the number of articles published in the Q3 and Q4 quartiles of the JCR.

All three models fit the data (significance of model fit < 0.0001). Further, the goodness of fit significance is higher than 0.05 for all three models. The test of parallel lines or the assumption of proportional odds is not significant for the three models; thus, the effects of our predictors are proportional across the different thresholds.

The Nagelkerke Pseudo R-Square indicates that the first model explains 26% of the variance, the second, almost 15% and the third, 20% of the variance of our outcomes.

In the first model, access to research funding is the only predictor among the five barriers that affect output. The coefficient, -0.296 and p-value = 0.003< 0.01 indicates that for a unit increase in the perceived level of the barrier, we expect a decrease in the ordered log-odds of productivity given that all of the other variables in the model are held constant. In the second model, access to scientific databases predicts the number of articles published in Q1 and Q2 journals (Coeff. = -0.220, p-value < 0.05). Finally, in the third model, the barrier related to personal capabilities to carry out research and access to research funds have a negative impact on the number of articles published in Q3 and Q4 journals.

Table 1: Model results

Variables	The overall number of articles published	Number of articles published in Q1 and Q2 Journals	Number of articles published in Q3 and Q4 Journals
	Coeff. (s.e.)	Coeff. (s.e.)	Coeff. (s.e.)
Access to research funds	-0.296*** (0.099)	-0.112 (0.105)	-0.280** (0.111)
Teaching load	-0.060 (0.099)	0.095 (0.106)	0.063 (0.110)
Personal capabilities for carrying out research	-0.136 (0.153)	-0.247 (0.169)	-0.365** (0.185)
Personal interest in research	-0.037 (0.166)	0.114 (0.178)	0.110 (0.189)
Access to scientific articles databases	0.118 (0.100)	-0.220** (0.109)	0.007 (0.114)
Gender (female)	-0.397** (0.197)	0.023 (0.210)	-0.385 (0.218)
Gender (male)	0[a]	0[a]	0[a]
Scientific title (not title)	-0.675* (0.371)	-1.125*** (0.386)	-1.775*** (0.389)
Scientific title (Assoc. Prof.)	-0.305 (0.389)	-0.246 (0.399)	-1.046*** (0.398)
Scientific title (Prof. Dr.)	0[a]	0[a]	0[a]
PhD (Albanian University)	-0.431 (0.266)	-0.283 (0.279)	-0.216 (0.289)
PhD (abroad)	0[a]	0[a]	0[a]
No P.h.D.	-1.569*** (0.253)	-0.718*** (0.268)	-1.013*** (0.297)
P.h.D.	0[a]	0[a]	0[a]
Public University	-0.165 (0.220)	0.327 (0.240)	0.307 (0.256)
Non-public University	0[a]	0[a]	0[a]
Experience (0-5 years)	-1.009*** (0.337)	-0.183 (0.363)	0.075 (0.387)
Experience (6-10 years)	0.172 (0.322)	0.467 (0.345)	0.766** (0.360)
Experience (11-15 years)	0.079 (0.319)	0.037 (0.341)	-0.149 (0.364)
Experience (16-20 years)	-0.351 (0.322)	0.428 (0.340)	0.418 (0.351)
Experience (more than 20 years)	0[a]	0[a]	0[a]

Note: '***' $p < 0.01$; '**'$p < 0.05$; '*'$p< 0.1$; coefficients (Coeff.); standard errors (s.e.).

Our analysis shows that having a scientific title (Prof. Dr) makes the difference. The coefficient for "no scientific title" is negative and significant to various levels across the three models. However, there are no significant differences between the scientific title "Prof. Dr." and "Prof. Assoc." Similarly, individuals with a PhD tend to perform better than those without it; the coefficient for the latter is negative and significant. Further, experience appears to have a specific effect, at least for two of our models, indicating that the entry-level researchers perform worst. However, in the third model, those experienced but still young perform better than the older generation.

4. Conclusions, Implications, Extensions and Limitations

This paper examined the main barriers that affect the productivity of Albanian academics. Our findings show that the only barrier affecting the total number of articles published, despite being indexed or not in Scopus, is access to funding. Similarly, this barrier also affects the number of articles published in Q3 and Q4 journals. Such results align with previous research (Nguyen et al., 2016; Tien et al., 2019; Jacob & Lefgren, 2011) especially the findings of Tien et al. (2019) who indicated access to funding as an essential barrier for

research output. However, we did not find any evidence of the effect of this barrier on the number of articles published in Q1 and Q2 journals. We argue that despite the low funding levels, high-performing researchers can overcome the challenges related to funding. Future research needs to address this counter-intuitive finding.

As expected, the lack of capabilities in conducting research is another barrier affecting the number of articles published in Q3 and Q4 journals but not those published in Q1 and Q2 journals. Such results align with previous research (e.g., Babu 1998; Obliopas 2018). Furthermore, our results show that the most critical factor affecting the quantity of high-quality research is access to the research databases. Such finding is consistent with Alrahlah's (2016) results in the middle-Eastern context.

The results of the three models do not show any effect of either personal interest in research or teaching load on the research productivity. While there is some variability in the variable measuring interest in conducting research, our results suggest that such a factor does not impact the quality and quantity of research. Despite the personal interest, other factors such as the obligation to be engaged in research might play a role here. Surprisingly, and in contrast with other studies (Nguyen et al., 2016; Tien et al., 2019), our results show that teaching load is not a barrier to productivity. However, we did not measure the teaching load with objective indicators and did not account for the variability between various Faculties. Further research might shed some light on this relation.

Our results show that the more experienced researchers perform better than the entry-level researchers. Such results align with Albert et al. (2016) and Jung's (2012) findings. However, our results of the third model corroborate the arguments of Batool et al. (2021), indicating that young but somehow experienced scholars produce more research than their older colleagues. Further, females appear to perform worse than their male counterparts supporting previous research (Albert, 2016; Batool et al., 2021). Finally, having a Ph.D. degree or scientific title positively affects productivity, although the results for the latter appear to be mixed across the three models.

Our study has important implications for policy-making at the institutional level and, more generally, at higher-level decision-making (e.g., government). First, more efforts should be made to ensure access to databases of scientific articles. While there have been some efforts in the last four years, the quality of databases accessed by the larger community of researchers is relatively poor, with the AADF's initiative to offer researchers access to JSTOR being an exception. Access to high-quality databases is crucial, especially when it comes to producing high-performing research published in high-quality journals. Second, increasing access to research might support young researchers who have just started their careers. While funding is essential for all researchers, our results suggest that this is more so for researchers who do not have the capabilities or experience to publish in high-quality journals. Hence, university and faculty level policies should support research proposals made by a mixed team of young and more experienced researchers. Third, training and coaching to increase capabilities are crucial, especially for inexperienced and young researchers. Anecdotal evidence suggests that few faculties deliver such training. Furthermore, PhD programs need to be adjusted by integrating a first phase that trains candidates in essential areas such as research methods, econometrics, and academic writing.

Some limitations bind this study. First, while capabilities might include the skills of researchers to use software for qualitative and quantitative analyses, in our study, we have not

measured their access to such software. Some studies consider such barriers significant to research productivity (see; Shanmugam et al., 2019; Teh et al., 2017). Second, we did not account for variations across different academic disciplines (see Jung, 2012; Albert, 2016), research collaboration (Nguyen, 2016), participation in academic associations (Valsangkar et al., 2016), and a responsible research climate (Haven et al., 2020). Third, we measured our outcome as a categorical variable leading to loss of details and variability. Forth, low access to research grants can be caused by various factors, both individual (e.g., low-quality research proposals) and institutional ones (e.g., lack of support). Thus, the variable it lacks the granularity to capture the differentiated impact that various factors related to funding have on research productivity.

Acknowledgements

References

Aksnes, D. W., Langfeldt, L., & Wouters, P. (2019). Citations, Citation Indicators, and Research Quality: An Overview of Basic Concepts and Theories. SAGE Open. https://doi.org/10.1177/2158244019829575

Albert, C., M. A. Davia, and N. Legazpe. (2016). "Determinants of research productivity in Spanish academia." European Journal of Education 51(4): 535–549. DOI: 10.1111/ejed.12142

Alrahlah, A. (2016). The impact of motivational factors on research productivity of dental faculty members: A qualitative study. Journal of Taibah University Medical Sciences, 11, 448-455. https://doi.org/10.1016/j.jtumed.2016.06.006

Babu, R. A., Singh, Y.P. (1998). Determinants of research productivity. Scientometrics 43, 309–329 https://doi.org/10.1007/BF02457402

Batool, A., Ahmad, S., & Naz, S. (2021). Correlation of personal and institutional factors with research productivity among university teachers. Humanities & Social Sciences Reviews, 9(2), 240-246. https://doi.org/10.18510/hssr.2021.9225

Carayol, N., & Matt, M. (2006). Individual and collective determinants of academic scientists' productivity. Inf. Econ. Policy, 18, 55-72. DOI:10.1016/j.infoecopol.2005.09.002

Haven, T., Pasman, H. R., Widdershoven, G., Bouter, L., & Tijdink, J. (2020). Researchers' Perceptions of a Responsible Research Climate: A Multi Focus Group Study. Science and engineering ethics, 26(6), 3017–3036. https://doi.org/10.1007/s11948-020-00256-8

Heng, K., Hamid, M. O. & Khan, A. (2020). Factors influencing academics' research engagement and productivity: A developing countries perspective. Issues in Educational Research, 30(3), 965-987. http://www.iier.org.au/iier30/heng.pdf

Jacob, B. A., & Lefgren, L. (2011). The Impact of Research Grant Funding on Scientific Productivity. Journal of public economics, 95(9-10), 1168–1177. https://doi.org/10.1016/j.jpubeco.2011.05.005

Jung, J. (2012). Faculty Research Productivity in Hong Kong across Academic Discipline. Higher Education Studies, 2, 1-13. DOI:10.5539/hes.v2n4p1

Mantikayan, J.M., & Abdulgani, M.A. (2018). Factors Affecting Faculty Research Productivity: Conclusions from a Critical Review of the Literature. JPAIR Multidisciplinary Research, 31, 1-1. DOI:10.7719/JPAIR.V31I1.561

Meho, L. I. & Spurgin, K. M. (2005). Ranking the research productivity of library and information science faculty and schools: An evaluation of data sources and research methods. Journal of the American Society for information science and Technology, 56(12), 1314-1331. https://doi.org/10.1002/asi.20227

Nguyen, T.L. (2016). Building human resources management capacity for university research: The case at four leading Vietnamese universities. *Higher Education, 71*, 231-251. DOI:10.1007/S10734-015-9898-2

Obliopas. R. G. (2018). Research Skills and Productivity among Faculty in a State University. IAMURE International Journal of Multidisciplinary Research, 17(1).

Papadhopulli, S., & Miço. H. (2019). Higher education and research in Albania in the way of achieving the objectives of Bologna declaration Higher education and research in Albania in the way of achieving the objectives of the Bologna declaration. 2. 20-57. https://www.researchgate.net/publication/336553526_Higher_education_and_research_in_Albania_in_the_way_of_achieving_the_objectives_of_Bologna_declaration_Higher_education_and_research_in_Albania_in_the_way_of_achieving_the_objectives_of_Bologna_declar

SCIMAGO, 2019, "Country Rank," available at: https://www.scimagojr.com/countryrank.php?year=2019 [Accessed: Apr. 15, 2022].

Shanmugam S. K., Zakaria, N., Ismail, M., Bakit, P. A., & Mat, D. (2019). Perceived barriers and motivating factors influencing research productivity among nursing and allied health professionals' trainers. The Malaysian Journal of Nursing. (MJN), 11(2), 49-56. https://doi.org/10.31674/mjn.2019.v11i02.006

Smeltzer, S. C., Cantrell, M. A., Sharts-Hopko, N. C., Heverly, M. A., Jenkinson, A., & Nthenge, S. (2016). Assessment of the Impact of Teaching Demands on Research Productivity Among Doctoral Nursing Program Faculty. Journal of professional nursing : official journal of the American Association of Colleges of Nursing, 32(3), 180–192. https://doi.org/10.1016/j.profnurs.2015.06.011

Stack, S. (2004). Gender, Children and Research Productivity. *Research in Higher Education, 45*, 891-920. https://doi.org/10.1007/s11162-004-5953-z

Tariq, M., Ahmad, T., & ur Rehman, S. (2016). Is English Language a Barrier in Research Productivity Among Information Professionals? A Descriptive Study. Pakistan Journal of Information Management and Libraries, 17, 162–173. https://doi.org/10.47657/201617904

Teh, L.C., Prema, M., Choy, M.P., & Letchuman, G.R. (2017). Attitudes, barriers and facilitators to the conduct of research in government hospitals: a cross-sectional study among specialists in government hospitals, northern states of Malaysia. *The Medical journal of Malaysia, 72 1*, 26-31.

Tien, H.T., Hai, N.T., & Viet, H.T. (2019). A case study: Institutional Factors Affecting Lecturers' Research Engagement in A University in Mekong Delta region, Vietnam. *International Education and Research Journal, 5*, 459-469.

UNESCO, 2015, "Science Report: Towards 2030," available at: http://uis.unesco.org/sites/default/files/documents/unesco-science-report-towards-2030-ex-sum-en.pdf [Accessed: Apr. 04, 2022].

Valsangkar, Nakul P.; Milgrom, Daniel P.; Martin, Paul J.; Parett, Jordan S.; Joshi, Mugdha M.; Zimmers, Teresa A.; Koniaris, Leonidas G. (2016). The positive association of Association for Academic Surgery membership with academic productivity. Journal of Surgical Research, 205(1), 163–168. doi:10.1016/j.jss.2016.06.030

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Motivation and Challenges in Learning Japanese Language as a Foreign Language Among Malaysian Academia

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Abstract

Due to the success of Look East Policy and Malaysia Education Blueprint 2015-2025, learning Japanese as a foreign language among Malaysian academia has become more common. Accordingly, there are more than 39,247 Japanese language learners in Malaysia and the number is increasing. Despite the steady growth of Japanese language learners, the language proficiency is not high wherein 52% of the respondents only possess basic command of Japanese language, 13% possesses medium command of Japanese language, and 2.5% possesses advanced command of Japanese language. Motivation and challenges are two key factors that determine the success of continuous learning among Malaysian learners. In this study, descriptive analysis and ordinal logistic regression were implemented. Integrative motivation (4.4508 ± 0.7444, $p < 0.05$) has been identified as the main driver among Malaysian academia. The motivation has significantly contributed to the formulation of Japanese language learning interest. Meanwhile, personal commitment (3.8063 ± 1.1303, $p < 0.05$) has been identified as the significant challenge that hinders effective learning. The survey findings are useful to develop future useful strategies for continuous Japanese language learning in Malaysia.

Keywords: Japanese Language, Challenge, Motivation, Malaysian Academia

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Introduction

Attributed to the internationalization effect, mastery of foreign language is viewed as a critical softskill to adapt into the global society. Good command of foreign language enables the learners to create value for themselves, their community and country. Nonetheless, learning new language is a time-consuming process that requires continuous practice and dedication. Therefore, attitude and motivation play paramount roles during the process. Among the foreign languages, Japanese language is one of the most frequently communicated language in this world, with more than 134 countries implementing Japanese language education across 18,661 institutes around the globe (Foundation, 2020).

As a multiracial mixing pot, Malaysia is a multilingual country. The local community is no stranger to speaking two or more types of languages in their daily lives. Furthermore, numerous Malaysian universities have been offering foreign language such as Japanese, French, Spanish language courses as one of the non-credit subject or credited electives in their curriculums. In the Malaysian Education Blueprint 2015-2025 introduced by the Ministry of Higher Education, learning foreign language has been highlighted as one of the key components in driving Malaysia's vision to become a fully developed country (Maktiar Singh et al., 2021).

Since the inception of "Look East" policy, Malaysia has built robust relationships with Japan. Preparatory education for study in Japan has been offered to students who have completed their secondary education. In fact, substantial numbers of Malaysian students would be sent to Japan to pursue their tertiary studies every year. As a result, Japanese language emerges as one of the most popular foreign languages practiced by Malaysian leaners. Retrospectively, there are more than 39,247 Japanese language learners in Malaysia, in which 14,720 learners are coming from higher education institutions (Foundation, 2020).

In addition to formal education, Malaysian academia has been exposed to a variety of exchange programs to Japan. Among them, Sakura Science Exchange (SSE) offered by the Japan Science and Technology Agency (JST) is one of the well-known exchange programs within the academia. Through the exchange, technological transfer can be attained, and bilateral cultural understanding can be strengthened at international level. Even though the number of Japanese language learners has been increasing over the years, the prevalence of good Japanese language proficiency remains low. Most learners only demonstrate basic level of language command.

Literature Review

In Malaysia, survey on the learning of foreign language is an active study topic. Intuitively, majority of these studies have concentrated on the factors influencing the learning motivation among undergraduate students. However, most studies only focus on a higher education institution and/or involve small number of survey respondents. For example, Khong, Hassan and Ramli (2017) have conducted a survey on the relationship between university student's motivation and gender differences in learning Spanish as a foreign language. The study only conducted within a Malaysian university. While the study showed that students were greatly motivated in learning Spanish language, there was no significant difference between integrative and instrumental motivations and gender (Hou-Keat, Nurul Husna, & Norasrani, 2017).

Meanwhile, Teh, Sulaiman and Yusuf (2018) have investigated two different types of motivations i.e. instrumental and integrative motivations among Arabic language learners from a Malaysian university. Their study outcomes suggested that integrative motivation was more prominent among the diploma students with the justification that the students have strong desire to integrate with the Arabic culture, community and language materials (Teh, Sulaiman, & Yusoff, 2018). Chua and Azlan (2019) have carried out interviews on Mandarin learners to identify drivers that have motivated the non-Chinese students to continue learning Mandarin. Their study reported that the instrumental motivation was the main reason in encouraging the learning of foreign language. It was found out that learning Mandarin to achieve better grades and better future prospect were the significant factors (Wen & Azlan, 2019).

Nikitina, Furuoka and Kamaruddin (2020) have examined the relationship between language attitudes and learning Korean as a foreign language among Malaysian university students. The study results have indicated significant association between learners' instrumental orientations and attitudes towards the speakers of Korean language (Nikitina, Furuoka, & Kamaruddin, 2020). On the other hand, Othman and Latif (2021) have investigated the foreign language anxiety among 40 Japanese language learners in a Malaysian university. The findings reported that the foreign language anxiety was at moderate level. Besides, there were differences between the male and female Japanese learners in their level of foreign language anxiety for the factors of communication apprehension, fear of negative evaluation and test anxiety (Othman & Latif, 2021).

Methodology

Research Objectives

The study's objectives are:
1. To determine the level of motivation for learning Japanese as a foreign language among Malaysian academia
2. To identify significant challenges of learning Japanese as a foreign language among Malaysian academia

Research Questions

Several research questions have been formulated based on the research objectives:
1. What type of motivation for learning Japanese as a foreign language should be considered in this study?
2. What kind of learning challenges can be considered in this study?

Design of Questionnaire

The questionnaire comprises of 4 sections i.e. (1) Demographics of Respondents, (2) Learning Motivation, (3) Challenges to Learn Japanese Language, and (4) Conclusion. Demographic information of respondents such as the education degree, field of study, name of exchange programs and gender were acquired in first section. The information would serve as guidance to the study's data analysis.

Types of motivation of learning Japanese as a foreign language. This section comprises of 9 questions. The learning motivation is categorized into integrative, instrumental (Gardner &

Lambert, 1972) and attitudinal (Liu, 2014) motivations. Specifically, integrative motivation aims to investigate the learners desire to socialize in the target language community, culture and become part of that society. Instrumental motivation is defined as the learning to accomplish a specific task/ goal such as passing an examination, while attitudinal motivation refers to the practice of motivating people by influencing their thoughts and behaviors.

Types of challenges in learning Japanese as a foreign language. This section comprises of 12 questions. Overall, the challenges have been categorized into four types i.e. foreign language anxiety, negative societal perception, burden from self-commitment/lifestyle and lack of learning resources (Quintos, 2021). Intuitively, foreign language anxiety is defined as a situation-specific anxiety arising from the uniqueness of the formal learning of foreign language, especially in low self-appraisal of communicative abilities in the foreign language. Negative societal perception refers to the rejection of a particular foreign language by a society. Burden from self-commitment/lifestyles refers to the lack of dedication by individual due to different commitment concerns. Lastly, the lack of learning resources refers to the limited accessibility to foreign language learning materials.

Details of Respondents

Survey questionnaires were distributed among Malaysian academia. A total of 105 researchers, postgraduates, and undergraduates from various institutions were recruited to the survey under the support of Toshiba International Foundation (TIFO) and help from the Malaysian Alumni of Sakura Science Association (MASSA) coordinators. Selection of respondents was based on those who have joined exchange programs to Japan such as the JST Sakura Science Exchange, JSPS Ronpaku, and Japan Student Service Organization (JASSO). The respondents' age ranged from 24 until 51 years old, where 60% were females and 40% were males. PhD degree holders constitute of 46.7% of the total respondents, followed by Master degree holders (29.5%) and Bachelor degree holders (23.8%).

Study Methodology

Quantitative approach is adopted in this study. A survey questionnaire was distributed to the Malaysian academia via the voluntarily assistance from MASSA. The questionnaire adopted a 5-points Likert scale ranging from strongly disagree to strongly agree. Descriptive statistics used means and standard deviations to identify the degree of different Japanese language learning motivations among Malaysian academia. Then, ordinal logistic regression were implemented to investigate the relationship between motivation and challenge to the interest in learning Japanese language.

Results and Discussion

A previous study on Japan exchange program among Malaysian has indicated that continuous Japanese language learning is challenging and worth further investigation (Gan, 2021). Table 1 shows the descriptive analyses on the range of motivation level while Table 2 shows the statistical analyses on the significance of each type of motivation in relation to the interest to learn Japanese language.

Table 1. Means and standard deviations on overall, integrative, instrumental, and attitudinal motivation for learning Japanese as a foreign language among Malaysian academia.

Type of Motivation	n	Means	SD
Integrative	315	4.4508	0.7444
Instrumental	315	3.7206	0.9991
Attitudinal	315	3.4476	1.0970
Overall	948	3.8769	1.0552

Malaysian academia has demonstrated a moderate level of overall motivation in learning Japanese as a foreign language (3.8769±1.0552). Going deeper, the integrative motivation has been identified as the primary motivation to learn Japanese language (4.4508±0.7444), followed by instrumental motivation (3.7206±0.9991), and lastly attitudinal motivation (3.4476±1.0970). The survey results were mainly in-line with previous studies on motivation of learning foreign languages (Maktiar Singh et al., 2021; Teh et al., 2018). Then, ordinal logistic regression was performed to investigate the relationship between each motivation type to the interest to learn Japanese language.

Table 2. Factors that contribute to the continuous learning of Japanese as a foreign language among Malaysian academia

Variable	Wald	df	p-value	Odds' Ratio
Intercept 1	13.388	1	0.000	-
Intercept 2	13.740	1	0.000	-
Integrative	14.344	1	0.000	2.807
Instrumental	0.879	1	0.348	0.843
Attitudinal	7.694	1	0.006	1.820

The results suggested that both integrative (p-value: 0.000) and attitudinal motivation (p-value: 0.006) have significantly improved the model's predictive capability. The integrative motivation is regarded as the most significant factor that increases the odds of being highly interested in learning the Japanese as a foreign language among Malaysian academia (Odds' ratio: 2.807). Meanwhile, attitudinal motivation also increases the odds of being highly interested in learning the Japanese language as a foreign language among Malaysian academia (Odds' ratio: 1.820).

Table 3 shows the descriptive analyses on different types of challenges in learning Japanese as a foreign language among Malaysian academia. Then, Table 4 shows the results from ordinal logistic regression on the challenge of learning Japanese language in relation to the interest of learning Japanese language.

Table 3. Means and standard deviations of different types of challenges for learning Japanese as a foreign language among Malaysian academia, where the scale of challenge is defined as 1.00 – 1.79 (Very Low), 1.80 – 2.59 (Low), 2.60 – 3.39 (Neutral), 3.40 – 4.19 (High) and 4.20 – 5.00 (Very High).

Type of Challenge	n	Means	SD	Interpretation
Foreign language anxiety	315	2.7524	1.0169	Neutral
Negative social perception	315	3.0190	1.0999	Neutral
Burden from personal commitment	315	3.8063	1.1303	High
Lack of learning materials	315	3.8413	1.0528	High

The challenges in learning Japanese as a foreign language has been examined. For instance, the lack of learning materials (3.8413±1.0528) and burden from personal commitment (3.8063±1.1303) have been interpreted as the major challenges during the learning process. On the other hand, the roles of negative social perception (3.0190±1.0999) and foreign language anxiety (2.7524±1.0169) have been interpreted as neutral. Based on the results, it is perceived that personal dedication and availability of learning resources are important to promote continuous foreign language learning.

Table 4. Factors that contribute to the challenge in continuous learning of Japanese as a foreign language among Malaysian academia

Variable	Wald	df	p-value	Odds' Ratio
Intercept 1	4.396	1	0.036	-
Intercept 2	4.007	1	0.045	-
Foreign language anxiety	0.008	1	0.092	1.010
Negative social perception	3.530	1	0.060	0.730
Burden from personal commitment	3.126	1	0.047	1.280
Lack of learning materials	0.734	1	0.392	0.880

Based on the results, it was found out that personal commitment (p-value: 0.047) was the significant challenge in learning Japanese as a foreign language in relation to interest of learning Japanese language. On the other hand, foreign language anxiety, negative society perception and lack of learning materials do not significantly contribute as the significant challenge in learning Japanese language ((p-value > 0.05). Retrospectively, a study from Yamashita (2020) has indicated that demotivation occurred within the Indonesian learners due to boredom and low Japanese language proficiency. The study suggested that more interesting teaching content should be introduced to prevent continuous learners from demotivation (Yamashita, 2020).

Conclusions

In this study, the level of motivation in learning Japanese as a foreign language among Malaysian academia has been investigated. The respondents who had previously joined Japan exchange program, were recruited from numerous higher education institutions and private sectors across Malaysia. Besides, we studied different types of challenge related to learning Japanese language. Our findings shows that integrative and attitudinal motivation are significant factors that drive Malaysian academia in continuously learning Japanese language. We also identify the burden from personal commitment as the significant challenge to continuously learn Japanese language. The study findings serve as important insight for educators to formulate useful learning strategies in their language classes.

Acknowledgements

References

Foundation, T. J. (2020). *Survey Report on Japanese - Language Education Abroad 2018*.

Gan, H.-S. (2021). Effect of COVID-19 Pandemic on Japan Research Mobility Programs: Evaluating the Disturbance from Malaysians' Perspective. *International Journal of Advanced Research in Education and Society*(4), 79-85%V 73. https://myjms.mohe.gov.my/index.php/ijares/article/view/16664

Gardner, R. C., & Lambert, W. E. (1972). *Attitudes and Motivation in Second-Language Learning*: Rowley, Massachusetts: Newbury House.

Hou-Keat, K., Nurul Husna, H., & Norasrani, R. (2017). Motivation and gender differences in learning Spanish as a foreign.

language in a Malaysian technical university. *Malaysian Journal of Learning and Instruction, 14*(2), 59-83.

Liu, Y. (2014). Motivation and Attitude: Two Important Non-Intelligence Factors to Arouse Students' Potentialities in Learning English. *Creative Education, 05*, 1249-1253. doi:10.4236/ce.2014.514140

Maktiar Singh, K. K., Loh Er Fu, D., Leong Yoke Chu, I., Yook Ngor, P., Yann Seng, C., & Abd Hamid, N. A. (2021). Motivational Orientations of Learning Japanese as A Foreign Language Among Undergraduates In A Public University In Malaysia. *Asian Journal of University Education*(3), 255-270%V 217. doi:10.24191/ajue.v17i3.14525

Nikitina, L., Furuoka, F., & Kamaruddin, N. (2020). Language Attitudes and L2 Motivation of Korean Language Learners in Malaysia. *Journal of Language & Education, 6*(2), 115-129.

Othman, N. D., & Latif, L. A. (2021). Foreign Language Anxiety among Japanese Language Learners in IIUM Pagoh. *International Young Scholars Journal of Languages, 4*(1), 16-30.

Quintos, S. B. (2021). Difficulties in Learning Japanese as a Foreign Language: The Case of Filipino Learners. *Bicol University R&D Journal 24*(2), 31-38.

Teh, K. S. M., Sulaiman, A. A., & Yusoff, N. M. R. N. (2018). Instrumental Motivation Orientation vs Integrative among Arabic Language and Literature Diploma Students. *International Journal of Academic Research in Business and Social Sciences, 8*(10), 308–314.

Wen, C. H., & Azlan, M. A. K. (2019). Factors influencing foreign language learners' motivation in continuing to learn Mandarin. *EDUCATUM –Journal of Social Science, 5*, 1-6.

Yamashita, J. (2020). What Makes Difficult to Keep Learning Japanese? Demotivational Factors Affecting on Indonesian University Students. *JAPANEDU: Jurnal Pendidikan dan Pengajaran Bahasa Jepang, 5*(1), 1-8.

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Enrolling in the Metaversity: A Meta-Analysis of Virtual World University Campuses in the Metaverse

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Abstract

Among the innovations in higher education during the Covid-19 pandemic are university-based initiatives in the metaverse. This paper provides a meta-analysis of a series of eleven of these international university educational undertakings in the emerging networked virtual worlds, or the metaverse. Findings show that metaversity initiative are organized into at least three main areas, including virtual world campuses, immersive courses, and programs of research about the educational implications of the metaverse and related learning capacities. It is posited these efforts are part of the resilience of higher education during a time of enormous challenge to adapt and provide quality education in an era of disruptive change.

Keywords: Metaverse, Virtual Reality, Immersive Learning, Metaversity

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Introduction

Metaversity is a portmanteau. It blends metaverse and university. Metaverse itself is also a portmanteau merging meta and universe. In a sense, then, metaversity is a double layered portmanteau. Meta comes from the Greek, meaning after or beyond (Merriam-Webster, 2023).

Designing and building a campus inside the metaverse is a goal of a growing number of universities across the globe (Singh, Malhotra & Sharma, 2022). Such initiatives to build virtual campuses is part of the resilience of higher education during a time of enormous challenge to adapt and to provide quality education in an era of disruptive change. The disruption is fueled by multiple factors, not only the COVID-19 pandemic that required an enormous increase in the role of remote or virtual learning, but technological, economic and cultural shifts that are fueling the reconsideration of a wide spectrum of assumptions of how organizations including universities operate in the 21st century and beyond.

Theoretical Framework

Science fiction writer Neal Stephenson coined the term metaverse in his 1992 science fiction novel, *Snow Crash*. Stephenson envisioned the metaverse as a "computer generated universe." A somewhat dystopian virtual world, humans live their lives digitally and immersed in an intense, videogame-like environment. Stephenson wrote, "In the lingo, this imaginary place is known as the Metaverse. Hiro spends a lot of time in the Metaverse" (p. 63). Hiro is the protagonist of Stephenson's book. In this context, the metaverse transcends reality.

Universities and other organizations have reimagined the metaverse in the intervening decades since Stephenson's provocative vision. In contrast to the dystopian view, many organizations, universities included, now view the metaverse as digital space filled with potential and possibilities, though not immune to problems such as the erosion of personal privacy or the threat of virtual assault or micro-aggressions.

University interest in the metaverse and their development of virtual campuses or some sort of presence inside the metaverse is multidimensional. At least three factors are significant. First, research, including a PwC 2022 comparative study shows that learning inside the metaverse can yield student engagement four times higher than student engagement in non-immersive learning environments, such as popular platforms such as Zoom or Canvas. Immersive learning in the metaverse, PwC found, is even 1.5 times more engaging than learning in in-person face-to-face settings, the traditional model of learning in physical university campuses. PwC found that this higher engagement is due largely due to fewer distractions that exist inside the metaverse or within the immersive learning environments that can be designed inside the metaverse. A second reason for university interest in the metaverse is the possibility for expanding their scope or operations without increasing their physical presence. A third reason is many faculty are advancing scholarship about the metaverse and its pedagogical impact, and this is motivating many universities to explore the possibilities without risking enormous resources.

A substantial body of research has begun to examine the potential and the pitfalls of the metaverse for education (Kye, Han, Kim, Park & Jo, 2021; Lee, 2020). Collins (2008) has examined higher education and the metaverse generally. Akour, Al-Maroof, Alfaisal, and

Salloum, (2022) have developed a conceptual model for the adoption of the metaverse in higher education in the Arab Gulf region. Go, Jeong, Kim and Sin. (2021) have similarly suggested a conceptual framework for the metaverse in higher education in a Korean context. Jang (2021) has examined the potential to use Gather.town as a metaverse platform for Korean speaking and language learning. Kim (2021) has similarly studied metaverse-based learning of Korean culture. Moneta has examined the role of metaverse-based architecure teaching and learning (2020).

Duan, Li, Fan, Lin, Wu, and Cai (2021) have proposed a university campus prototype in the metaverse. Han (2008) has likewise proposed a typology of virtual world application in a higher education metaverse context. Han and Noh (2021) have surveyed instructor perceptions of the metaverse higher education. Jeon (2021) has studied communication effectiveness in educational environments in the metaverse. Jovanović and Milosavljević (2022) examined VoRtex as a metaverse platform for learning a collaborative gaming environment. Likewise, Yoo, & Chun (2021) have examined gaming-based metaverse learning effectiveness as has Zhu (2022a). Kanematsu, Kobayashi, Barry, Fukumura, Dharmawansa, & Ogawa (2014) have examined metaverse-based STEM education in nuclear safety. Similarly, Lee and Hwang (2022) have examined the use of VR for teacher readiness. Pande, Thit, Sørensen, Mojsoska, Moeller and Jepsen (2021) have examined the long-term effectiveness of immersive simulations. Suzuki, Kanematsu, Barry, Ogawa, Yajima, Nakahira, & Yoshitake (2020) have studied virtual experiments in Metaverse collaborative learning. Ning, Wang, Lin, Wang, Dhelim, Farha, and Daneshmand (2021) have outlined the state of the art in technologies for the metaverse. Zhu (2022b) has studied the role of artificial intelligence in metaverse learning platforms. Park and Kang (2021) have employed the Technology Acceptance Model (TAM) among early users of studied users metaverse platforms.

Articulating what is the metaverse and its potential in higher education is important. Yet there is no single agreed-upon notion, at least not at this time of what is or will be the metaverse in higher education. Instead, there are varied definitions of and approaches to the metaverse, and a wide range of digital platforms for designing spaces such as campuses inside the metaverse. Most conceptualizations and platforms for the metaverse involve notions that reflect three qualities or dimensions. These are networked virtual worlds featuring 1) immersion, 2) interaction, and 3) multi-sensory engagement. Immersion refers to an enveloping, absorbing experience. In the metaverse, immersion can be the envelopment of the user or the absorbing psychological nature of virtual reality. Interaction refers to a mutual or reciprocal influence. It may be between humans or humans and digital entities, such as media content or virtual experiences and artificial intelligence (AI) agents or bots. Multi-sensory engagement refers to the sight, sound or haptic experiences possible in the metaverse, regardless of the eXtended Reality (XP) platform employed, including augmented reality (AR), virtual reality (VR), mixed reality (MR) or otherwise.

The theoretical framework of this paper draws upon structural analysis, as suggested by Kultawanich, Koraneekij, and Na-Songkhla (2015). This framework offers a four-part model of educational innovation in the metaverse based upon the organizational or systemic characteristics and parameters that define or shape the its affordances, or possibilities of that environment, especially for the user, student, faculty, staff or other (Gibson, 1966, 1977). This framework yields a four-part research question revolving around the how universities adapting or designing for educational purposes the metaverse in terms of 1) systemic and organization qualities (e.g., building a virtual campus), 2) curricula and course content (e.g.,

developing and offering courses inside the metaverse), 3) student engagement (e.g., enrolling students in metaverse courses, programs and other activities such as research), and 4) pedagogical practices (e.g., innovating new approaches to teaching and learning).

Methodology

Because this study revolves around the structural parameters related to the development of higher education in the metaverse, it employs a methodology called meta-analysis. Meta-analysis is a method that quantitatively and systematically assesses multiple existing research studies to synthesize new research findings based upon the existing, or secondary, data. This paper employs an adapted meta-analytic approach. It uses an exploratory meta-analysis of a spectrum of eleven universities across the globe that have self-identified as developing or studying the development of virtual university campuses and programs in the metaverse. A limited quantitative analysis is performed to designate the number of universities that have pursued metaverse educational strategies in virtual campus building, metaverse research, and designed virtual learning programs or curricula for the metaverse. Data examined include 1) systemic and organization dimensions such as the building of a virtual campus), 2) curricula and course content such s developing and offering courses inside the metaverse, 3) student engagement measurements such as the enrolling of students in metaverse courses, programs and other activities such as research, and 4) assessments of pedagogical practices such as innovating new approaches to teaching and learning in the metaverse.

The universities studied are listed here alphabetically by country (country designated in parentheses):
1) Davenport University (USA);
2) University of California, San Diego (UCSD) (USA);
3) University of Miami (USA);
4) Guangdong University of Technology (China);
5) Tecnológico de Monterrey (Mexico);
6) Nanyang Technological University (NYU) (Singapore);
7) Fundación Universitaria San Pablo (CEU) (Spain);
8) Korea Advanced Institute of Science and Technology (KAIST) (S. Korea);
9) Chulalongkorn University (Thailand).
10) Sabancı University (Turkey);
11) University College of London (UCL) (UK).

Findings

Four universities have as of 2022 had already designed and built virtual campuses in the metaverse, and even begun offering courses. These are Davenport University UCSD, Tecnológico de Monterrey and Fundación Universitaria San Pablo. As shown in Figure 1, these schools, including the Tecnológico de Monterrey, have designed their virtual campuses, and began teaching courses and hosting seminars in metaverse in 2022 on the Virbela platform. As shown in Figure 2, Fundación Universitaria San Pablo CEU) in 2021 designed a metaverse learning environment via Minecraft (CEU Universities, 2021).

Figure 1: Tecnológico de Monterrey Virtual Campus on Virbela

Figure 2: Fundación Universitaria San Pablo via Minecraft

Five universities or their faculty are conducting research on the metaverse, including learning effectiveness, metaverse development, and metaverse and culture (Swayne, 2022). Guangdong University of Technology has established a program for metaverse study. Projects include "Reliable Coded Distributed Computing for Metaverse Services: Coalition

Formation and Incentive Mechanism Design" and "Optimal Targeted Advertising Strategy For Secure Wireless Edge Metaverse."

Nanyang Technological University (NTU) has introduced research on the metaverse and its development. Studies include investigations into" Reliable Coded Distributed Computing for Metaverse Services" and business aspects of Web 3, the" Optimal Targeted Advertising Strategy For Secure Wireless Edge Metaverse." Korea Advanced Institute of Science and Technology is conducting research on metaverse and its development. Researchers are also conducting research on Web 3 and the metaverse. University College of London is conducting research on the metaverse and education. Research there is examining the future of trust in the metaverse and "how socially contested organizations affect the birth and renewal of industries operating at the vanguard of capitalist economies." Sabancı University is conducting research on the metaverse and culture, including "Spatial poetics, place, non-place and storyworlds: Intimate spaces for Metaverse avatars" as published in the journal *Technoetic Arts*.

Two universities have developed projects in immersive learning programs and curricula. The University of Miami has designed immersive learning environments via eXtended Reality (XR) through the University's XR Initiative (Tannen, 2022). Students and faculty are developing projects in AR and VR using the Hololens 2 platform. At Chulalongkorn University Professor Dr. Jaitip Na Songkhla is studying implications of metaverse for education, particularly for learners and learning (Somboon, March 2022). Research at Chulalongkorn looks at how metaverse experiences can help students transcend limitations to learning in physical reality.

In sum, the data from this meta-analysis indicate that at least eleven international universities are investing resources to establish a presence in the metaverse or to become centers for leadership and research on metaverse and its development. Efforts in the metaverse and higher education range widely and reflect adaptation on multiple levels, including pedagogical approaches, systemic changes (e.g., virtual campuses), new ways to engage students (e.g, AR, VR, XR), and research-based endeavors.

Since this study was conducted in early 2022, other universities have announced or begun projects in the metaverse. Using a platform called VictoryXR, these schools have received grants to build a metaverse campus: Morehouse College, University of Kansas School of Nursing, New Mexico State University, South Dakota State University, West Virginia University, University of Maryland Global Campus, Southwestern Oregon Community College, Florida A&M University, California State University, Alabama A&M University. This development suggests interest in building the metaversity is growing.

Conclusion

The Metaversity is still embryonic. Universities around the world are investing, or perhaps more accurately, dabbling, in the metaverse and its development. Questions include which platform to utilize and how. Problems are emerging as well, including the digital divide, protecting student privacy and ensuring educational benefits across a diverse, inclusive and equitable fashion.

Further research is needed to examine more fully how university engagement with the metaverse advances beyond exploration (i.e., assess size of enrollment in metaverse) and into a transformative environment for higher education.

References

Akour, I. A., Al-Maroof, R. S., Alfaisal, R., & Salloum, S. A. (2022). A conceptual framework for deter- mining metaverse adoption in higher institutions of gulf area: An empirical study using hybrid SEM-ANN approach. *Computers and Education: Artificial Intelligence*, *3*, 100052. doi:10.1016/j.caeai.2022.100052

CEU Universities (15 October 2021). "CEU Universities already have their own metaverse." https://www.ceuuniversities.com/en/ceu-universities-already-have-their-own-metaverse/

Collins, C. (2008). Looking to the future: Higher education in the Metaverse. *EDUCAUSE Review*, *43*(5), 50–52.

Duan, H., Li, J., Fan, S., Lin, Z., Wu, X., & Cai, W. (2021). Metaverse for social good: A university campus prototype. In *Proceedings of the 29th ACM International Conference on Multimedia* (pp. 153- 161). 10.1145/3474085.3479238

Gibson, J. J. (1966, 1977). *The theory of affordances*. Lawrence Erlbaum, Hillsdale, NJ*, 1*(2).

Go, S. Y., Jeong, H. G., Kim, J. I., & Sin, Y. T. (2021). Concept and development direction of metaverse. *Korea Information Processing Society Review*, *28*(1), 7–16.

Han, H. W. (2008). A study on typology of virtual world and its development in metaverse. *Journal of Digital Contents Society*, *9*(2), 317–323.

Han, S., & Noh, Y. (2021). Analyzing Higher Education Instructors 'perception on Metaverse-based Education. *Journal of Digital Contents Society*, *22*(11), 1793–1806. doi:10.9728/dcs.2021.22.11.1793

Jang, J. (2021). A study on a Korean speaking class based on metaverse: Using Gather. town. *J. Korean Lang. Educ*, *32*, 279–301.

Jeon, J. H. (2021). A study on education utilizing metaverse for effective communication in a convergence subject. *International Journal of Internet Broadcasting and Communication*, *13*(4), 129–134.

Jovanović, A., & Milosavljević, A. (2022). VoRtex Metaverse platform for gamified collaborative learn- ing. *Electronics (Basel)*, *11*(3), 317. doi:10.3390/electronics11030317

Kanematsu, H., Kobayashi, T., Barry, D. M., Fukumura, Y., Dharmawansa, A., & Ogawa, N. (2014). Vir- tual STEM class for nuclear safety education in metaverse. *Procedia Computer Science*, *35*, 1255–1261. doi:10.1016/j.procs.2014.08.224

Kealey, Kate (17 July 2022). "Iowa Company Creates Virtual Reality Classrooms for 10 Universities." https://www.the74million.org/article/iowa-company-creates-virtual-reality-classrooms-for-10-universities/

Kim, J. G. (2021). A study on metaverse culture contents matching platform. *International Journal of Advanced Culture Technology*, *9*(3), 232–237.

Kultawanich, K., Koraneekij, P. & Na-Songkhla, J. (2015). A Proposed Model of Connectivism Learning Using Cloud-based Virtual Classroom to Enhance Information Literacy and Information Literacy Self-efficacy for Undergraduate Students, Procedia - Social and Behavioral Sciences, Volume 191, Pages 87-92, ISSN 1877-0428.

Kye, B., Han, N., Kim, E., Park, Y., & Jo, S. (2021). Educational applications of metaverse: Possibili- ties and limitations. *Journal of Educational Evaluation for Health Professions*, *18*, 18. doi:10.3352/ jeehp.2021.18.32 PMID:34897242

Lee, H., & Hwang, Y. (2022). Technology-Enhanced Education through VR-Making and Metaverse-Linking to Foster Teacher Readiness and Sustainable Learning. *Sustainability*, *14*(8), 4786. doi:10.3390u14084786

Lee, S. (2020). *Log in Metaverse: Revolution of Human Space Time.* Issue Report.

Merriam-Webster (2023). "Meta." *https://www.merriam-webster.com/dictionary/meta*

Moneta, A. (2020). Architecture, heritage and metaverse: New approaches and methods for the digital built environment. *Traditional Dwellings and Settlements Review, 32*(2).

Ning, H., Wang, H., Lin, Y., Wang, W., Dhelim, S., Farha, F., & Daneshmand, M. (2021). *A Survey on Metaverse: the State-of-the-art, Technologies, Applications, and Challenges.* arXiv preprint arX- iv:2111.09673.

Pande, P., Thit, A., Sørensen, A. E., Mojsoska, B., Moeller, M. E., & Jepsen, P. M. (2021). Long-Term Effectiveness of Immersive VR Simulations in Undergraduate Science Learning: Lessons from a Media- Comparison Study. *Research in Learning Technology*, *29*, 29. doi:10.25304/rlt.v29.2482

Park, S., & Kang, Y. J. (2021). A Study on the intentions of early users of metaverse platforms using the Technology Acceptance Model. *Journal of Digital Convergence*, *19*(10), 275–285.

PwC (2022). PwC 2022 US Metaverse Survey. Price Waterhouse Coopers. https://www.pwc.com/us/en/tech-effect/emerging-tech/metaverse-survey.html

Singh, Jashandeep & Malhotra, Meenakshi & Sharma, Nitin. (2022). "Metaverse in Education: An Overview." 10.4018/978-1-6684-6133-4.ch012.

Somboon, Thitirat (11 March 2022). "Metaverse: The Future of Education Beyond Frontiers from the Real to the Virtual World."11 March 2022 https://www.chula.ac.th/en/highlight/67429/

Stephenson, Neal (1992). *Snow Crash.* New York: Bantam Books, p. 63.

Suzuki, S. N., Kanematsu, H., Barry, D. M., Ogawa, N., Yajima, K., Nakahira, K. T., & Yoshitake, M. (2020). Virtual Experiments in Metaverse and their Applications to Collaborative Projects: The frame- work and its significance. *Procedia Computer Science*, *176*, 2125–2132. doi:10.1016/j.procs.2020.09.249

Swayne, Matt (28 February 2022). "Top 5 Universities for Metaverse Research." https://metaverseinsider.tech/2022/02/28/top-5-universities-for-metaverse-research/

Tannen, Janette Neuwahl (20 January 2022). "University community leaps into the 'metaverse.' University of Miami. https://news.miami.edu/libraries/stories/2022/01/university-community-leaps-into-the-metaverse.html

Virbela (13 January 2022). Three Universities Already Teaching Classes in the Metaverse. https://www.virbela.com/blog/three-universities-already-teaching-classes-in-the-metaverse

Yoo, G. S., & Chun, K. (2021). A Study on The Development of A Game-type Language Education Service Platform Based on Metaverse. *Journal of Digital Contents Society*, *22*(9), 1377–1386. doi:10.9728/ dcs.2021.22.9.1377

Zhu, H. (2022a). *MetaOnce: A Metaverse Framework Based on Multi-scene Relations and Entity-relation- event Game.* arXiv preprint arXiv:2203.10424.

Zhu, H. (2022b). *MetaAID: A Flexible Framework for Developing Metaverse Applications via AI Technology and Human Editing.* arXiv preprint arXiv:2204.01614.

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Significance of Working Together to Create and Revise a Consistent Achievement Goal Chart: Focusing on Teachers' Narratives

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

Japan's Ministry of Education and boards of education in each prefecture have been emphasizing collaborative activities between elementary, junior high, and high schools. However, it has been pointed out that collaboration between schools has not progressed very well. This may indicate the need for collaborative activity research in English education between different school types is greater than ever. Yamamoto (2019) conducted an interview survey of teachers who initiated a collaborative project in English education of a private school cooperation in western Japan (the first-generation teachers). He found out that what they seek is a "lean connection" and that setting consistent achievement goals is essential in connecting education of different school types. The project has continued, although the core members have changed. Based on Yamamoto (2019), the presenter set the following research questions and conducted interviews in 2021 to compare the attitudes of the second-generation teachers at elementary, junior high, and high school with those of the first-generation teachers. (1) Do the second-generation teachers have different mindsets from the first-generation? (2) How have collaborative activities centered on creating and revising a consistent achievement goal chart affected them? The results show that, unlike the first generation, the second generation has a more concrete and multifaceted perspective in their awareness of lesson planning, student understanding, and self-examination. The results also suggest that collaborative efforts centered on the goal chart have functioned as an opportunity for teacher development, fostering an awareness of collaboration among different school types and improving the quality of information exchange.

Keywords: English Education, Consistent Achievement Goal, Elementary and Secondary School Collaboration

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Introduction

In Japan, English education in elementary schools has been one of the required subjects since school year 2020. Before this movement, many prefectural boards of education established policies and goals to promote collaboration among elementary, junior high, and high schools regarding English education. Moreover, they started to carry out projects to promote such collaboration. The importance of promoting inter-school English education collaboration among different school types is generally recognized. For example, the percentage of prefectures with "established policies or goals to promote collaboration among different school types" is 63.8, 31 prefectures out of 47. Furthermore, 87.2% of 41 prefectures answered that they are doing some projects in practice to promote inter-school collaboration on English education (Zenkoku todofuken kyoikuiinkai rengokai, 2018).

According to the 2017 Japan Ministry of Education survey, 12.5% of high schools nationwide responded that they are collaborating with elementary schools, and 27.5% responded that they are collaborating with junior high schools. In contrast, the figure for elementary and junior high school collaboration is 81.2%, which is considerably higher than for elementary and high school collaboration (Ministry of Education, Culture, Sports, Science and Technology, 2017). This is thought to be due to the municipality in which the schools are located. Most elementary and junior high schools are established in the same city. In recent years, some schools have been established as integrated public elementary and junior high schools or compulsory education schools. 81.2% indeed seems high, but the rate was already 70.0 in the 2009 survey (Ministry of Education, Culture, Sports, Science and Technology, 2009). This means that their collaborative activities have not suddenly become more active in recent years.

Based on Ministry of Education, Culture, Sports, Science and Technology (2017), let us look at specific forms of collaboration between schools. The bar graphs below show the responses to the question about what kind of activities high schools do with junior high schools. The most common activity is "teachers' class observation," followed by "teachers' joint workshop on a specific theme" (Figure 1, left). Many of the activities between elementary and junior high schools are class observations followed by discussions (Figure 1, right).

Figure 1: Collaborative activities

Source: Ministry of Education, Culture, Sports, Science and Technology (2017)

In sum, so far, cooperation among different school types in English education is considered necessary nationwide, and teachers' exchange activities are conducted to some extent. Such actions include class observations and subsequent discussions, information exchange meetings, or joint training sessions.

Review of previous studies

Previous studies in various subject areas, not limited to foreign language education, argue that exchanging information enhances collaboration among different types of schools. Many practices in schools based on this logic have been reported. Naoyama (2013) states that

information exchange and interaction among different schools are essential to reach the first state of collaboration. They shorten the distance in feelings, and the distance in content is shortened through curriculum collaboration. In other words, the process is from information exchange to curriculum improvement. The author does not object to this position. Exchanging information would undoubtedly be necessary. However, Aoyagi (2016), Matsumoto (2013), and others have pointed out that despite these efforts, the reality is that in many schools, collaboration among different types of schools in English education has yet to progress sufficiently. This indicates that further research on collaborative activities is needed to examine what and how to enhance collaboration among schools.

There are few studies dealing with collaborative activities to set achievement goals, which is the focus of this project and research, as a trigger for promoting collaboration. Okazaki (2014) and Okazaki (2016) have addressed the issue of setting achievement goals in English language education. In particular, Okazaki (2016) points out the significance of setting achievement goals together as effective for positive changes in teaching practices and beliefs and for improving collegiality within the English department of a high school.

The author started a project in 2013 with teachers from an elementary school, a junior high school, and a high school. We believed that jointly creating achievement goals that are consistent and connected could be a catalyst for promoting collaboration based on Okazaki's viewpoint. This project aims to create an achievement goal chart that has consistency from elementary school to high school graduation in English communication skills and the educational philosophy of the schools.

Their schools are affiliated with private school cooperation. Collaboration between schools would be challenging even if they are private schools. When they exist as one junior high school or one high school, it tends to have a stand-alone mindset, and in many cases, educational activities are completed at each school. The schools in question have their own entrance exams, and it used to be hard to see what they were doing in each, though they are located close together. The goal chart in Figure 2 is the 2022 edition made through their collaborative work. Based on it, we have also been working on verifying the achievement of the goals and evaluating the students' degree of accomplishment.

Yamamoto (2019) surveyed the attitudes of teachers involved in this project. He interviewed the teachers who started the collaborative project in 2013 (hereafter referred to as "the first-generation collaboration teachers"). In this project, teachers worked together to create a consistent English education achievement goal chart for their junior and senior high schools. From the interviews, Yamamoto (2019) extracted what they sought in the project is a "lean connection (p.12)" and claimed that making a consistent achievement goal chart can be an essential factor in connecting schools of different levels.

The project, initiated to connect a junior high school and a high school, is still ongoing as of 2022; in 2018, an elementary school was added to the project. Moreover, the core teachers of the project have been replaced over the years.

Figure 2: Goal chart 2022 edition

In 2022, the author conducted an interview survey to compare the attitudes of "the second-generation collaboration teachers," who are involved in the project currently, with the first-generation teachers.

The activities the teachers are currently undertaking as part of the collaboration project are as follows: collaborative meetings, revising and publishing the goal chart once a year in April, students' English speech and recitation contest, teachers' collaboration workshops, and student visits to different schools and exchange meetings. The meeting is held once a school term, and their main topics are the goal chart, teaching and evaluation methods, joint events, and student situations. The goal chart is distributed to all elementary, junior high, and high school students, English teachers, and other relevant parties.

Research Questions

Here are the two research questions of this study.

(1) Do the current English teachers involved in collaborative activities have a different mindset from the teachers who initiated the activities?
(2) How have collaborative activities centered on creating a consistent achievement goal chart affected them?

Interviewees

Let us overview the survey. The researcher interviewed three English teachers, Keiko, Nozomi, and Takuro (Their names are pseudonyms). Keiko is a female elementary school

English teacher in her 30s. Nozomi is a female junior high school English teacher in her 30s. And Takuro is a male high school teacher in his 40s. They are "second-generation collaboration teachers." They were all assigned to be in charge of revising the goal chart in a situation where this collaborative project had already started.

Methods

Semi-structured interviews were conducted in August 2021, which lasted 40-50 minutes each. The researcher compared them with the previous survey results. Data were transcribed, and qualitative content analysis was conducted through coding. The questions were the same as those of the first-generation teachers were asked in the 2019 survey:

(1) How has your involvement in this project changed your thinking about "goal setting," "collaboration," and your teaching style?
(2) What is the state of being "collaborative" like?
(3) What are some of the challenges you face when collaborating?

Results and Discussion

The second-generation teachers had similar views to the first generation-teachers regarding the nature of the collaboration and the challenges they faced. However, the author refers here to the following imposing points. Many narratives suggest that second-generation teachers have more "concrete forms of connection" and "more focused perceptions of the student condition" than first-generation teachers. What are extracted from their narratives are: (a) Specific, multifaceted understanding of students' English language skills, (b) Teachers' perception of their own specific growth, and (c) Recognition that collaboration is being promoted.

(a) Specific, multifaceted understanding of students' English language skills

While the first-generation teachers made relatively abstract comments, such as "collaboration requires lean connections throughout the information (Yamamoto, 2019, p.12)." On the other hand, many of the second generation's narratives were more specific in describing the skills and status of the students. They talked about their reflections on teaching based on the existence of the achievement goal chart, their commitment to collaborative activities, and their recognition of different school types. For example, Nozomi said, "I have come to realize that, for example, this student is not very good at writing, but is very good at presentation." Keiko described her class with the words like, "More and more children are able to respond accurately to questions and instructions." Takuro said, "If I notice that my students are more into on listening, I think I need to cover this part of the course while developing their skills." Moreover, Takuro also said, "I always look at the goal chart and decide what we will do in class. I find out, like, 'Oh, this is where they are expected to reach.'"

(b) Teachers' perception of their own specific growth

After describing their students, all the teachers talked about their own teaching methods and views or beliefs on English language education. Furthermore, all of them talked about the remarkable changes due to their involvement in the project. For example, Nozomi, a junior high school teacher, said, "I have started to pay particular attention to whether my classes are at the appropriate level for new students." Takuro as a high school teacher, reflected, saying,

"I have improved my classes, which tended to focus on explaining grammar, and I have gained a perspective to increase interaction among students." For Keiko, an elementary school teacher, the goal chart seems indispensable to planning her classes. Her words are: "I have come to look at the achievement goal chart and think about what activities are necessary to achieve them."

(c) Recognition that collaboration is being promoted

Though the amount of time teachers spend in face-to-face activities is not that large, elementary and junior high school teachers often expressed an increased awareness that they can share information about different types of schools and that they can cooperate with each other more than the actual amount of time spent. They all spoke positively and favorably about the nature of these collaborative activities. For example, Keiko said, "I really appreciate the collaborative events for students." "It would be nice if other subject teachers had collaborative meetings as well." The following is Keiko's comment. "I am most grateful for the current environment in which we can learn about trends at each facility and revise the goal chart each year." Nozomi said, "I feel like we are working together now."

Conclusion

Regarding the first research question, we can say that second-generation teachers have a somewhat different awareness than first-generation teachers. The first-generation teachers described collaboration in relatively abstract terms, such as "lean connections (Yamamoto, 2019, p.12)" throughout the information. On the other hand, second-generation teachers have a more concrete and multifaceted perspective on teaching, student understanding, and self-examination. The second research question was how this project is affecting second-generation teachers. We could say to this question that collaborative efforts centered on creating the goal chart may be functioning as an opportunity for teacher development for them and other teachers in each school. A school corporation office staff and the author, a university faculty member as a coordinator, also have participated in this project. However, what we are doing is by no means a supervisor-subordinate issue. It is an opportunity for each teacher to develop and improve their skills as a language teacher who belongs to one cooperative unit. The schools in this case study are working together to create a consistent achievement goal chart and are continually revising it and exploring ways to validate it. Previous studies address that setting goal activities is suitable for positive change in teachers, such as classroom practices, their beliefs, and enhancing collegiality within an English department of a school. Based on them, broadening the involvement to different school types should foster an awareness of collaboration among them and improve their quality of information exchange. Finally, the author would like to add that this presentation is based on a case study of one project and is not a "collaborative model of English education" that can be widely generalized.

References

Aoyagi, A. (2016). Sho-chu-ko renkei shita eigo kyoiku no torikumi to sono tenbo: Yamagata-ken sho-chu-ko-dai renkei proguramu wo motoni (Actions and prospects of English education in collaboration with elementary, junior high and high schools: Based on a collaborative program among elementary, junior high, senior high schools, and university in Yamagata Prefecture), *Yamagata University Research on Teaching and Educational Practice*, (11), 1-9.

Matsumoto, S. (2013). CAN-DO risuto no sakusei ni yotte kitai sareru eigo kyoiku no makuroteki kaizen (Macroscopic improvements in English education expected from the creation of a CAN-DO list), *One World Info*, 2013, Spring, 2-3.

Ministry of Education, Culture, Sports, Science and Technology. (2009). Heisei 21 nendo koritsu sho-chugakko ni okeru kyoikukatei no hensei jisshi jokyo chosa no kekka nitsuite [On the results of the 2009 survey on the status of curriculum development and implementation at public elementary and junior high schools]. https://www.mext.go.jp/a_menu/shotou/new-cs/1269841.htm

Ministry of Education, Culture, Sports, Science and Technology. (2017). Heisei 29 nendo eigo-kyoiku jisshi jokyo chosa no kekka ni tsuite [On the results of the 2017 survey on the status of English-language education implementation]. https://www.mext.go.jp/a_menu/kokusai/gaikokugo/1403468.htm

Miura, T. (2007). Chu-ko-dai de eigo ni yoru kodoryoku ikusei wo do tsumiageruka (How to build up behavioral skills development in English at high school and university level), *Bulletin of the Faculty of Education, Shizuoka University*, 39, 185-197.

Naoyama, Y. (2013). Gaikokugo kyoiku ni okeru sho-chu renkei (Elementary and junior high school collaboration in foreign language education), *Sho-chu renkei Q&A to jissen*, (pp. 6-7). Tokyo: Kairyudo.

Okazaki, H. (2016). Can-do risuto no settei・katsuyo no seika to kadai: kenkyu kyotenko no eigo kyoshi no shiten kara (The outcomes and challenges of setting up and using can-do lists: Perspectives from English teachers at a research hub school), *CELES Journal*, 45, 87-94.

Ueda, K. (2012). Sho-chu renkei no eigo kyoiku (English education linking elementary and junior high schools), *The Bulletin of the EIPSJ*, Vol. 48, 117-120.

Yamamoto, T. (2019). Eigo kyoiku ni okeru gakushu totatsu mokuhyo settei ga motsu sho-chu-ko renkei suishin no kanosei (Potentialities of goal setting process in English education to promote elementary-secondary school collaboration), *Foreign Language Education Theory and Practice*, No.45, 1-22.

Zenkoku todofuken kyoikuiinkai rengokai. (2018). *Heisei 29 nendo kenkyu hokokusho* [*Research report for SY 2009*]. http://www.kyoi-userdata/pdf/report/h29_1 bukai.pdf

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The Role of an Online Campus in Supporting a Sudden Shift in Students' Preferences to Enroll at a College: Forecasting the Next Five Years in Higher Education

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

Overnight, the higher education community experienced a shift to remote teaching and learning. The shift benefited online-only learning institutions, as students discovered their ability to manage their time in a virtual environment. This shift has generated a need for educational institutions to recognize students' scheduling preferences. TCC Connect Campus opened in 2014 as Tarrant County College's sixth and fully online campus, serving over 29,000 students each semester. Tarrant County College is located in Fort Worth, Texas, and is a large urban community college. The campus has been on the cutting edge of adapting to students' preferences, resulting in a 25% increase in enrollments from Fall to Fall. The significant rise in enrollments resulted in friction towards the online campus with the five sister campuses, which were experiencing an opposite trend post-pandemic. Given the clientele's behavior, this complex situation required additional iterations and analysis to align "the online and face-to-face campuses in a One College framework." To support growth, an approach based on planning, soft launching, and data analysis was implemented while leveraging previously developed projects. As institutions returned to the classroom and student preference for online instruction increased, the College Chancellor, focusing on being a student-ready college, directed the online campus to open sections until demand was satisfied. Our campus Data Analyst was asked to provide continuous reports on enrollment status and fill ratios impacting the need to release additional courses. The authors will discuss strategies for providing leadership during a rapid change in student preferences, including data for forecasting and communication across the institution.

Keywords: Online Learning, Distance Learning, Higher Education, Strategic Planning, Quality Assurance, Student Success

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Introduction

Overnight, the higher education community experienced a shift to remote teaching and learning. The shift benefited online-only learning institutions, as students discovered their ability to manage their time and experience success in a virtual environment. This shift has generated a need for educational institutions to recognize student preferences when deciding in what modality to offer course selection.

Tarrant County College was established by a county-wide election on July 31st, 1965 as Tarrant County Junior College. The name was later changed in 1999. Located in Fort Worth, Texas, with a current credit enrollment of more than 80,000 credit and non-credit students, Tarrant County College is a two-year public institution with six campuses in a large urban community. Distance Education offerings started in the fall of 1973, with two courses delivered via instructional television, reaching an enrollment of almost 800 students. This immediately showed that there was interest in a flexible and convenient mode of taking classes. TCC Connect Campus, which opened in 2014, is the only stand-alone online campus built from the ground up in the state of Texas. Today, the campus offers 40 programs, which translates to about 29,000 enrollments (Tarrant County College District, 2013, 2022b). Throughout its nine years as a campus, TCC Connect Campus has seen phenomenal growth, making eLearning at TCC the most extensive online program in Texas.

TCC Connect Campus is Tarrant County College's sixth campus, fully online, serving over 26,000 students each semester. The campus has been at the forefront of adapting to students' preferences, resulting in a 25% increase in enrollments from Fall to Fall (Morales, 2011, 2017). The significant rise in enrollments resulted in friction towards the online campus from the five sister campuses, which were experiencing an opposite trend post-pandemic. Given the students' behavior, this complex situation required additional iterations and analysis to align "the online campus and the face-to-face campuses in a One College framework." To support growth, an approach based on planning, soft launching, and data analysis was implemented while leveraging previously developed projects. Since its inception in 2014, the campus has focused on creating tools that promote quality online learning, such as Peer Developed Courses (Morales, 2017), Online Instructor Certification, eFaculty Coaches (Morales, 2019), and Instructional Design Support (Morales Irizarry, 2006). These innovations enabled rapid adaptation to change while ensuring students' needs were met.

As institutions returned to the classroom post-pandemic and the students' preference for online instruction increased (D'Agostino, 2022), the College Chancellor, focusing on being a student-ready college, directed the online campus to open sections until demand was satisfied. We asked the campus Data Analyst to provide continuous reports on enrollment status and fill ratios to determine when to release additional courses. As the majority of our sections were filled within one hour of being published, immediate access and attention to data allowed the academic divisions to quickly identify subjects requiring additional capacity.

State of Digital Learning

Distance education, online learning, and the more recently coined term, Digital Learning, all aim at defining a variant of a mode of instruction that is mediated through technology (Witze, 2020). Distance education in its various forms has been in existence for over 70 years. The main impetus is creating learning environments that provide flexibility of time, space, and learning styles through the use of instructional technology tools. The sector is poised to

continue its growth trajectory as more institutions recognize the value, importance, and opportunities that can be achieved for both students and the institution. It is well known that through distance education, Institutions of Higher Education (IHEs) can reach underserved populations, provide equity, and increase access to achieve credentials leading to high wage, high demand professional opportunities . The COVID-19 Pandemic may have accelerated the role digital learning plays both administratively and academically as many institutions have experienced growth in the modality (Lee, Fanguy, Bligh, & Lu, 2022).

In the case of TCC Connect Campus, the institution has striven to create the conditions to widen access to higher education while reducing barriers that some students face. By employing a centralized operational model, campus staff have focused on student success through quality assurance and faculty development (Morales 2019).

Student Preference for Online Learning

In the Fall of 2020, Tarrant County College started to track how students prefer to learn and go to college. Increasing student preference for online instruction predates the pandemic, as evidenced by the rise and evolution of distance learning in the past 20 years. Prior to 2020, TCC Connect experienced an average annual growth of approximately 10%. Since students returned to the campuses in 2021, the annual growth has been 20% with record enrollments each semester.

In a recent institutional survey of student preferences, 24% of student respondents preferred all online classes and about 38% of respondents working 40 plus hours a week preferred all online classes. Students choosing all online as their preferred modality ranked flexibility, the ability to attend to family members at home, and concerns about being in-person due to Covid-19 as their top 3 reasons (Tarrant County College, 2022a). Other reasons included not having to commute to campus, learning better at home, and social anxiety due to the pandemic (Keeling & Haugestad, 2020). Interestingly, about 18% of respondents who preferred all online courses stated they were not likely to enroll in any course if online was not available. This was the highest value in that enrollment decision group by 10 percentage points.

Understanding that students who have a strong preference for online learning would potentially not enroll at all makes attention to data and scheduling of paramount importance.

The Pandemic caused by COVID-19 triggered shelter-in-place orders, turning colleges and universities into ghost towns (Reference here empty colleges). The goal was to reduce virus transmission rates by dispersing people as much as possible, while preserving the continuity of academic operations. IHEs quickly turned to Emergency Remote Teaching (ERT) as a temporary solution, although it came with its own challenges (Hodges, Moore, Lockee, Trust, & Bond, 2020). The speed at which the transition took place the lack of professional development culture toward instructional technology, and the absence of Academic Continuity plans complicated for some students—and faculty—the benefits of technology-mediated instruction (Morales, 2020). On the other hand, institutions with mature and well-established online learning operations experienced less difficulties. The campus led by the authors of this article provided assistance, knowledge, and expertise to the rest of the college, which predominantly conducted operations face-to-face.

Achieving Student Success in Online Learning

Tarrant County College defines *success rate* as earning an A-C in a course. TCC Connect Campus has experienced steadily increasing success rates since the campus was established going from 68% in Fall of 2018 to 83% in Summer 2022. There has also been an upward trajectory in retention rates, from 86% in Fall 2018 to 93% retention in Summer 2022. Several key factors contribute to student achievement in an online environment (Area-Moreira, San Nicolás, & Sanabria, 2018; Villasenor, 2022). Intentional design for the online classroom is achieved through the use of a dedicated instructional design team that offers assistance in accessibility, regular and substantive interaction requirements, and online pedagogy best practices. Moreover, the campus focuses on quality and design with intentional attention to online student versus remote teaching.

The success achieved by the students that attend the campus has been significant. Conceptualized as a non-traditional campus that serves non-traditional students, online learning and weekend college require students to be self-directed and have discipline (Morales, 2019). After all, online learning is a form of independent study that allows students to learn at their own pace, quickly apply knowledge to the workplace, and obtain educational credentials at their own time and pace. The success of those students is evidenced in Table 1.

Semester	Enrollments	Passed with C or better		Retention Rate	
Fall 2022	27,483	20,423	74.3%	24,528	89%
Summer 2022	20,647	17,268	83.6%	19,175	93%
Spring 2022	28,141	21,154	75.2%	25,008	89%
Fall 2021	24,330	18,579	76.3%	21,845	90%
Summer 2021	8,171	6,813	83.4%	7,621	93%
Spring 2021	22,030	15,886	72.1%	19,410	88%
Fall 2020	22,601	16,253	71.9%	19,641	87%
Summer 2020	18,649	15,452	82.9%	17,104	92%
Spring 2020	22,737	16,777	73.8%	19,537	86%
Fall 2019	21,758	15,074	69.3%	18,877	87%

Table 1. eLearning Enrollments and Success Rates

Year	Enrollments	Passed with C or Better		Withdrew	
2023	1,489	1,313	88.2%	1,411	95%
2022	1,427	1,157	81.1%	1,291	90%
2021	1,466	1,270	86.6%	1,383	94%
2020	1,210	1,021	84.4%	1,089	90%
2019	1,001	890	88.9%	959	95%
2018	753	613	81.4%	676	90%
2017	499	420	84.2%	456	91%

Table 2 Wintermester Enrollments and Success Rate

Semester	Enrollments	Passed with C or better		Retention Rate	
Fall 2022	819	635	77.5%	768	94%
Spring 2022	866	666	76.9%	799	92%
Fall 2021	755	581	77.0%	696	92%
Spring 2021	686	468	68.2%	599	87%
Fall 2020	977	721	73.8%	863	88%
Spring 2020	669	517	77.3%	604	90%
Fall 2019	944	682	72.2%	851	90%

Table 3. Monthly Starts Enrollments and Success Rates

Quality in Online Courses

Centralization of online courses allows oversight and quality assurance. All online and hybrid offerings originate and are managed by the online campus. As in face-to-face instruction, successful course outcomes begin with qualified faculty. The campus certifies the e-learning instructor rather than the course. Prior to assignment, all faculty are required to complete the Online Instructor Certification (OIC), an in-depth 32-hour professional development course based on best practices in online pedagogy (Almerich, Orellana, Suárez-Rodríguez, & Díaz-García, 2016). In addition, faculty are encouraged to use Peer Developed Courses (PDCs) when available. PDCs are course templates developed by discipline faculty across the

institution and the instructional design team. The course is developed to a 70 or 80% completion to maintain consistency in assessment, student experience, and accessibility (Geilman, 2018; Morales, 2017). The remaining 20% allows for faculty customization and signature assignments.

The campus employs full-time eFaculty Coaches to assist faculty in achieving the highest potential success in course outcomes. "Coaching is a collaborative, iterative quality-assurance process designed to empower faculty to improve their online course offerings." (Kelton, 2021) Coaching is also a standards-based approach focusing on communication, Regular and Substantive Interaction (RSI), and student support (Kelton, 2023). The coaches are experts in online pedagogy and provide guidance to new instructors as well as those wishing to improve their online course experience.

Planning for now and for the future

Continuous review of success and preference data allows the campus to maintain a course schedule that is efficient, student friendly, and ensures completion on a timely basis. The campus Data Team meets monthly to review success, retention, and completion rates. Regular comprehensive analysis provides real-time decisions on course offerings and enrollment management. These activities yield an overall low cancellation rate for courses that do not "make," which adversely affects students who must find alternatives.

Conclusion

Online learning is poised to continue growing in quality and prominence. It will develop even further as more and more students and institutions become aware of its benefits. It is expected that pressure points will continue to trigger and shape offerings and student support, which will require institutions to be ready and seize the opportunity through planning and the allocation of resources. The trajectory of the TCCC Connect Campus includes supporting the educational needs of non-traditional students, innovation, continued growth, and quality assurance processes that result in students' high level of familiarity with online learning. The steps taken during the implementation of the campus were an early forecast of what was coming—we could not have imagined that a global pandemic would change the landscape. The campus has been knowingly responding to student preferences for online learning since its inception by fine-tuning academic offerings, student support, and campus operations to their needs.

References

Almerich, G., Orellana, N., Suárez-Rodríguez, J., & Díaz-García, I. (2016). Teachers' information and communication technology competences: A structural approach. *Computers & Education*, 100, 110-125. https://doi.org/10.1016/j.compedu.2016.05.002

D'Agostino, S. (2022, October 10). A Surge in Young Undergrads, Fully Online. Retrieved December 23, 2022, https://www.insidehighered.com/news/2022/10/14/more-traditional-age-students-enroll-fully-online-universities

Geilman, D. J. (2018). *Experiences of Instructors Using Ready-to-Teach, Fixed-Content Online Courses* (Doctoral dissertation). https://digitalcommons.usu.edu/etd/7052

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A., (2020). The difference between emergency remote teaching and online learning. *Educause Review*, *27*. https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning

Keeling, C., & Haugestad, A. (2020). Digital Student Preferences: a study of blended learning in Norwegian higher education. *Nordic Journal of Language Teaching and Learning*, *8*(2), 89-112.

Kelton, K. (2023). Cracking the code: Finding and using your own data. I*n Proceedings Tarrant County College, TCC Connect Campus Fall Faculty Conference*, Ft. Worth, Texas.

Kelton, K. (2020). *Instructor-Generated Interactions and Course Outcomes in Online History Courses.* (Doctoral dissertation).

Lee, K., Fanguy, M., Bligh, B., & Sophie Lu, X. (2022) Adoption of online teaching during the COVID-19 Pandemic: a systematic analysis of changes in univer- sity teaching activity. *Educational Review*, 74(3), 460-483. Retrieved from: http://doi.org/10.1080/00131911.2021.1978401

Morales Irizarry, C.R. (2006). *La Importancia del Diseñador Instruccional en el diseño de cursos en línea*. Revista Didáctica, Innovación y Multimedia (DIM). 1 (3). Barcelona, España. https://www.raco.cat/index.php/DIM/article/view/56105

Morales, C. (2011). Managing Rapid Growth of Online Programs: State of the Practice, *In Proceedings 27th Annual Conference on Distance Teaching & Learning Conference*, Madison, Wisconsin.

Morales, C.R. (2017). Managing quality in online education: a peer development approach to course design. *In Proceedings 33rd Annual Conference on Distance Teaching & Learning Conference. Paper presented at the 33rd DT&L Conference.* Madison, Wisconsin.

Morales, C.R., Tapia, G. (2018). La implementación de un programa de mentoría para la facultad en línea: El "Faculty Coach". *In CIIE Proceedings 5to Congreso Internacional de Innovación Educativa (CIIE),* (pp.1954-1960). Monterrey, México. Retrieved from: https://goo.gl/Koq7nD

Morales, C.R. (2019). Expanding Access to Higher Education Through a Virtual Campus: The State of The Practice. *INTED 2019 Proceedings. 13th International Technology, Education and Development Conference* (pp.367-372). Valencia, Spain; IATED Academy.

Morales, C.R. (2020). *The Role of Online Learning and the Implementation of Academic Continuity Plans: Preserving the Delivery of the Academy*. In Proceedings Hawai'i International Conference on Education. Honolulu, Hawai'i. Available at: https://bit.ly/38s7XXD

Moreira, M. y otros (2018). Las aulas virtuales en la docencia de una universidad presencial: la visión del alumnado RIED. Revista Iberoamericana de Educación a Distancia (2018), 21(2), pp. 179-198 DOI: http://dx.doi.org/10.5944/ried.21.2.20666

Tarrant County College District. (2013). *TCC Connect Concept Plan*. Fort Worth, TX.

Tarrant County College District. (2022). *Statistical Handbook 2022 FL*. Retrieved from https://www.tccd.edu/documents/about/research/institutional-intelligence-and-research/statistical-handbook/2022FL-statistical-handbook.pdf

Tarrant County College District. (2022). *Executive Summary: 2022SP Students preferences on the schedule.*

Villasenor, J. (February 10, 2022). *Online college classes can be better than in-person ones. The implications for higher ed are profound.* Brookings Techtank https://www.brookings.edu/blog/techtank/2022/02/10/online-college-classes-can-be-better-than-in-person-ones-the-implications-for-higher-ed-are-profound

Witze, A. (2020). Universities will never be the same after the coronavirus crisis. *Nature, 582*(7811), 162-164. https://doi.org/10.1038/d41586-020-01518-y

Streaming Technologies and Competence in Live Online Classes During the COVID-19 Pandemic – A Case in Japanese Higher Educational Institutions

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Abstract

The world was faced with a global viral pandemic forcing individuals and nation-states to change the way society interacts. In 2020, Covid 19 presented fundamental challenges in the way education was conducted in the form of lockdowns and stay home orders. The move from face-to-face classes to an online classroom environment confronted the need for educators to quickly adopt new technologies and expertise to maintain the level and quality of education expected by their institutions. The virtual classroom required a rethink in the way of traditional classroom management styles and pedagogies that was based on physical proximity. Not only were educators required to familiarize themselves with new methodologies but were also expected to be competent and confident enough to provide technical support to a generation of students in Japan completely unfamiliar with computer systems. This study documents the use of streaming technologies and video conferencing applications in combination with Microsoft Teams, and the Office 365 ensemble for live online lessons at a university in Chiba, Japan. It addresses problems faced by educational institutions and instructors when attempting to deliver a quality educational program through the online medium. Furthermore, it provides recommendations for pedagogical and classroom management adjustments while emphasizing the necessity for ongoing instructor competence in information communication technologies (ICT).

Keywords: Competence, ICT, TPACK, PII, Streaming Technologies

1. Introduction

Education has for a long time been using technology to distribute information to an ever-increasing student population of all demographics. Advances in technology has provided a means of distributing knowledge to a number of people while systematically attempting to reduce socio-economic limitations.

In the years leading up to 2020, there had been a shift to embrace both analog and digital technologies in classrooms in what is commonly known as blended learning. In one such definition, blended classes use paper-based texts in combination with digital devices such as tablet computers and laptops (Sharma, 2004). Software components for these devices have expanded as developers increase software availability to be used in the classroom.

In early 2020, covid-19 forced many educational institutions to re-think its approach on delivery mediums and how to continue to provide an established standard of education while charging students full tuition fees. Japan, In particular, was faced with a monumental task as the country was still subscribing to a traditional education and work culture where paper was regarded as proof of work (Aoki, 2010).

2. Literature review

Transferring from traditional face to face classes devoid of digital technology to using ICT based classrooms has been an ongoing process in universities around the globe long before the pandemic. Countries like Australia, Malaysia and the US had been slowly developing software and hardware to accommodate for this transition through the use of blended classrooms (Alazam et al., 2012; Caldwell, 2020; Hayes, 2007; Patrick, 2008). As progressive as this seems, instructor motivation in developing practical competence and implementation of these technologies has remained at low to moderate levels (Copriady, 2015).

In Japan, the delivery of education has been done using tested but antiquated technologies, focusing on the more analog aspects of educational technology such at chalk boards, physical print-outs and other paper based mediums. Very little progressions has been seen in regards to ICT professional development, investment and implementation in classrooms across the educational spectrum.(Aoki, 2010; Caldwell, 2020; Miller & Kumar, 2022; Wu et al., 2022) (ref). The covid-19 outbreak highlighted the failure of Japan to facilitate a movement towards ICT and resulted in a struggle to transfer delivery into the digital medium (Yacob et al., 2020).

In 2020, the rate at which the virus spread, decisions were made by governments to quickly contain it by implementing sudden stay home orders in particular, educational institutions. As a result, there was very little time for those unfamiliar with ICT to develop their understanding and use of it as well as a general reluctance to learn and incorporate it into their pedagogical practices (Tallvid, 2016). It resulted in an inadequate online learning system where teachers would set up web cameras in front of chalk boards (Osaki, 2021), overuse asynchronous teaching (Murakami, 2021), use of unofficial email services to manage materials and assessment. (Clark & Silsbee, 2021) and a general confusion as to how courses should be designed and conducted and delivered in an online environment. This, unfortunately, lead to high rates of student dissatisfaction, leading to drops outs, mental anguish and in some cases, litigation against institutions (Hata, 2020; Murakami, 2021; Shoji, 2020; Singh, 2021).

2.1 Instructor competence

Instructor competence implies that Instructors are not only experts in their field of knowledge but also in the subsequent delivery methods. Anything less, then their suitability to the chosen career will be put into question.

This concern was outlined by Tucker and Cofsky (1994) in the publication by Sulaiman and Ismail (2020), revealing that competence encapsulates five constituents relevant to both face-to-face and online classes:

1. Knowledge of the subject area being taught
2. Skills of the medium being used to deliver content
3. Self-concept of the individual's philosophy and self-reflection
4. Character in reference to the individual's aptitude in what is being taught
5. Motives and true purpose of their actions

This work by Tucker and Cofsky was further built upon by Koehler and Mishra, (2009). Using the description by Shulman (1987) on pedagogy and content knowledge (PCK) Koehel and Mishara include technology as a medium of delivery and thus creating technology pedagogy and content knowledge (TPACK). Implementing this into an ICT instructor's repertoire would have a positive association on "self-efficacy belief about technology integration into teaching and learning" (Esfijani & Zamani, 2020) and provide an easier transition to an online environment. Further studies indicated that technological, pedagogical and content knowledge (TPAK) was vital for implementing ICT into an instructor's repertoire.

The change in delivery methods highlighting the second competence by Tuker and Cofsky, skills of the medium being used to deliver content, would have an immediate impact on Purposeful Interpersonal Interaction (PII) mentioned by Mehall (2020) to include a technology component relevant to both the design of ICT and online classes. PII is further divided into three types; "Purposeful interpersonal instructional interaction (PIII), purposeful social interaction (PSI) and supportive interaction (SI)."

3. Technology, Pedagogy and Content Knowledge (TPACK) and Purposeful Interpersonal Interaction (PII)

3.1 Technology, Pedagogy and Content Knowledge (TPACK)

TPACK, described my Koehler and Mishara (2009) is the foundation of instructor knowledge of technology, pedagogy and content knowledge and the relationships between the three.

Technological knowledge, describes the use of technology literacy as an understanding that information technology, depending on its situational use, can either be a hinderance or a functional asset requiring a continuous update in knowledge as new technologies develop. Instructors with this level of awareness can devise alternative methodologies to deliver course content to either maintain pace and ease of understanding or improve its efficacy.

Secondly, pedagogical and content knowledge refers to the instructor's knowledge of content relevant pedagogy. An instructor with this knowledge considers student agency through the student's prior knowledge, and ability. They are then able bespoke material, teaching styles

and classroom management practices to increase teaching effectiveness and students understanding of course content.

In combination, TPACK provides a package for instructor to use in a variety of situations. And becomes a complex system that requires consideration in its application. The use of each component in TPACK can be individually scaled and adjusted in regard to individual instructor skills sets, content curriculum, student abilities, and method of delivery.

3.2 Purposeful Interpersonal Interaction (PII)

Purposeful Interpersonal Interaction incorporates a human element to teaching. Described by Mehall (2020), it creates opportunities for social interaction between peers and instructors to develop shared understanding of course content and of each other. Within purposeful interpersonal interaction, are 3 subsets. Purposeful interpersonal instructional interaction, purposeful social interaction, supportive interaction.

Purposeful interpersonal instructional interaction (PIII) is meaningful communication be it verbal or non-verbal between peers and instructor that has a categoric relationship in the learning process. Students should be able to ask question and summarize their understanding in an environment free from ridicule. Relationships of trust organically develop, resulting increased support between course members that enhances the learning experience.

Secondly, in purposeful social interaction (PSI) environments, there exists a social relationship between all members. Such interaction is not forced upon learners such as in discussions and group work. These interactions are spontaneous and arise organically from the course content and human interactions. They are separate from course outcomes but essential for the learning process and student satisfaction.

Finally, supportive interaction (SI) is concerned with avenues of communication during class and outside of class. It is here that the choice of a learning management system (LMS) is important. Students must be provided with support and instructions on how to interact with the user interface. The LMS also provides the necessary channel to which students and instructors can communicate during class and outside of standard class hours that effects the rate at which feedback and supporting assistance is sent and received.

Mehall (2020) then further describes each type within an online environment summarized as;

Purposeful interpersonal instructional interaction

- Prompt feedback and error guidance
- Perceived direct communication between educator and students

Purposeful social interaction

- Immediacy of feed back
- Body language and gestures
- Technical support

Supportive interaction

- Instructional videos about basics of user interface
- Ease of User interface (UI)
- (UI) support
- Tools to assist course content

4. Purpose of development

The intent behind the development and subsequent case study of this online learning system was to primarily ground it to the two theories of TPACK and PII and document the hardware and software used in 2020 -2021 at a university in Japan. It presents reasoning behind component arrangements and use and intends to present an example of how to create an online learning environment that closely simulates a traditional student agency focused physical classrooms and Vygotsky's constructivist approach to education. It attempts to map itself to Esfiani and Zamani (2020) tracing of TPAK, and Mehall's (2020), summation of PII.

5. Design

Primary design parameters focused on the student's assumed needs and similarities to a traditional face to face classroom. The secondary consideration was instructor useability in relation to ICT competence. These parameters included;

1. A space where students could interact and complete their assignments
2. Interaction both written, verbal and non-verbal with the instructor
3. Logically ordered and purposeful screens for the students
4. Easy to view across all devices
5. Speed and accessibility of system by the instructor to deliver a smooth learning experience

For educators willing to implement new and essential ICT technologies, they will require pedagogical class management adjustments, investigations into suitable online environments suited to their teaching philosophy, hardware requirements and the familiarization of educational software such as MS teams. The main hardware components comprised of an x86 intel generation 6 i7, Nvidia GTX1070 graphics card, four monitors, and various input devices. MS Teams was chosen as the institutions educational software and provided a friendly and easy to use user interface (UI) for students to complete tasks online. This software was designed with digital classroom in mind without a steep learning curve on the part of educators and students alike (Amin et al., 2022; Pratama, 2021; Smolinski et al., 2021).

The virtual classroom was presented using video conferencing software such as Zoom, Webex and streaming software such as Open Broadcast Software (OBS) Air Server Connect and MS paint and Maschine 2.0 were also used as tools to simplify and aid student understanding of course material. The combination of the hardware and software systems allowed educators to take on a more constructionist approach to online classroom environments focusing on the students' abilities and needs (Basilaia, 2020).

6. Visual presentation

6.1 Scene design

OBS is an opensource software used to streaming content on platforms like YouTube or Twitch. As illustrated in Fig 1.0, it was used to create four content scenes each with its own design characteristics to provide the following user interfaces;

- Activity and exercise area
- Textbook display/PowerPoints
- Textbook display/PowerPoints and activity exercise area
- Internet access/online translators/Word Documents

Scene designed with different device display capabilities were taken into consideration such as traditional laptops and tablet computers. Scenes borders were sourced from copywrite free images and adjusted for multiple device viewing. Each contained a web camera feed of the instructor at the bottom right (F) and an optional closed caption window at the bottom center with the exception of scene 3.

In Figure 1, scene one was the activity and exercise area. Contained within (A) was the MS teams dashboard and student input area. Figure 2, Illustrates scene two which displayed textbook in PDF format editable with the IOS application, I-annotate or PowerPoints via the air server connect iPad mirror application us. Figure 3 shows scene three. It combined the iPad mirror via air server connect, and the activity and exercise area. It was used specifically to model responses to activities and exercises while simultaneously referring to the textbook or PowerPoint slides. Figure 4 marks scene four. I was used as a multipurpose screen to capture the web browser or online translator when further context on the topic required an internet search or translations. A combination of these four primary configurations could also be made and used at the instructor's discretion.

Figure 1: Scene one: (A) MS teams main display area and student input
(B) Instructor Webcam (C) Closed captions

Figure 2. Scene two: (A) iPad mirroring display (B) Instructor Webcam (C) Closed captions

Figure 3. Scene three: (A) MS teams main display area and student input
(B) iPad mirroring display (C) Instructor Webcam

Figure 4. Scene four: (A) Webtools (B) instructor webcam (C) Closed captions

6.2 Instructor's monitor organization

Four monitors were used in the design each tasked with managing important elements within the system. Monitors were assigned with a specific task as illustrated in figure 5.

Figure 5: Monitor arrangements of instructor's computer

Monitor one was used to view enrolled students in the Zoom/WebEx session and to display screen content to the students using the "pin to center stage" or spotlight option respectively. The instructor's web camera was placed on top of it. Monitor two served at the main content screen viewable by students. All four OBS scenes were displayed here. Monitor three contained MS paint filled in green chromakey. This mode allowed for a red, movable arrow, to guide students to different parts of what was shown throughout all scenes. It was also used as a space for class notes and a whiteboard, internet access and online translators and displayed through scene four in OBS. Monitor four on the bottom, contained the OBS

program. It displayed which scene was in use and a lineup of other scenes, available digital stamps, and audio channel controller.

6.3 Controls and external peripherals

Scene control

Scenes were controlled using a Stream Deck by Elgato. The stream deck has 15 customizable LCD keys on each page to enhance workflow (ref). By using programmable keys, the instructor was able to switch between scenes, control necessary executable programs and display digital stamps as a means of student feedback.

6.4 iPad camera

The iPad camera allowed the teacher to physically demonstrate program specific keyboard shortcuts. The split screen on OBS layout three in figure 2, provided the environment to see the instructors keyboard and the resultant effects of the shortcut keys on the document. This addressed student software and hardware inquiries and digital competence.

6.5 Audio presentation

When lessons required listening activities, MP3 files were sliced into sentences using the music production software Maschine 2.0 and the hardware controller Maschine Mk 2 by Native Instruments. This was especially useful to emphasis particular parts of the wave file contents to repeat certain sections, elicit responses and provide confirmation of answers.

7. Student interaction

Before the course started it was suggested that students use two devices if available. Most students used their main computer or tablet computer for the Webex/Zoom virtual classroom to view the contents and visually interact with the instructor. The secondary device, usually a cellular phone, was used to link up with and input work using an installed version of MS Teams application.

8. Mapping system design to theory and observations

8.1 Technological, pedagogical and content knowledge (TPACK)

Technological knowledge

Device limitations

Device display limitations were considered when visually designing the online environment. Viewable area differences were noticed between IOS and desktop displays. Notably, IOS displays cut about 20% of the viewable area presented in OBS (figure 2- 4).

Audio

Multiple audio channels were added to OBS using the Virtual Audio Cable plugin. This permitted the use of changing and/or mixing the microphone audio channel with the desktop

audio channel when performing listening activities by splicing audio content or viewing content related AV media.

Pre-course requirements and troubleshooting

Students were required to view as pre-course video posted on a dedicated YouTube channel for students to follow. This video contained instruction on downloading, installation and login requirements. During the course, student problems were addressed live using the red chroma key arrow with bilingual verbal instructions.

Simplicity of user interface

The learning curve of MS Teams was relatively short. Important sections of the UI were clearly labeled. Students were able to navigate and be task ready in a timely manner. Students could check their individual progress and deadline submissions.

Closed captions

These were used during PowerPoint presentations. Closed captions allowed for greater understanding of content through listening reading and image association in the presentations. It also assisted students with hearing difficulties. However, the closed captions were language specific and didn't allow for language code mixing.

Pedagogical knowledge

Student motivation

Features in MS teams Assignment-document area indicted when students were logged into the assignment and were actively working on the assignment. The instructor was then able to identify if students were having difficulty either logging on to the system or with the content through the activity indicator on the cursor and on top of the menu bar on MS word.

Positive feedback

Digital stamps were used to indicate approval for attempts to participate in activities. Content and technical error guidance were addressed neutrally. The instructor repeatedly reminded students that the classroom is a *sandbox* where mistakes are solved and learnt from.

Equity

Students with different levels of technology and competence were able to participate in the lesson without fear of falling behind in the course or being negatively subjugated by peers or instructor.

Content Knowledge

Bilingual instructions

Course instructions, error guidance and corrections were verbally communicated in either Japanese or English depending on the students second language acquisition (SLA) ability.

Written corrections were solely done in English as a model guidance.

Split screen display

Split screens were used to guide students and explain the content of the lesson while being able to model answers. iPad projection on the smaller screen contained a PDF of the textbook while the bigger screen contained the student document area to input answers as seen in (figure 2).

Annotations

The instructor was able to error check student work by first verbally informing the student that error checking was taking place. Students were able to see which parts need attention though highlighting and verbal instructions and written solutions.

8.2 Purposeful interpersonal interaction (PII)

Purposeful interpersonal instructional interaction

Instructor presence

The instructor was always present, and, in all scenes, web camera was positioned on the bottom left corner of the view able area across all devices (figure 1). This gave the student the psychological assurance that the instructor was present and aware of the student's progress.

Instructor availability

MS teams allowed for the installation of a mobile application. Application notifications were set to make the instructor available outside class hours between 8am to 10pm 7days a week. Student concerns were address as soon as possible within the chat feature of the application.

Purposeful social interaction

Addressing students

Students were addressed on a first name basis at the very offset of the online class. Enrolment and attendance lists were viewable by the instructor via a separate monitor thus personalizing the class environment and increasing trust between instructor and student.

Simulated direct communication

The position of the instructor's web camera was important to simulate social protocols. When facing directly to the camera positioned on monitor one, the instructor was addressing either the group or an individual. When facing monitor two, the instructor was focusing on the individual assignment or course content.

Non-verbal communication

When students sought the instructor's attention the instructor's name was called accompanied by the physical gesture of raising their hand. Communication from both student and instructor

was performed verbally and non-verbally using universal gestures such as nodding, shaking head, shrugging shoulders, or giving the thumbs up.

Supportive interaction

User Interface (UI) support

The first week of the course exposed the students to the MS teams User interface. By using the chroma key arrow along with verbal bilingual instructions students were familiarized with the MS teams UI. UI support was available for students throughout the course.

Use of World Wide Web

Course content was supplemented using the worldwide web made possible by scene four (figure 4) web searches and translations tools were used to enhance learner understanding of the content.

9. Student survey

A survey was administered to students to assess the overall satisfaction of the course. There were 91 respondence with 45.1 percent in second year and 53.8 percent in second year. Most students had access to more than one device either a desktop platform or mobile device. 67 percent used their PC to access the video conferencing software and mobile device for MS Teams interaction while 36.7 percent used their mobile device to access the video conferencing software and PC for teams. Please see appendix for tabulated results.

9.1 Ease of Use

This part of the questionnaire related to the learning curve of MS teams.
How easy was it to do the following after 4 weeks into the course?

1. Signing into the system
2. Navigating the system
3. Accessing course material
4. Submitting assignments

Signing into the system 41.8 percent said it was very easy, 41.8 percent easy, and 12 percent easy. Accessing course material, navigating the system, and summitting assignments yielded a majority of easy followed by very easy and slightly easy. This suggest that the time required to become fully accustomed to using the system with assistance from the teacher was within acceptable limits of the course duration of 15weeks.

9.2 Visual design

The following was related to the visual design of the online course. When asked about the clarity of text and images, Most respondents answered yes at 87.8 percent while 12.2 percent answered no. Respondents who answered no, may have been due to the screen size of their mobile device if they use it to access the video conferencing software as well as the data transfer rate of their internet service provider.

On the use of multiple screens help to understand assignments more, 99 percent of the respondents agreed that the use of multiple scenes was beneficial to their understanding of the course content. The most used scenes were 1 and 2 (figure 1 and figure 2). These scenes were used to read over the information in the textbook while inputting answers.

9.3 Feedback

The main issues with online classes were the issues of timely and meaningful feedback.

MS Teams had the live feedback function built into the software. The following items then unpack some reactions to the live feedback and the students' feelings in terms strengthening personal confidence and establishing a trust relationship between the students and instructor.

The item, did real-time corrections feedback using teams and zoom help you correct mistakes and understand the course? Generated a 46.2 percent strongly agree and 41.8 percent agree response. This marked the importance of providing timely and immediate responses to student course content to increase the efficacy of their learning.

The next item, did real time feedback make you feel comfortable knowing that the professor was always checking and assisting you with your assignments during class? Provided insight into the student's psychological needs and dependance on instructor presence. 47 percent strongly agreed, and 41.1 percent agreed. The visual design of having the instructors webcam viewable at all times and the ability to interact with the students verbally, non-verbally, and written, in real time, reaffirmed the students were in a safe and controlled learning environment where mistakes are accepted, corrected and understood.

The last Item regarding feedback, did real time feedback help create a stronger student teacher relationship, addressed the face-to-face simulation of having the teacher present and establishing a human relationship with the teacher. The pedagogical approach of authoritative constructivism helped to create trust between both parties. Students we comfortable to ask questions and remain on task without the teacher chastising the student with negative commentary. It further elicited impressions from the students that the instructor was competent in the subject area well enough to explain at any stage of understanding.

9.4 Instructor ICT competence

The results of instructor ICT competence indicated that there is a direct link to the quality of the course design and approach. With an overall result very good or good knowledge, students felt comfortable knowing that the instructor was skilled in not only the course content but also the technical aspect of the class, alleviating apprehension from the student allowing them to concentrate on learning the course material.

9.5 Course satisfaction

Lastly How satisfied are you with the format of the class? Yielded 45.1 percent very satisfied, 46.2 percent satisfied, and 8.8 percent slightly satisfied. The results were overwhelmingly positive however, curriculum design should also be taken into consideration in that it may or may not have confidently included prominent ICT usage by students which could have led to the 8.8 percent slightly satisfied result.

10. Limitations

The student survey proved to be a limiting factor in the study. While it did achieve an insight into student satisfaction, A mapping of the survey to TPACK and PII using statistical analysis would have yielded more in-depth insight into the efficacy of the technological and pedagogical approach taken by the instructor. This would have allowed for reductions or additions in future designs to improve its effectiveness as an educational tool and medium of delivery.

11. Conclusion

The design of the online class was to demonstrate a more ICT intensive delivery on digital classes during the covid 19 pandemic. It attempted to address student satisfaction and to justify the financial impact of full-fee tuition.

Instructor self-reflection and empathy towards the student was at the heart of the study. By placing oneself in the student's position and then designing a medium with technological pedagogical and content knowledge, it is hoped that it will contribute to the field of ICT and online delivery methods by providing an example of what is possible. By this, professional development   initiatives can collaborate using this study as an example to bespoke future online classes through the awareness and importance of ICT, TPACK and PII and train educators both in the present and future to deliver quality education.

Appendix

Ease of use

	Very easy	Easy	Slightly easy	Difficult
Signing into the system	41.8	41.8	12.1	4.4
Accessing course material	35.2	42,9	22.0	0
Navigating the system	36.7	42.2	20	1.1
Submitting assignments	39.6	39.6	15.45	5.5

Visual design

	Yes	No
Were all images and text clearly visible?	87.8	12.2

	Strongly agree	Agree	Slightly agree	disagree	Strongly disagree
Did the use of multiple screens help to understand assignments more?	31.9	54.9	12.1	1.1	0.0
Were the answer sheets for the course easy to type your answer?	38.5	53.8	6.6	1.1	0.0

Feedback

	Strongly agree	Agree	Slightly agree	disagree	Strongly disagree
Did real time correctio feedback using teams and zoom help you to correct mistakes and understand the course?	46.2	41.8	11	0.0	0.0
Did real-time feedback make you feel comfortable knowing that the professor was always checking and assisting you with your assignments during class?	47.8	41.1	11.1	0.0	0.0
Did real-time feedback help create a stronger student teacher relationship?	40	44.4	15.6	0.0	0.0

Instructor ICT Competence

	Very good knowledge	Good knowledge	Average knowledge	Poor knowledge	Very poor knowledge
Do you thing the quality of an online class is related to the computers kills of the professor?	31.9	54.9	12.1	1.1	0.0
How would you rate the professor's computer skills?	38.5	53.8	6.6	1.1	0.0

Student satisfaction

	Very good	Good	No difference	Poor	Very poor
How would you rate this online class compared to other online classes?	31.9	54.9	12.1	0.0	0.0

	Very satisfied	Satisfied	Slightly satisfied	Dissatisfied	Very dissatisfied
How would you rate the format of this class?	31.9	54.9	12.1	0.0	0.0

References

Alazam, A., Bakar, A. R., Hamzah, R., & Asmiran, S. (2012). Teachers' ICT skills and ICT integration in the classroom: The case of vocational and technical teachers in Malaysia. Creative Education, 03(08), 70–76. https://doi.org/10.4236/ce.2012.38B016

Amin, M., Sibuea, A. M., & Mustaqim, B. (2022). The effectiveness of online learning using e-learning during pandemic covid-19. Journal of Education Technology, 6(2), 247–257.

Aoki, K. (2010). The use of ICT and e-learning in higher education in Japan. International Journal of Educational and Pedagogical Sciences, 4(6), 986–990.

Basilaia, G. (2020). Replacing the classic learning form at universities as an immediate response to the covid-19 virus infection in Georgia. International Journal for Research in Applied Science and Engineering Technology, 8(3), 101–108. https://doi.org/10.22214/ijraset.2020.3021

Caldwell, M. (2020). An investigation into the perceptions of Japanese university educators on the use of ICT in an EFL tertiary setting. Computer-Assisted Language Learning Electronic Journal, 21(2), 1–16.

Clark, K., & Silsbee, S. (2021). An analysis of the development of an online language learning program. Josai International University Bulletin, 29(2), 165–178.

Copriady, J. (2015). Self-motivation as a mediator for teachers' readiness in applying ICT in teaching and learning. Procedia - Social and Behavioral Sciences, 176, 699–708. https://doi.org/10.1016/j.sbspro.2015.01.529

Esfijani, A., & Zamani, B. E. (2020). Factors influencing teachers' utilisation of ICT: The role of in-service training courses and access. Research in Learning Technology, 28(0). https://doi.org/10.25304/rlt.v28.2313

Hata, A. (2020, April 22). Japan's students left behind as world embraces online classes. Nikkei Asia.

Hayes, D. (2007). ICT and learning: Lessons from Australian classrooms. Computers & Education, 49(2), 385–395.

Koehler, M., & Mishra, P. (2009). What is technological pedagogical content knowledge (TPACK)? *Contemporary issues in technology and teacher education*, *9*(1), 60-70.

Mehall, S. (2020). Purposeful interpersonal interaction: What is it and how is it measured? Online Learning, 24(1). https://doi.org/10.24059/olj.v24i1.2002

Miller, R., & Kumar, S. (2022). Analysis of faculty use and perceptions of ICT: Planning for effective professional development at a Japanese HEI. SN Social Sciences, 2(8), 1–18. https://doi.org/10.1007/s43545-022-00454-0

Mumtaz, S. (2000). Factors affecting teachers' use of information and communications technology: A review of the literature. Journal of Information Technology for Teacher Education, 9(3), 319–342. https://doi.org/10.1080/14759390000200096

Murakami, Y. (2021, June 9). Student to sue university for only offering online courses. The Asahi Shinbun.

Osaki, T. (2021, September). Japan's virus wave shows just how far digitalization of schools still has to go. Japan Times.

Patrick, S. (2008). ICT in Educational Policy in the North American Region. In J. Voogt & G. Knezek (Eds.), International Handbook of Information Technology in Primary and Secondary Education (Vol. 20). Springer.

Pratama, A. (2021). Modification of the technology acceptance model in the use of Google classroom in the COVID-19 era: A case studies in junior high schools. Cypriot Journal of Educational Sciences, 16(5), 2598–2608.

Radkevych, V., Kravets, S., Herliand, T., Radkevych, O., & Kozak, A. (2021). Modern technologies in the development of professional competence in teachers from professional (vocational) education schools. Journal of Physics: Conference Series, 1840(1), 012041. https://doi.org/10.1088/1742-6596/1840/1/012041

Sharma, P. (2010). Blended learning. *ELT journal*, *64*(4), 456-458.

Shoji, K. (2020, November 7). Japan's students struggle to embrace online learning amid Covid-19. Japan Times.

Singh, S. (2021, October 3). Japan, H.K. academics say virtual learning no match for real thing. Kyodo News.

Smolinski, P. R., Szostakowski, M., & Winiarski, J. (2021). Technology acceptance of MS Teams among university teachers during covid-19. 346–361.

Sulaiman, J., & Ismail, S. N. (2020). Teacher competence and 21st century skills in transformation schools 2025 (TS25). *Universal Journal of Educational Research*, *8*(8), 3536-3544.

Tallvid, M. (2016). Understanding teachers' reluctance to the pedagogical use of ICT in the 1:1 classroom. Education and Information Technologies, 21(3), 503–519. https://doi.org/10.1007/s10639-014-9335-7

Wu, R., Yang, W., Rifenbark, G., & Wu, Q. (2022). School and Teacher Information, Communication and Technology (ICT) readiness across 57 countries: The alignment optimization method. Education and Information Technologies. https://doi.org/10.1007/s10639-022-11233-y

Yacob, A., Baharum, Z., & Hamzah, W. M. A. (2020). ICT integration to support online learning during the covid-19 outbreaks. International Journal of Advanced Trends in Computer Science and Engineering, 9(1.4), 192–197. https://doi.org/10.30534/ijatcse/2020/2891.42020

Competences 4.0 As Resilience Factors in Educational Project Management During COVID-19

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

The Covid-19 pandemic affected all aspects of human life and education systems became one of the spheres most severely disrupted. The international dimension of education, and especially Erasmus+ Programme – the European Union initiative supporting the development of competitive skills and competences among pupils, students, adults, teachers, academics and professionals – was also affected. International mobility projects were either stopped or their implementation was significantly hindered. This paper presents the results of Authors' own study on 990 Erasmus+ project leaders who were carrying out their projects during the peak of the pandemic in Poland in 2020. The Authors discuss the role of 4.0 competences (digital and technical competence, managerial competence, cognitive competence, social and psychosocial competence) of adult professionals in the implementation and assuring sustainability of projects under Erasmus+ Programme. The aim of the research was to study whether those competences are able to become resilience factors and to empower Erasmus+ project leaders in sustaining their international cooperation in the times of global crisis, widespread online learning and common project disruption or cancellation. The research hypothesis assumed that the above-mentioned competences might increase resilience and help project leaders to carry out and complete their projects. The Authors also show that project leaders' high 4.0 competences might constitute a sort of protective shield for functioning in a globalized, digitalized and drastically changing environment, which demands fast and effective adaptation to new challenges.

Keywords: Competences 4.0, Competitive Skills, Resilience, Sustainability, Project Management, Erasmus+

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Introduction

The current era is characterized by the rise of global connectivity and increased use of advanced technology and media that is accessible to almost anyone in any part of the world (Future World Skills 2020 Report, 2019). The World Economic Forum predicts that up to 47% of jobs will become automated in the next 15 years, and the Covid-19 pandemic has only accelerated the transition to a digital-based education and work environment. This fast-changing environment, referred to as the 4th industrial revolution, requires individuals to have updated skills and competencies in order to participate fully in modern society and tackle challenges such as the global pandemic, climate change, migration crisis, and youth unemployment (Conclusions of the World Economic Forum, 2017).

These competencies, according to the World Economic Forum, are referred to as 4.0 competencies and can be divided into digital and technical, managerial, cognitive, and social and psychological competencies. They include literacy, multilingual skills, mathematical abilities, scientific knowledge, digital skills, personal and social development, learning, citizenship, cultural awareness, entrepreneurship, and more.

Governments around the world are taking various initiatives to enhance the development of these competencies among their citizens. One such initiative is the Erasmus+ program, an European Union scheme designed to address societal challenges such as high unemployment rates, particularly among young people, social marginalization, and low skill levels (Erasmus+ Programme Guide, 2020). The program aims to create more inclusive and cohesive societies that allow citizens to play an active role in democratic life. The Erasmus+ program offers international mobility opportunities for pupils, teachers, students, academics, professionals, and youth workers through projects such as exchanges, trainings, and cooperation activities. These projects follow a specific life cycle and help promote common European values, foster social integration, and enhance intercultural understanding. The program is also an effective tool for promoting inclusion for individuals from disadvantaged backgrounds, including newly arrived migrants.

Research rationale a theoretical background

The purpose of the research described in this article was to investigate how Erasmus+ project leaders adapted and managed their projects during the COVID-19 pandemic. The main questions the research aimed to answer were:

- What competencies do the project leaders' believes are important for managing Erasmus+ projects?
- Which competencies are considered particularly crucial for managing Erasmus+ projects during the pandemic, according to project leaders?
- Which of the three groups of competencies is considered most important for managing Erasmus+ projects?

The research was conducted among 990 Erasmus+ Polish project leaders from various sectors (public, non-government and private) who had carried out Erasmus+ projects during the pandemic. The data was collected through an anonymous online survey (70 questions, both closed and open-ended) and the data collection took place over a period of five weeks in December 2020.

The research is based on two management theories, Taylor's and Le Chatelier's. Taylor's system emphasizes a scientific approach to work, proper training, cooperation between managers and workers, and shared responsibilities (Taylor, 1912). This theory aligns with the nature of Erasmus+ projects, which focus on distributing tasks based on expertise and promoting cooperation. Le Chatelier's system, a cycle of goal-setting, planning, resource acquisition, implementation, and evaluation, mirrors the life cycle of Erasmus+ projects (Le Chatelier, 1926). Additionally, the Polish perspective of Adamecki's rules of organization function, which emphasizes the division of responsibilities, specialization and complementarity of units, and harmony among them, also aligns with the management of Erasmus+ projects, where the proper mix of responsibilities and expertise among project partners is crucial for successful project assessment (Adamecki, 1970).

Research results

Out of the 990 project leaders who participated in the survey, 816 implemented their Erasmus+ projects between March and November 2020, during the peak of the COVID-19 pandemic in Poland. The majority of respondents, 80%, were from the public sector, while non-governmental organizations and private sectors made up 13% and 7% respectively. The majority of projects implemented during the pandemic had 1 to 3 international partners, with 16% of the project leaders working with 5 or more international partners. 26% of the respondents stated that they coordinated up to 3 Erasmus+ projects at the same time during the pandemic. 32% of the respondents were the main coordinators of their projects, while 51% joined an existing partnership. The research studied the self-perceived competences of the Erasmus+ project leaders, including digital and technical skills, managerial skills, cognitive and reasoning abilities, and social and psychosocial skills. The reliability of each of these dimensions was measured using Cronbach's Alpha and only one dimension, critical thinking, did not meet the reliability criteria (value of 0.7 or higher). The highest reliability was recorded in the use of computers in everyday work (0.91), while the lowest reliability was in critical thinking (0.55).

The profile of average level of competences is presented in the Table 1.

Table 1. The Erasmus+ project leaders' competence profiles

Competences	Dimensions	Average level (scale 1-5[1])
Digital and technical	Use of computer in everyday work	4.37
	Work with online documents	4.18
Managerial	Cooperation with people	3.77
	Team coordination	3.86
Cognitive and thinking	Pro-activeness, innovation, openness to challenges	3.96
Social and psychosocial	Relations and emotions	3.94
	Adaptability and managing stress during the pandemic	1.74
	Maintaining contacts, cooperation	3.96
	Communication	3.63

Source: own work based on research results. First published in: Proceedings of the 25th World Multi-Conference on. Systemics, Cybernetics and Informatics: WMSCI 2021

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[1] Scale 1-5, where 1 is the lowest score and 5 – the highest.

The competencies of Erasmus+ project leaders were found to be highest in the use of computers and online work, followed by cognitive and managerial competencies, and cooperation with others. The lowest rated competency was adapting and managing stress during the pandemic. The scores were slightly higher for leaders who completed their projects successfully, compared to those who suspended or extended them due to the pandemic. This evaluation, however, is based on self-assessment by the leaders, and thus should be taken with caution. Nearly 72% of the project leaders reported that they had to make significant changes to their projects as a result of the pandemic, while another 22% made minor adjustments. Only 3% claimed no changes were necessary, and 3% answered "I don't know". Out of the project leaders who participated in the study, 62% were only able to complete less than half of the originally planned activities due to the pandemic. There was a statistically significant difference in the level of managerial competencies, specifically in team coordination, between leaders who carried out less than 25% and those who completed more than 75% of their activities (see Table 2).

Table 2. Relation between the sustainability of Erasmus+ projects and the level of managerial competence of their coordinators

Indicator question from the questionnaire	%	N	The level of managerial competence in the dimension of team coordination
In your opinion, to what extent the project activities conducted during Covid-19 pandemic were implemented successfully?	Maximum 25%	387	3.78
	Between 75% and 100%	222	4.03

Source: own work based on research results. First published in: Proceedings of the 25th World Multi-Conference on. Systemics, Cybernetics and Informatics: WMSCI 2021

Additionally, project leaders who had lower levels of stress and uncertainty and better adaptability skills tended to have higher average levels of cognitive, managerial, and digital competences, with the exception of managerial competence in terms of working with others. Finally, the older age group (46 and above) showed a lower average score for social competence in the area of adaptability and stress management, indicating that it may have been harder for them to deal with the pandemic than for those under 46.

Conclusion

The study found that, on average, Erasmus+ project leaders have a high level of 4.0 competencies (according to their own evaluations), particularly in the areas of digital and technical skills and cognitive competencies. In the challenging period of the Covid-19 pandemic, these 4.0 competencies played a role in the successful management of Erasmus+ projects, particularly regarding computer usage and managerial competencies. Additionally, the study revealed a relationship between stress and efficiency in implementing Erasmus+ projects during the pandemic.

References

Adamecki, K. (1970) O nauce organizacji Wybór pism [*The learning of organisations*]. Warszawa: PWE, Poland.

Erasmus+ Programme Guide 2020.

Future World Skills 2020 Report (2019), OECD, Paris, France.

Poszytek, P., Fila, J., Jeżowski, M., (2021), The 4.0 competences as facilitators in the realization, management and sustainability of Erasmus+ projects in the times of Covid-10 pandemic, in: Proceedings of the 25th World Multi-Conference on. Systemics, Cybernetics and Informatics: WMSCI 2021, Orlando, United States of America.

Taylor, F. W., (1912) The Principles of Scientific Management. New York and London: Harper and Brothers.

World Economic Forum (2017) Conclusions of the World Economic Forum, Davos, Switzerland.

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Dancing With Digital Tools: Discourses on Teaching and Learning in School-Age Educare in Sweden

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

Internationally, there is a growing interest in School-Age Educare and the meaning of aesthetic aspects of teaching and learning in educational settings. Even if dancing is beneficial for human wellbeing and can be understood as both a physical activity as well as an aesthetic expression there are few studies that examine dance in School-Age Educare. Dance as an aesthetic expression can be linked to femininity which adds challenges in educational practice. According to UNICEF, dancing is one way for children to develop imagination, creativity, and social skills. Therefore, this study aims to critically examine the prerequisites for teaching and learning dance in School-Age Educare in Sweden. This study sheds light on discursive constructions made by school-age educators when they reason around dance in their education. The empirical material consists of six semi-structured interviews with eighteen educators in sex School-Age Educares in Sweden. Mainly two discourses of how dance is constructed appear in the material. Firstly, a discourse on dance as a joyful "learning" activity. Secondly, a discourse on "teaching" dance by using digital tools. The results show that it is challenging for the educators to encourage pupils while managing the risk that dance as a feminine activity is consolidated. Moreover, in its current form, there is a shortcoming of possibilities for pupils´to develop their own creativity in dance. Finally, the educators lack the know-how to develop pupils´ dance skills beyond what they already know.

Keywords: Dance, Digital Tools, School-Age Educare

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Introduction

Internationally, there is a growing interest in extended education (eg. Fischer et al., 2014; Bae, 2019) and studies in pupils' school performance, as well as social and emotional abilities (Durlak et al., 2010; Kanefuji, 2015; Zief et al., 2006). The demands on high quality in the School-Age Educare in Sweden have increased with a distinct focus on teaching (Swedish National Agency for Education, 2022). Almost 85 % of all children 6-9 years, took part in School-Age Educare in Sweden during 2021-2022 (Swedish National Agency for Education, 2022). This shows the importance of what is happening during the extended school day. In line with the focus on teaching, the responsibility for School-Age Educare in Sweden was transferred from the Ministry of Social Affairs to the Ministry of Education already in 1996. A holistic, democratic, and lifelong learning is aspirational in School-Age Educare (Andishmand, 2017; SOU 1974:42). To be a qualified educator in School-Age Educare there is a demand of university studies for three years. Despite the importance of School-Age Educare in Sweden, the number of qualified educators is below 25 %. This is a paramount challenge for qualitative aspects in educational settings, and, therefore, our study is relevant to contribute to developing high quality education. The curriculum for School-Age Educare states that creation through various aesthetic forms of expression, for example play, art, music, dance, and drama should be a part of the education (Swedish National Agency for education, 2022). Although, in general, there are few studies that examine dance in School-Age Educare. One study of dance in School-Age Educare by Pereia and Pinto (2017) assert that dance contributes to students' social and emotional development.

Dance has existed in different forms and cultures, and people throughout history have valued dance highly (e.g., Bond & Stinson, 2000; Shapiro, 2008). There is a body of research of dance in other educational settings and dance is well explored. The importance of dance for children's development has been shown in several studies (e.g. (Gard, 2003; Smith Autard, 2002; Svendler Nielsen, 2009; Svendler Nielsen and Burridge, 2015; Stinson, 1989, 2005a, 2005b; Winner et al., 2013). Dance can be understood both as a physical activity and as an aesthetic expression (Gard, 2006; Mattsson, 2016; Mattsson and Larsson, 2021). Dance as an artform involves performing and creating bodily movements and can therefore be a way for children to understand themselves and the world. In several studies it is shown how dance can be linked to femininity (Gard, 2003; Pastorek Gripson, 2016; Risner, 2009; Stinson, 2001). According to UNICEF (2019), dancing is one way for children to develop imagination, creativity, and social skills. Since it is every child's right to participate in cultural activities, dance provides a platform that can meet such needs, and it also contributes to gender repositioning.

Aim and research questions

The aim is to critically examine prerequisites for teaching and learning of dance in School-Age Educare in Sweden.

Research Questions

- How do school-age educators reflect on dance in educational settings?
- What discourses of teaching and learning related to dance in School Age Educare are identified?

Theoretical framework

This study is inspired by discourse analysis and aims to shed light on discursive constructions articulated by school-age educators as they reason around dance in their education. Analyses of discourses are focused on the basic concepts of the petition and their opportunity conditions and relation to power (Olsson, 1999). This means that it is the way something is described or constructed that is in focus. Olsson (1999) states that discourses are constituted by linguistic productions of "truth" and by societal processes in institutions, for example schools. From a discourse analytical perspective, not only what is articulated are of importance, as this would merely provide a description of a theme or area of focus (Bryman, 2020). What is not mentioned, or mentioned to a limited extent, is telling us how a topic is understood (Lindgren, 2006). As discourse is related to power, what is not occurring in the empirical material, can be understood as marginalized or having a low status. Therefore, deconstruction enables identifying and problematizing dichotomic positions. For instance, if teachers regularly mention specific aspects of the education, but seldom mention other aspects, this points toward a shared consensus. In agreement with Lenz Taguchi (2009), we as researchers aim to destabilize taken for granted perspectives and to instead illuminate alternative "truths". Those alternative truths can be regarded as productive, as they point at areas that can be developed and contribute to repositioning the dichotomies, and the hierarchy between positions (Winther Jørgensen and Phillips, 2009). Significantly, alternative truths are paramount as they reveal terra incognita, which can be developed into contributing to the repositioning of dichotomies (Winther Jørgensen & Phillips, 2009).

In line with Potter (1996), we aim to analyze the rhetorical strategies used by school-age educators when they describe dance and its position in their everyday practice. The function of a statement shows how it works as a strategy to create a specific picture of something (in this case dance in school age educare) and the effects it brings to the understanding of the specific topic (Holmberg, 2010: Potter, 1996). In this sense function and effects are related, as the function gives a specific potential effect in meaning making of dance for school-age educators.

Methodology

In this study we have involved eighteen school-age educators, twelve women and six men. Twelve of them had the qualifications required for their positions, five had no university degree at all. Two educators did their university education part time and worked part time at the time of the interviews. In Swedish School Age-Educare, 25 % of the educators have a teacher's degree, which means that our respondents were higher qualified than in School-Age Educare in general.

During the interviews, which were semi-structured and lasted around one hour each, our intention was to connect with the respondents and make them feel respected and safe. Therefore, we spent initial time on relationship-building, and we organized the interviews in a way that gave great freedom to the respondents to reflect on dance in their everyday teaching practice. We made sure that the interviews covered the same themes, but they were carried out in flexible and diverse ways. The pupils were not present during the interviews. The interviews were recorded and transcribed.

Swedish School-Age Educare is often organized within the primary schools' pedagogical setting. The empirical studies took place at six School-Age Educares in South Sweden during

spring 2022. The sizes of the schools differed from 180-750 pupils. The schools were situated in a big city, medium sized cities, suburbs, and villages.

Interview themes

To be able to cover similar areas, we arranged our conversations with the respondents around predetermined themes. They occurred spontaneously in the educators' narratives. If any theme did not occur spontaneously, we encouraged the respondents to share their intentions, experiences, or beliefs, by initiating a question informed by the theme we wanted to explore further together.

The themes were meant to both cover wide and deep perspectives and therefore included: 1) Experiences of and attitudes towards dance; 2) Spontaneous dance among the children; 3) Pedagogical considerations about dance; 4) Documentation and curriculum in work with dance and 5) Development, training and needs for educators to support pupils learning in dance.

As the interviews were semi-structured those themes were not separated, but often intertwined. For example, the educators' experiences of dance (theme 1) were often connected to their own training/lack of training in dance (theme 5). In our analyses though, two discourses emerged that related to children's learning and educators' teaching strategies. Digital tools were often mentioned, and similar tools were used by pupils and educators in all School-Age Educares.

Analytical angels

As we intend to study discourses, a critical and social constructionist perspective (Burr 2003; Davies & Harre', 1990; Lenz Taguchi, 2009; Potter & Wetherell, 2007) has informed our analysis. We deconstruct the empirical material by paying attention to dichotomies that are visible and then organizing the transcriptions in different categories (McQuillan, 2000). In this phase we pay attention to variations in the statements and shared understandings among the respondents (Potter and Wetherell, 2007). When something "is at stake" it is also of importance, for example, when different opinions or conflicting statements are articulated by the respondents.

Categorization is not "a banal naming process" (Potter, 1996) but a process where something is constituted. Our empirical material takes a new shape when it is broken down into pieces. For example, it can become obvious if dance is understood as an aesthetic activity or perhaps a physical activity, by the way dance is described. If it is described mainly as bodily movements, or if it is linked to expression and meaning making, it depends on how dance is connected in narrative chains.

We then re-read all the statements from our interviews and thematized the empirical material in a more narrow way, to be able to picture emerging discourses. Based on repetitions, when a specific theme is occurring on a regular basis in the material, those discourses become visible. Lenz Taguchi (2009) indicates that what is not mentioned, or mentioned to a limited extent, sheds light on differences and shared understanding in the statements, and this also contributes to the discourses. Local expressions, metaphors and even jokes contribute to nuances and specific understanding of the topic that is investigated (Holmberg, 2010).

Ethical considerations

All participating educators, and their principals, received written information about the study before the interviews. The School Age Educares also received oral information adjacent to the interviews, and they gave their informed consent before we began the interviews (Cohen, Manion & Morrison, 2003). They were informed that all participation was voluntary and that they could quit at any time. The study follows the Research Council's guiding principles for social science research (Swedish Research Council, 2017). An important ethical aspect has been to build up a respectful and trustful interview situation (Cohen, Manion & Morrison, 2003), where the respondents feel free to contribute with their understanding and experiences without being judged or dismissed.

Findings

All educators in the six School-Age Educares state that dance is included in their work. They perceive that the pupils show a great interest in dance. All school-age educators talk about dance in a positive way and that dance has a position in the educational setting. Mainly two discourses of prerequisites for teaching and learning of dance in School-Age Educare in Sweden appear in the empirical material. Firstly, a discourse on dance as a joyful "learning" activity. Secondly, a discourse on "teaching" dance as an imitation of movement to digital tools.

A discourse on dance as a joyful "learning" activity

The interviews clearly demonstrate that dance creates joy and well-being in the School-Age Educare. Dance is also motivated because it is fun, and it is not mandatory for the pupils to participate in the activity if they do not want to. The educators explain and motivate dancing to have fun. It is more important for them that the pupils dare to dance than if they get any knowledge from dancing. In one of the interviews, a conversation on the aim of dance in School-Age Educare emerges:

>Interviewer: What do you want "dance" for and what do you want them to know?
>
>Monika: That it's fun
>
>Caleb: Yes
>
>Samir: Yes
>
>Monika: That it's fun to dance
>
>Caleb: That they can move.
>
>Samir: Yes, but it is also to show oneself, to be able to stand in front of others and show. I also think it's important to have self-esteem. As I said, some may be in a group of 2-3 girls and dance secretly but do not dare to come forward. But they dance anyway. That might have been fun to get many pupils to dare. Trying to pep them to come to dance a little. Then they come, but then they disappear again.

Monika: And I probably think more that it's for one's own well-being. That it's fun to dance and it's good for the body, it's good for the brain. To feel music and get to move to the music. It is the feeling you want to convey that it is actually fun and joyful.

In this conversation the educators talk about the importance of daring to dance and that dancing gives a better self-esteem. It is not of importance what kind of dancing it is as long as the pupils are dancing. Monika believes that dance gives joy and that it is fun. Kaleb highlights dance as a physical activity and the importance of children being allowed to move. Samir mentions another dimension of joy that is about daring. He connects the joy-filled activity with having self-esteem.

The goal of dance is articulated with the following elements together: fun, well-being, move, dare to dance, dance anything. What it looks like does not matter if the children are dancing and moving. The educators do not mention the knowledge the pupils get from dancing, or other dimensions of dance. Dance is a joyful "learning" activity and a physical activity that is "good for your body."

The educators emphasize that the pupils like to choose their own music. Tiktok and Just dance are examples when the pupils experience dance as fun:

Erik: Tiktok! There is a great demand. We hear that every break when we are out in the schoolyard. We dance to TikTok. That's where it's interesting. There they make movements that are quite advanced, but we take the pupils into the sports hall for physical education. I cannot.

Madde: Then it's not fun anymore.

When the movements take place voluntarily to music in the schoolyard, they are perceived as easy to perform. But if the same movements are performed in physical education, it is perceived as difficult and boring.

In the statements, most educators categorize themselves as educators who cannot dance. But it is not perceived as something negative because they can still create situations where the children are allowed to dance. The educators take the speaker out on the schoolyard or bring out the projector indoors. However, not all children are attracted to the activity. It is mostly girls who like dancing.

The educators often take a speaker out in the schoolyard and they let the pupils dance their own dances as a voluntary activity:

Monika: We have had a bit of this "Just dance"… You put on and then you should do the same as they do. And it's a lot of fun, but quite difficult sometimes (laughs). But we have had that sometimes. And it's great fun.

Interviewer: Yes

Monika: Like everyone. And even the boys participate (colleagues agree)

The educators in this study explain that they do not have much knowledge in dance. In some cases, the educators argue that it could be an advantage not having knowledge in dance. Instead, the educators act like "ice breakers" to encourage pupils to dance:

> Monika: Yes, but you do not need much education. These trends like Jerusalem and this "Do do do" (sings a popular tune, our remark). It's just hooking up and learning yourself and getting involved. And think it's fun because then the kids think it's fun.

Some of the educators explain that they can act like a clown and that it can help anxious pupils to participate in dance.

A discourse on "teaching" dance by using digital tools

During all our interviews, digital tools were brought up as a dominating resource to teach dance. Tiktok and Just dance, where pupils watch and copy pre choreographed dances were repeatedly described as useful. To work with outdoor dancing during breaks was also a common strategy to offer possibilities for pupils to dance in playful ways without any claim of outcome.

One of the educators, Lena, gives an example of how "Just dance" is used with a projector to show pre-choreographed routines that the pupils can imitate.

> Lena: We have a lot of "Just dance" for example where they follow movements on the white board, which you set up. It's very popular, because it's both their music and it's movements that they recognize. I think very much, when it comes to dance, that they should be something they recognize. Otherwise, it inhibits participation instead of motivating participation.

Both Lena and another respondent, Doris, argue that pupils' musical preferences are of importance. When pupils are familiar with the music, often mainstream music, they appear more encouraged to engage in dancing. If the pupils do not know the music, they tend to be less motivated to take part.

Examples of how popular culture and games, for example *Fortnite*, provides opportunities to "catch" pupils is mentioned by Marie-Louise. Lena agrees with Marie-Louise and shows a specific hip and arm movement (flossa) that have been popular among the pupils. In another interview, similar experiences are expressed as Monica sings a popular tune that also has pre-choreographed moments that are well known to the pupils. All the resources mentioned involve social media and/or digital tools. The pupils have experiences from computer games and social media, which is portrayed as closely connected to dance, and almost a condition required for dance education.

But social media also brings challenges. From a gender perspective, girls that "shake their buttocks" in a stereotypical feminine way are addressed by Sebbe. He reasons around a dilemma, when pupils (often girls) choose gender stereotypical ways to dance known from Tiktok they are engaged, but they "grow up a bit too fast", according to Sebbe. Limited clothing, coolness, and high status (many followers on Tiktok) are examples of how those role models can prevent a wider gender positioning among the pupils. Limited clothing, make-up but also thin body shapes among influencers tend to limit the pupils' (girls) childhood and narrow their understanding of girls/women. Sebbe expresses an insecurity

regarding how he as an educator could deal with this dilemma. He knows that gender equality is a goal in the curricula that he also should take responsibility for addressing, and he states a difficulty when influencers have such a strong impact. On the other hand, Sebbe has also seen possibilities when boys take part in Just dance and follow "feminine characters". Some boys resist at first, but when peers attend, more boys join.

Anette, who has a background as a dance instructor for children in her spare time reflects on her own challenges. To be able to "catch" pupils you have to be "up to date". She problematizes her own limited knowledge regarding social media and digital tools, such as Tiktok and Just dance. She describes that dances pupils perform outdoors during school-breaks and at school-age educare are unfamiliar to her. Probably as she is not familiar with Tiktok, and she sees this as a limitation. She expresses an ambition to give pupils increased opportunities to learn dance, and even if she has sufficient dance skills, those are not mentioned by her as resources. Rather her lack of knowledge regarding digital tools and social media is pictured as limitations. This illuminates the digital tools as a core aspect in dance education, more important than own embodied qualifications.

Monika reflects on pupils' possibilities to improvise and states that the pupils do not improvise a lot. They use set dances that they imitate.

> Monika: It is, after all, a dance. Then you have an organized dance where you dance a Bulgarian folk dance with specific movements. Then you have... There are many kinds of dance. Now I do not think our pupils dance so much improvisation. But…I feel that… I get a little eager to maybe teach the children a little differently, maybe we can look at a little different dance forms.
>
> *Silence*
>
> Khaled: Yes
>
> Samir: Yes (*doubtful*)
>
> *Silence*
>
> Monika: … Ballet. …Then we have improvisation. …Hip hop…

Monica and her colleagues Kahleb and Samirc discuss possibilities to include other genres than those used by the children themselves and to introduce improvisation in their teaching. Khaled also describes that his teaching of dance consists of arranging chairs and putting on music (to play a movement game). Monika, who knows about a few other dance forms from her private life, brings up the idea that educators more carefully design learning situations to challenge children. Lena also mentioned that, as the time is limited for educators to plan teaching, it is easier to use YouTube and Just dance as an easy and pragmatic way to offer dance at all to the pupils. Especially, when the educator lacks bodily knowledge in dance. Monica has a family member with a dance education, and she mentions different genres that could be part of the School-Age Educare, if the educator planned their teaching and had specific goals related to dance as an aesthetic form of expression.

Discussion on learning as tourism or Huaka'i

It has been obvious that dance occurs often in School-Age Educare. The educators describe the dancing as important, popular, and often appreciated by some pupils (often girls). Our aim was to critically examine prerequisites for teaching and learning of dance in School-Age Educare in Sweden. As the results show, two discourses emerged: "A discourse on dance as a joyful "learning" activity" and "a discourse on "teaching" dance by using digital tools". Pupils learning dance is closely connected to the feeling of "having fun". This seems to be the dominating argument for attending and offering dance activities in School-Age Educare. Our interpretation is that doing (spontaneous dancing) is experienced as fun and learning choreography is connected to more boring experiences. Julia Kaomea, (Keynote speaker at IICE 2003 conference, Honolulu 2023) discusses the difference between the concept of "Huaka'i" and "tourism". She points at tourism as a fun way to travel without any troublesome prerequisites. Huaka*i, on the other hand, involves traveling that can be demanding, tiring, and testing one's abilities in an occurring situation during the journey. In the same way, learning can be challenging and provocative to one's understanding on a general level. We see similarities between learning and "Huakai" and between tourism and a fun-filled activity. This is also in line with other research on how to make learning "fun" in a more long-lasting perspective. Stinson (2005 b), for example, points toward the importance of combining play, practice, mastery, and connection to facilitate a long lasting joyful and deeper learning environment. This kind of learning involves demanding AND playful aspects in combination.

Accordingly, there is a visible didactic focus on holistic education in line with the curriculum (Swedish National Agency for Education, 2022) but not any didactical focus specifically on how to develop pupils' dance knowledge, for example, by using improvisation, readymade dances not well known to the pupils, different genres, and the teachers own bodily engagement. Frequently, social media or digital tools (Just dance and TikTok) preclude a more active educator-led dance education, and, therefore, exclude pedagogical support as well as a focus on a variety of content that could be emphasized in dance. The educators tend to limit their own bodily involvement in dance activities, and instead rely on digital tools. However, there are some exceptions, provided by the educators that have experiences from dancing in their spare time. Therefore, it indicates that educators with knowledge in dance can contribute to the development of pupils' dance skills to a greater extent than educators without embodied knowledge in dance.

Dance is offered to all pupils, but more girls than boys participate. As dance can contribute to cross-gender work, this shows a potential for improvement (Gard, 2003; Pastorek Gripson, 2016; Risner, 2009; Stinson, 2005a, 2005b). According to the Swedish National Agency of Education (2022), School-Age Educare has a responsibility to raise awareness on gender equality among pupils, and dance can contribute in this perspective. In one way, simply by offering dance, the educators give a typical "girl activity" space. On the other hand, if gender stereotypical choices are made and are continually performed in movements, group constellations, and genres chosen, the practice may reinforce the very same ideals it set out to challenge. More emphasis could be put into helping children to move outside those dichotomic positions.

In line with the curriculum for School-Age Educare, children's creative skills should be promoted. As most of the dance activities involve imitation pre-choreographed dances, the potential that dance improvisation and composition could contribute with is not utilized.

Furthermore, the educators lack the know-how to develop children's dance skills beyond what the children already know. Instead, the educators act as organizers (providing digital tools, arranging chairs) rather than teaching the children themselves. Finally, dance offered in School-Age Educare tends to follow trends rather than knowledge development in creative aesthetic activities.

Conclusions

The aim was to critically examine prerequisites for teaching and learning of dance in School-Age Educare in Sweden. This study aimed at answering the two following research questions:

- How do school-age educators reflect on dance in educational settings?
- What discourses of teaching and learning related to dance in School Age Educare are identified?

School age educators have a positive attitude towards dance, but the constant statements on dance related to joy can also be a limitation when they reflect on dance in their everyday practice. We have seen that dance as a joyful "learning" activity is a strong discourse among school-age educators. We question if the possibilities to learn dance are utilized, or if the strive to prioritize joyful and fun activities also prevent pupils' learning opportunities in dance. Aspects that challenge pupils in different ways might not occur in the teaching practice because as soon as it is not instantly fun pupils drop out. In this sense, we argue, in line with Kaomea (2023), that pupils become more "tourists" than learners engaged in Huaka'i. Educators in general do not have dance knowledge that can help them to reach out to all pupils and help them to appreciate dance (Smith-Autard, 2011) in more diverse ways. For example, we lack examples on how educators introduce improvisation, different genres, and reflective talks with the pupils on dance, dance history, dance in different cultural aspects, dance as expression, dance as communication, dance as a possibility to get deeper kinesthetic awareness movement skills and more.

The educators have high ambitions when it comes to holistic aspects of the education. However, the lack of their own dance competence limits their possibilities to challenge and motivate pupils. The educators tend to provide digital tools as resources to learn dance when they themselves lack bodily "know how". This becomes evident through both emerging discourses in this study. The educators emphasize the importance of pupils' voluntary participation in the learning activity. Consequently, more girls than boys take part and gender stereotypical movements are influencing pupils' dancing. Pupils are left alone to imitate Just dance or Tiktok rather than creating dance themselves, and the educators typically do not involve themselves physically in the dancing. Pupils do not get subject specific support and they are not challenged by the educators to develop new embodied knowledge or appreciation for dancing.

References

Andishmand, C. (2017). *Fritidshem eller servicehem? En etnografisk studie av fritidshem i tre socioekonomiskt skilda områden*. (Doktorsavhandling). Göteborgs universitet.

Bae, S. H. (2019). Concepts, Models, and Research of Extended Education. *International Journal for Research on Extended Education*, *6*(2), 153–164.

Burr, V. (2003). *Social Constructionism*. Routledge.

Burridge, S. (Ed.). (2015). *Dance Education around the World. Perspectives on Dance, Young People and Change.* Routledge.

Bond, K., & Stinson, S. (2000). "I feel like I'm taking off!": Young people's experiences of the superordinary in dance. *Dance Research Journal, 32*(2), 52-87.

Bryman, A (2020). *Samhällsvetenskapliga metoder.* Upplaga 3. Liber.

Cohen, L., Manion, L., Morrison, K. (2003). *Research Methods in Education. 5th Edition.* Routledgefalmer.

Davies, B., Harre', R. (1990). Positioning: The Discursive Production of Selves. *Journal for the Theory of Social Behaviour, 20*(1), 43-62.

Durlak, J. A., Weissberg, R. P., & Pachan, M. (2010). A metaanalysis of afterschool programs that seek to promote personal and social skills in children and adolescents. *American Journal of Community Psychology*, *45*(3), 294–309.

Fischer, N., Radisch, F., & Schüpbach, M. (2014). International perspectives on extracurricular activities: Conditions of effects on student development, communities and schools – Editorial. *Journal for Educational Research Online*, *6*(3), 5–9.

Gard, M. (2003). Being someone else: Using dance in anti-oppressive teaching. *Educational Review, 55*(2), 211–223.

Gard, M. (2006). Neither flower child nor artiste be: Aesthetics, ability and physical education. *Sport, Education and Society*, *11*(3), 231–241.

Holmberg, K. (2010). *Musik- och kulturskolan i senmoderniteten: reservat eller marknad?* (Doktorsavhandling). Musikhögskolan i Malmö.

Kanefuji, F. (2015). Evaluation of schoolbased afterschool programs in Japan: Their impact on children's everyday activities and their social and emotional development. *International Journal for Research on Extended Education*, *3*(1), 11-12.

Kaomea, Julie (2023). *Hidden Hawai'i: A Huaka'i through the Native Realities and Future Imaginaries behind the Touristic Sheen of Our Island Home.* Keynote, IICE Honolulu, 4 January, 2023.

Lenz Taguchi, H. (2009). *In på bara benet – En introduktion till feministisk poststrukturalism.* Stockholms universitetsförlag.

Lindgren, M. (2006). *Att skapa ordning för det estetiska i skolan- diskursiva positioneringar i samtal med lärare och skolledare.* (Doktorsavhandling). Art Monitor. Göteborgs universitet.

Mattsson, T. (2016). *Expressiva dansuppdrag: Utmanande läruppgifter i ämnet idrott och hälsa* (Doktorsavhandling). Idrottsforum.org.

Mattsson, T., & Larsson, H. (2021). 'There is no right or wrong': exploring expressive dance assignments in physical education. *Physical Education and Sport Pedagogy, 26*(2), 123-136.

McQuillan, M. (2000). Five strategies for deconstruction. In M. McQuillan (Ed.), *Deconstruction. A Reader*. Routledge.

Olsson. U. (1999). Att läsa texter med Foucaultinspirerad blick. I C. A. Säfström & L. Östman (Eds.), *Textanalys* (s. 222-236). Studentlitteratur.

Pastorek Gripson, M. (2016). *Positioner i dans- om genus, handlingsutrymme och dansrörelser i grundskolans praktik.*(Doktorsavhandling) Art Monitor, Nr 61. Göteborg: Göteborgs universitet.

Pereira, N. S., & Marques Pinto, A. (2017). Including educational dance in an afterschool socioemotional learning program significantly improves pupils' selfmanagement and relationship skills? A quasi experimental study. *The Arts in Psychotherapy*, *53*, 36–43.

Potter, J (1996). *Representing Reality. Discourse, Rhetoric and Social Construction*. Sage publication Ltd.

Potter, J & Wetherell, M. (2007). *Discourse and social Psychology: Beyond Attitudes and Behaviour.* SAGE Publications.

Risner, D. (2009). Challenges and opportunities for dance pedagogy: Critical social issues and "unlearning" how to teach. *Congress on Research in Dance Conference Proceedings, 41*(S1), 204–209.

Shapiro, S. (2008). *Dance in a World of Change: Reflections on Globalization and Cultural Difference*. Human Kinetics.

Skolverket (2019). *Läroplan för grundskolan, förskoleklassen och fritidshemmet*. Stockholm: Skolverket.

Smith Autard, J. M. (2011). *The Art of Dance in Education*. 2nd ed. A.& C. Black.

SOU 1974:42. *Barns fritid. Fritidsverksamhet för 7–12 åringar.*

Stinson, S. W. (1989). Creative dance for preschool children. *Early Child Development and Care, 47*(1), 205–209.

Stinson, S. W. (2001). Choreographing a life: Reflections on Curriculum, Design, Consciousness, and Possibility. *Journal of Dance Education, 1*(1), 26–33.

Stinson, S. W. (2005 a). The Hidden Curriculum of Gender in Dance Education. *Journal of Dance Education, 5*(2), 51–57.

Stinson, S. W. (2005 b). Why are we doing this? *Journal of Dance Education, 5*(3), 82–89.

Svendler Nielsen, C. (2009). *Ind i Bevægelsen: et perfomativt fænomenologisk feltstudie om kropslighed, mening og kreativitet i børns læreprocesser i bevægelsesundervisning i skolen*. Institut for Idræt, Københavns Universitet.

Svendler Nielsen, C., & Burridge, S. (Eds.). (2015). *Dance Education around the World. Perspectives on Dance, Young People and Change.* New York: Routledge.

Swedish National Agency for Education (2022). https://www.skolverket.se/publikationsserier/styrdokument/2022/laroplan-for-grundskolan-forskoleklassen-och-fritidshemmet---lgr22?id=9718

Swedish Research Council (2017). *Forskningsetiska principer inom humanistisk-samhällsvetenskaplig forskning.* Vetenskapsrådet.

UNICEF (2019). *The UN Convention on the Rights of the Child.* Available at: https://www. unicef.org

Winner. E., Goldstein, T., & Vincent-Lancrin, S. (2013). *Art for Art's Sake: The Impact of Arts Education. Educational Research and Innovation.* OECD Publishing.

Winther Jørgensen, M., & Phillips, L. (2009). *Diskursanalys som teori och metod*. Studentlitteratur.

Zief, S. G., Lauver, S., & Maynard, R. A. (2006). Impacts of after-school programs on student outcomes. *Campbell Systematic Reviews*. *2*(1), 1–51.

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A Public University and a Small-Town Library: Community-Engaged Learners Foster Literacy, Diversity and Bilingual Identity in Rural Minnesota

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

The United States is an increasingly diverse and multi-lingual society, but when Americans imagine populations of native Spanish or bilingual speakers, they often imagine large urban areas or parts of the Southwest. We happen to live and work in a small, rural community in Minnesota whose Spanish-speaking/bilingual population has increased steadily over the past two decades, creating a significant cohort of young people ideally poised to develop a truly bilingual and bicultural identity. However, the local community and education system face challenges (in terms of funding and expertise) in effectively serving this population in this way. Embracing a key element of our university's mission, we have explored ways to incorporate community-engaged learning strategies into our academic program as a way to both expand students' experience with language and culture and work toward a more inclusive community that can better position this young population to fulfill its bilingual and bicultural possibilities. We have begun regularly assisting our local public library staff in expanding their collection of authentic and high-quality materials in Spanish to give ample opportunities for Spanish-speaking children and teens in the local community to maintain and develop language and literacy skills and cultural connections. At the same time, we involve and empower our advanced and intermediate-level university students in the process of selecting, evaluating, and promoting these materials to the local Latinx community, using tasks and assignments tailored to the needs and abilities of both groups and offering them many of the documented benefits associated with bilingualism.

Keywords: Language, Culture, Community-Engaged Learning, Bilingualism

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Introduction

The project outlined in the following pages came about through the convergence of three key components: a need for program refinement and revision, an institutional mission prioritizing community-engaged learning, and a local community with a demonstrated need that could be addressed via these other components. As faculty members in the Spanish program at the University of Minnesota, Morris, an undergraduate liberal arts campus within the University of Minnesota system, we form part of a small but active campus community as well as a small rural community in the West-Central region of the state, a city whose Spanish-speaking/bilingual population has increased steadily over the past two decades, creating a significant cohort of young students ideally poised to develop a truly bilingual and bicultural identity. However, the local community and education system face challenges (in terms of funding and expertise) in effectively serving this population in this way. Embracing a key element of our university's mission, we have explored ways to incorporate community-engaged learning strategies into our academic program as a way to both expand students' experience with language and culture and work toward a more inclusive community that can better position this young population to fulfill its bilingual and bicultural possibilities. We have begun regularly assisting our local public library staff in expanding their collection of authentic and high-quality materials in Spanish to give ample opportunities for Spanish-speaking children and teens in the local community to maintain and develop language and literacy skills and cultural connections. At the same time, we involve and empower our advanced and intermediate-level university students in the process of selecting, evaluating, and promoting these materials to the local Latinx community, using tasks and assignments tailored to the needs and abilities of both groups and offering them many of the documented benefits associated with bilingualism. We outline in the following the three components of this project, as well as some of the initial outcomes and further plans and challenges for its continuation.

Program Needs and Challenges

Our program offers an undergraduate major and minor in Spanish, one which strives to balance academic rigor with an emphasis on practical skills and applications of language mastery. But as with most language programs, there is a progression of sequenced courses corresponding to student level of proficiency (intermediate to advanced), with what is traditionally considered a "third year" or advanced sequence (though in reality most students who take this level are second or first-year students in the program) that serves as a sort of gateway or checkpoint for students continuing on into upper-division work in the major. Upper-division work in a language includes an emphasis on reading and analysis of increasingly sophisticated literary work in the target language. Given the level of work we expect students to engage in at the upper-division level, it is imperative that our sequenced courses leading to this level, and particularly the advanced sequence, give students ample and diverse experiences to introduce them to and make them comfortable with the types of reading tasks they will encounter as they progress through the program. To this end, we have put in place a sequenced group of classes at this level, which alternate between an emphasis on technical aspects of the language (grammar, composition and conversation) and reading and analysis of literary texts, as outlined below:

1st half fall semester	2nd half fall semester	1st half spring semester	2nd half spring semester
Span 3011	Span 3111	Span 3012	**Span 3112****
Conversation, Composition and Culture	Readings in Spanish I	Spanish Grammar in Practice	Readings in Spanish II
Conversation, Culture, Grammar, Writing Spanish-language films	Short story, poetry, essay Increase confidence and comfort level with reading in Spanish	Conversation, Culture, Grammar, Writing Improved writing technique, strategies and components of academic prose	Strategies for more advanced reading Emphasis on cultural content Short novels in preparation for advanced- level surveys and seminars

Figure 1: Structure of Advanced Language Sequence

The format has served the program well for about a decade now. However, in more recent years students have exhibited a higher level of frustration and a lower level of interest and engagement with some of the readings associated with the literature components of the sequence. There are, we believe, multiple reasons for this trend. In part, student interest and expectations have evolved over recent years, yet the typical assigned texts for this level have not changed much since many of us who are now teaching Spanish-language literature were students ourselves. They are increasingly less accustomed to reading in ways that require the type of attention, engagement and curiosity we ask of them at the advanced level of language study. As instructors, we may justly lament this fact, but at the same time, we need to accept the challenge of finding effective and productive ways of engaging students and preparing them for increasingly sophisticated work in the target language they have chosen to study, as well as prepare them for success in our own program. To this end, we began exploring possible ways to refine the existing classes within the existing program structure.

The ideal place to focus was the second of the literature-based classes in the sequence, Spanish 3112 or Readings II (see above), which serves as the final checkpoint before students continue on to upper-division work. Typically, students in this class are required to read two short novels (preferably from different cultures) that provide the experience of a sustained reading task while not overwhelming them (texts are about 100 pages typically). While every effort is made to keep these reading tasks manageable, students have found the task of high-level reading in Spanish difficult. Those of us who teach world language literature have long espoused the idea of "simplifying the task, not the text" when designing activities and assignments around our materials. Understanding that students struggle with literature that may feel far beyond their level of proficiency, but also aware that the discomfort they feel in such reading assignments is a necessary part of their growth and improvement in their language study, we began to consider alternatives to traditional text assignments that might at least feel more in line with their level of proficiency, and this led to a consideration of the growing genre of young adult literature in Spanish, the thought being that students might feel more of an affinity with texts of this kind, thus raising levels of interest and confidence and enhancing their progress toward higher-level work. After a considerable amount of

exploration, however, we could not identify any one single text that would serve as a worthy candidate for a common reading, one that would ideally appeal broadly to students and provide sufficient linguistic challenge and cultural/historical background to fully serve the goals and objectives of the course. Still, the amount and range of young adult literature that has been produced in recent years was notable, and while it was not yet deemed appropriate to replace more tried and true texts that had been used previously with students at this level of the program, it left us interested in other possible ways to incorporate it into the program. This continued interest in the genre led us to consider a community-engaged project with our local public library, a project that could potentially serve both the needs of our program (and students) and those of our local community and its growing cohort of young bilingual students by assisting the local public library in effectively expanding its collection of quality Spanish-language materials available to the local community. Over the course of several years, the project has further expanded to include both our advanced and intermediate-level courses, and to focus on Spanish-language materials in both the juvenile and young adult categories.

Community-Engaged Learning and the Morris Community

Before we get to the specifics of the project and its implementation, we will explain a bit more of the goals and objectives of the community engagement initiative on the UMN Morris campus and some demographic background on the Morris community. Our campus is fortunate to have a commitment to this endeavor, and a dedicated Office of Community Engagement that "seeks to engage members of the broader community and the University of Minnesota, Morris students, faculty and staff in reciprocal, meaningful course-based and co-curricular partnerships." [1] Within this office there is a program dedicated to community-engaged learning, whose goal is to "plan, implement, and assess service-learning projects that fit course goals and meet documented community needs." The program has developed the following set of learning outcomes, which happen to intersect in meaningful ways with those of the Spanish program:

- Increased understanding of how theory, knowledge, and skills learned in and outside the classroom can be used to meet a range of community needs
- Increased intercultural agility
- Improved leadership skills
- Improved critical thinking and problem-solving skills.
- Increased commitment to and understanding of civic engagement and improved skills and knowledge relevant to effecting social change
- Improved skills that can be applied to careers related to education, community engagement, and community development

With this in mind, we began exploring the possibility of partnering with the Morris Public Library to design a project that could both further the aims of our academic program (and enhance the progress of our students toward reading proficiency) and those of the library to better serve its growing Latinx community and particularly the young readers within this population. A relatively new library director was making a conscious effort to build and enhance the library's holdings of Spanish-language books, and staff members were consciously working to build up the collection of young adult literature in both English and Spanish. What they admittedly lacked, however, were staff members proficient enough in

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[1] See https://students.morris.umn.edu/community-engagement

Spanish language and culture to make good, informed choices on acquisitions, or who even knew where to look for the best options. This was precisely the skill set we could offer the library staff to assist with their project. While much of the initial holdings tended to be Spanish translations of popular English-language books (the *Harry Potter* series, for example), we were in a position to help the library introduce high-quality young adult literature produced in Spanish and reflecting cultural perspectives from the Spanish-speaking world, books that would be of value both to our students and the local community of potential bilingual readers.

One might reasonably wonder why a small town in rural Minnesota might have such a demonstrable need for an enhanced collection of Spanish-language materials, or why there would be so much interest on the library's part to address the needs of this particular population cohort. Despite its location and size, demographic trends over the last two decades have seen a sizeable and noticeable increase in the Latinx population in the community, which now constitutes nearly 6.8% of the population of the City of Morris (compared to 1.48% in 2000) and 8.5% of the population of Stevens County, where we are located. The rate of growth of the Latinx community in our county even over the last decade is striking, as illustrated on this census graph:

Figure 2: Census information 2010-2020

This is a relatively young population of adults aged 18-40, many of whom have found work in the local agricultural economy and are setting down roots and building families in the community. This naturally means a growing population of K-12 students in the local schools who either call Spanish their first language (i.e., who came to the community as children but spoke Spanish in their home countries prior to the transition) or who may speak or at least hear Spanish at home even if their primary language of communication at school and in the community may be English. While there is increasing will in the community to better understand, support, accommodate and welcome these community members, there is often a lack of experience and knowledge to make such efforts successful. The Spanish program at UMN Morris has developed a number of initiatives in recent years to connect students with the community in meaningful ways, including a community ESL program where students serve as instructors, a translation and interpretation program in which students are trained to provide these services in limited settings (such as in parent-teacher conferences at local schools), and a local iteration of the Jane Addams Project, a cross-cultural discussion group that provides Spanish and English-speaking community members with opportunities to

connect with one another and better understand each other's cultures. This community-engaged learning project constitutes an additional opportunity to engage our students in the community in a meaningful way while also enhancing their academic progress in our program.

Project Implementation in the Classroom and the Community

As noted earlier, we first decided to focus efforts on our course Span 3112, the final component in our advanced sequence with an emphasis on reading proficiency and literary and cultural analysis and the development of strategies for sustained comprehension and understanding of lengthier texts, as a challenge in our program and an opportunity for improvement. We considered the incorporation of young adult literature at this level to alleviate some of the frustration with more traditional assigned texts but had been unsuccessful in identifying a single text from the genre that would be a suitable common reading for all students. Then we began to explore alternative ways to incorporate this literature into the course while still maintaining the level of academic challenge and rigor necessary to prepare students for future work in the program and considered possibilities to do this in the context of community-engaged learning and the methods and objectives that entails.

We decided not to replace the more traditional assignments for the course with selections from the young adult genre, but rather to use these as an ancillary assignment to the course, giving students an additional opportunity by the end of the course to compare their level of comprehension and proficiency between the challenging and perhaps frustrating traditional assignments with the somewhat unorthodox selection of young adult literature which, in realistic terms, might better align with their linguistic abilities at the moment. To this end, and with the goal of helping the public library expand its collection of Spanish-language young adult literature, we decided, rather than to focus on one selection, to assign each student their own individual selection, which they would be responsible for reading and evaluating independently by the end of the course. The texts could be assigned randomly, but also in certain cases tailored to the interests and abilities of individual students. Longer selections could, for example, be assigned to students with demonstrated stronger potential, or texts with particular themes could be matched to students with demonstrated interest. The assignment would result not only in an individual achievement (and, ideally, a confidence booster for each student that would reinforce the progress made toward better reading comprehension and proficiency in Spanish) but also a contribution toward the broader collaboration between our program and the library.

To this end, we worked with library staff to identify and adapt existing criteria for evaluating young adult literature [2], and designed materials with which students could rate (according to a number scale) their assigned readings based on these criteria and provide additional commentary to justify their numerical ratings. The work could reasonably be done independently in addition to the more traditional common reading and associated assignments and submitted in a uniform format (in the form of a survey) by the end of the course. This, in turn, would generate useful information and data for use by the library in making thoughtful, informed decisions on the materials to add to the collection and make available at their discretion the evaluation materials or relevant details from these materials to potential readers and/or their families.

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[2] See https://www.ala.org/yalsa/teenreading/teenstopten/tttcriteria

With the success of a pilot program associated with the advanced level 3112 course, in subsequent years we have incorporated different but related assignments in our second semester of the intermediate-level sequence (Spanish 2002). For this component of the project, and in light of the proficiency level of these students, we focus on Spanish-language materials produced for juvenile readers, including picture books for very young readers and lengthier illustrated chapter books designed for beginning readers. These texts are manageable (though not without linguistic challenges) for a typical intermediate-level student, and our assignments are again crafted with the level of the students in mind as well as the usefulness of the results for the local library's use. To this end, intermediate students also have an individually assigned chapter book to read and evaluate (using a common set of criteria and a simplified survey form) by the end of the course, with the aim of making these materials available for use by the library in evaluating their acquisitions or making relevant information available to readers and their families. In addition, and at an earlier point in the semester, these students are also individually assigned simple picture books to read. Their assignment with these selections is to choose a segment of the book that they think would engage the interest of a potential reader, and prepare a short, simple video of 60-90 seconds in which the text of the book appears along with their voice reading the book aloud. These videos (pending student permission) are then shared with the library for use in promoting the materials on their website; meanwhile, students have the opportunity to enhance their vocabulary and comprehension while also focusing on pronunciation and clear communication in the target language (which, of course, they are encouraged to practice and perfect as much as possible before recording). Again, the aim of all of these assignments is two-fold: to offer practical and engaging ways for students to enhance proficiency and increase confidence in their target language (to further our program outcomes), while at the same time providing useful information and guidance to our library, which in turn can better serve the local Latinx community in meaningful ways. In other words, we strive to see our program goals connect with the goals and needs of the local community, and therefore contribute to the institutional commitment of community engagement to enhance the learning experience of our students.

In addition to these practical academic pieces of the project, we also felt it important to create a tangible opportunity for students to interact with the library and local community and showcase the work they had done for the course. Though this piece was not possible during the worst year of the COVID pandemic, it has been a successful conclusion to the project in the years when it has been possible. For this piece, we organize an end of the year event (refreshments included as an incentive) to which community members are invited to learn more about the library and see the new Spanish-language materials on display as well as the student work associated with it. We have also worked with the library on potential reading incentive summer programs (thus far with only modest success). The event also gives the library staff the opportunity to interact directly with current and potential patrons, provide information on the library services, offer library card applications to those who have not yet acquired them, and make it clear that the community matters and that their local library wants to understand in their needs, concerns and interests.

Finally, we also use the opportunity to reinforce what research has shown about the important benefits of bilingualism, by offering concise materials giving a brief overview of the information. These are available at the community event and also shared with the library to be made available at any time. The following handout was prepared by students in the

program, and adapted from Edwards and Newcomb, "Back to Basics: Marketing the Benefits of Bilingualism to Parents":

Figure 3: Example of shared material

These basic principles are applicable to our students as well as the readers and families in our community.

Conclusion

Even as we plan to continue this project for the foreseeable future, we are pleased with its success so far even as we acknowledge the need to further refine our goals and improve outreach strategies. We will need to ensure continued funding for the project as well as faculty support and available time to dedicate to the project. There is further opportunity to expand the materials included in the project, for broader cultural diversity within the Hispanic world as well as diversity of genres (including, perhaps, graphic novels and films). Based on available data from the library, current circulation of Spanish-language materials has been significant but could be improved; we would like to continue working with the library on strategies to promote the Spanish-language collection. Finally, to the extent possible, we would like to collaborate with the local public schools as well as the library for better integration and promotion of the project and its goals. This will take time and effort moving forward, but our project, despite its limitations, has made a demonstrable impact on our students and our community.

References

Edwards, V., & Newcombe, L. (2018). Back to Basics: Marketing the Benefits of Bilingualism to Parents. In Imagining Multilingual Schools (pp. 137-149). Bristol, Blue Ridge Summit: Multilingual Matters.

Kanban Methodology to Assess ESL Students' Learning Process

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

Kanban boards are a visual form of project management very popular among software, Engineering and product development teams, although we claim that its principles can greatly help ESL students learning to perform language tasks with proficiency, as defined by ease, speed, and accuracy of performance, acquired through practice, in order to improve both receptive skills used in understanding; reading or listening and productive skills (speaking or writing). Dividing language into skill areas for teaching and evaluation purposes does not necessarily reflect how language is really used, but it provides a basis upon which students may start building up their proficiency. ESL learning materials have a multi-layered skills approach. This is the reason why Kanban can be applied to teaching/learning of English as a second language. The methodology, originally developed by Taiichi Ohno, a Japanese engineer at Toyota in the late 1940s, is focused on continuous improvement, where tasks are "extracted" from a list of pending actions in a constant workflow. ESL students can be identified with the working teams Ohno had in mind, and the different tasks by each team member can be interpreted as the tasks related to the different language skills. ESL students using Kanban principles may enhance their results in learning English. The Toyota Production System (TPS) has inspired our proposal, which includes the concepts: Jidoka (automation), Poka Yoke (fail-safe), JIT (just-in-time), Kanban (card or token) and Kaizen (continuous improvement), applied to learning English.

Keywords: Kanban Methodology, Self-Assessment, ESL, Kaizen

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Introduction

In this paper I will try to explain why I consider Kanban methodology to be an effective way to evaluate the learning process of EFL students. To do so, I will first discuss some issues about learning English as a second language that will be relevant later. Then I will go more directly into the Kanban method in general and finally I will relate the Kanban methodology to the ESL learner's self-assessment.

English is the most spoken language in the world in terms of number of speakers, slightly ahead of Chinese, at present. In fact, English is the language recognized as official by more countries in the world. Besides, English is widely spoken in a number of countries without being recognized as an official language. Finally, we cannot forget the prevalence of English, with more than 54% of content written in this language, a situation that extend to any techical field, academic writing, etc.

Learning English as a Second Language

Given this reality, it is logical that the English language is a priority objective for many international students who encounter various difficulties in learning it. Among them, the learning of a somewhat erratic grammar, a vocabulary in constant evolution or the simple observation that their EFL learning techniques they have used in their study have not provided sufficient knowledge, which is evidenced in poor pronunciation, inaccurate comprehension when the difficulty level of texts or linguistic situations increases, etc. English teachers, including myself, are looking for new ways to capture the students' interest in order to avoid this. And although at the university level may seem too late, we are still looking for ways for students to broaden their knowledge and acquire skills such as critical thinking or higher order thinking skills, so necessary for their professional performance once the formative stage is over. In short, and despite the adoption of the ECTS credit as a unit of measurement that finally placed the student at the center of the educational process, the learning process is still out of focus.

In the case of learning English as a foreign language, we detect some learning issues. The basis of memory is essential for any linguistic learning and we already recognize different memory types employed in an equally differentiated way to conclude that, in order to move any learned item into long-term memory, the information has to be processed at a deep and elaborated level through meaningful learning. The traditional education paradigm is focused on what students need to learn. Little emphasis, if any, is on training students how to learn. As a result, students focus on memorizing information (collecting dots), and not on processing information, thinking critically, understanding, and meaningful learning (connecting dots) (Toni Krasnic at Biggerplate Unplugged 2016). In a recent publication by Richard Arum and Josipa Roksa, the authors examined whether students are really learning in college. Their study showed that 45% of college students made no significant improvement in critical thinking, reasoning or written communication skills during their first two years of college. Thus, after 4 years, 36% still showed no significant gains in these so-called higher order thinking skills.

If information is simply repeated (collecting dots) it does not penetrate deeply enough. Only information that makes sense and connects with existing knowledge requires thought and is thus associated with long-term memory. After recognizing such processes, some learning strategies can be rated better than others, as Dunlosky points out: interrelated practice,

explanation of concepts by learners are more effective than highlighting and reading, which have traditionally been considered useful. EFL Communicative Language Teaching (CLT) approaches versus the more traditional Grammar Translation Method (GTM).

In this effort to find methodologies that fit better in the current scenario, we reviewed the Kanban methodology, first used in industry since its creation in the fifties by the Toyota engineer Taiichi Ohno and later adapted by teams not only in industrial production but also in the development of IT tools. If you work in services or technology, work can be sometimes invisible and intangible. A Kanban board helps make your work visible so you can show it to others and keep everyone on the same page. Kanban has come a long way from is origins in leacn manufacturing. David Anderson's work has helped defining the Kanban method into the software and services space while Jim Benson and Tonianne DeMaria expanded its applications to unbelievable places. If we look for the element that is of common interest to engineers controlling the industrial process and computer developer teams adopting agile philosophy to optimize their production, Kanban is the buzzword. Adaptive planning and continuous improvement through diverse processes makes Kanban methodology suitable for ESL learning precisely because of its focus on process and the assessment of multiple skills involved in learning a second language. One of the first things you'll notice about a Kanban board are the visual cards (stickies, tickets, or otherwise). Kanban teams write their projects and work items onto cards, usually one per card. For agile teams, each card could encapsulate one user story. Once on the board, these visual signals help teammates and stakeholders quickly understand what the team is working on. Each column represents a specific activity that together compose a "workflow". Cards flow through the workflow until completion. Workflows can be as simple as:

- ❑ To Do
- ❑ In Progress
- ❑ Complete

or much more complex.

Kanban helps to visualize the work, maximize efficiency and improve progressively, elements of great interest in the EFL learning process. The different skills that a EFL learner traditionally needs to address can be identified as active or productive (speaking and writing in the L2) and passive or receptive (reading and listening comprehension). All of them involve different processes in the acquisition of the desired L2 fluency that the Kanban board, either in its digital versions or in the simpler version with colored post-its, can help. Learners may reflect on their learning process and get to take a moving picture of their learning.

But the Kanban methodology does not end with the use of the board, as it is based on a series of principles that Toyota's corporate culture developed in the 1950s and that we will now review regarding their suitability to represent EFL learning process. As we said, the board helps the learner to visualize progress but it can also help in the management of the multiple tasks to be performed to improve specific skills by applying concepts such as work-in-progress limitation, workflow management, quality implementation, etc. If Lean production refers to a technique that helps eliminate waste and inefficiency in the production process Kanban method incorporates lean production elements in the student's learning process eliminating time waste and inefficiency in their progress towards English acquisition.

Transformation from push process (products introduced in the market) to pull process (products are created based on market demands). Instead of following learning methods which framed the student' progress without paying attention to their needs-pull process, using the Kanban method the learning process is enriched as it is based on the student's demands (pull process).

JIT: And we start with one of the pillars of the Kanban method: just in time. The concept of JIT teaching was proposed by Novak in 1999, has developed with ups and downs but after the pandemic it has become fully valid, in view of the use of online teaching during COVID-19 lockdown. The idea that face-to-face class contents are generated at the time of teaching after obtaining prior feedback from the students' home-tasks in a process more recently used in flipped classroom methodology, is enormously attractive for its freshness in the first place, but also for its effectiveness in terms of higher-order thinking developed by the students in this active teaching strategy. Just-in-Time Teaching incorporates active learning approach by moving the "content-transfer" element of the course to pre-class preparation and focusing class time on cooperative problem solving. Thus, JiTT encourages the active learning approaches that promote learning.

Jidoka, which originally referred to process automation with a human touch, applies directly to error detection and further reflection to achieve correction. This quality control process applies the following principles:

- Detect an issue
- Stop
- Fix/Correct the immediate condition
- Investigate the root cause and install a countermeasure

The quality control process is increasingly present in language learning as the learner is more and more frequently in a self-learning situation. Jidoka is subsequently complemented by Poka yoke (mistake-proofing), the eliminating error strategies. Both Jidoka and Poka joke are essential processes for the learner to identify mistakes, their causes and try to seek solutions accompanied in the process either by peers or by their instructor/teacher/other native speakers, etc. Self-assessment is one of the language learning strategies of metacognition which definitely produces.

Kaizen, defined as the synergetic philosophy integrating the response capacity of all profiles in order to face the challenges that arose after the devastation caused by WWII that in our improvement process implies the inclusion of all skills at different levels that each EFL student shows.

Neuroscience has allowed us to distinguish two processes when dealing with language: learning, which is conscious, needs formal instruction and produces knowledge and acquisition which is an unconscious process and poses student-centered activities. Although our classes are becoming more and more student-centered, the process of correction and evaluation of the student still continues to be teacher-centered, producing a situation in which the correction comes from the teacher and not from the student's own learning process.

If we try to reproduce the process of L2 acquisition, it is essential that the learner controls the process. And obviously it is a process that is not free of difficulty, since our students do not learn in a bilingual environment and their access to L2 occurs in many cases with non-native

speakers. A case in which we are immersed right now. I am Spanish, speaking English and in the audience there are people from multiple nationalities and we communicate in English.

Kanban is therefore a tool that can help students find a balance between classroom work demand and their availability. It provides the student with an overview of their learning process and stimulates the flexibility inherent in a process of progressive improvement. Kaizen can easily be integrated into the implementation of the four skills of English learning (Reading, Writing, Listening and Speaking). By using the kaizen process you are not only planning what you need to do but also checking what you have done to ensure progress towards successful learning.

Conclusions

Lord Kelvin stated that we cannot improve something that cannot be measured. With the strategies provided by Kanban-Kaizen.

I believe that the internalization between Kanban and kaizen makes possible a simpler assessment that eliminates the need to fit into overly general rubric descriptions that mean nothing to the student: familiar vocabulary means the same for a telecom engineer as it does for a teenager? The Council of Europe published in 2001 the following table that we could discuss: Is it an understandable and applicable tool for the student in his evaluation?

Self-assessment is the essential element that is gaining more and more strength in second language learning. The centrality of the learner in the teaching-learning process culminates in his/her self-management of the result and the objective evaluation of it. As I have tried to show, in the old paradigm the learning process is supposedly controlled by the teacher whereas in language acquisition it is the learner who controls the process sometimes unconsciously. But in a student-centered learning paradigm of a ESL student the learning process is intentional and the learner should control the process.

The Kaizen philosophy as a consequence of a systematic application of Kanban principles provides self-assessment tools to students. EFL learners have traditionally used their mistakes to improve their learning strategies but the structure provided by Kanban and Kaizen approaches as they can find a balance between classroom work-demand and student's availability. It also provides an at-a-glance view of the student's work allowing a kick-start and workflow view. And, finally, the flexibility of a continuous improvement process perfectly matches the learning process.

References

Arum,R., Roksa, J.(2011). *Academically Adrift: Limited Learning on College Campuses*. University of Chicago Press.

Anderson, D.J. (2010). *Kanban: Successful Evolutionary Change for Your Technology.* Blue Hole Press; Blue Book Ed.

Benson, J. Tonianne DeMaria B. (2021). *Personal Kanban: Mapping Work/Navigating Life*. CreateSpace Independent Publishing Platform.

Dunlosky , J. , Rawson , K.A., Marsh , E.J., Mitchell, J.N. , Willingham, D.T. (2013). Improving Students' Learning with Effective Learning Techniques: Promising Directions. From *Cognitive and Educational Psychology* https://pubmed.ncbi.nlm.nih.gov/26173288/

Gavrin, A., J. Watt, K. Marrs, and R. Blake. 2004. Just-in-Time Teaching (JiTT): Using the Web to enhance classroom learning. *Computers in Education Journal 14* (2): 51-59.

Monden, Y. (1998). *Toyota production system: An integrated approach to Just-in-Time*. Norcross, GA: HE Press.

Novak, G. M., E. Patterson, A. Gavrin, and W. Christian. (1999). *Just-in-Time Teaching: Blending active learning with Web technology*. Upper Saddle River: Prentice Hall.

Oxford Reference (n.d). *Lord Kelvin 1824–1907 British Scientist*, https://www.oxfordreference.com/display/10.1093/acref/9780191826719.001.0001/q-oro-ed4-00006236;jsessionid=622CE14E0E931BD0DFC51C3C4D7C614F

Toni Krasnic, T. (2016). at *Biggerplate Unplugged*. https://www.biggerplate.com/Events/biggerplate-unplugged-new-york-2016.aspx

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Hidden Academic Failure:
The Course Experience of International Graduate Students in Japan

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Abstract

More attention should be given to international graduate students enrolled in Japanese Universities. This study investigated the course experience of six international graduate students at one top Japanese University with PAC analysis and semi-structured interviews. As a result, international graduate students still have many challenges and dissatisfaction in their course-learning experience. The challenge and dissatisfaction in international graduate students' course experience could be listed as impractical syllabus, limited choice, impractical course content, inappropriate pedagogy, language barrier, unpleasant collaborative learning, useless assignment, barely feedback, and unclear assessment standard.

Keywords: Course Experience, EMI, JMI, International Graduate Students, Japan

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Introduction

Driven by (1) the declining birthrate and an aging society; (2) The emergence of world university rankings; (3) The increasing student mobility; (4) New competitors in other Asian countries, the Japanese government announced 300,000 international students plan in 2008 (Ota, 2020). This plan aims at recruiting more excellent international students to Japanese higher institutions of higher education and helping them settle in Japan after graduation as highly skilled human resources (Fukushima, 2017). To support the 300,000 international student plan, the Japanese government has also launched various top-down initiatives, such as Global 30 (2009), and the Top Global University Project (2014), to attract more English-speaking international students and strengthen cooperation with outstanding overseas universities (Ota, 2020). Shimauchi (2018) has identified three primary stakeholders in the internationalization of Japanese higher education. The three primary stakeholders are the Japanese government, Japanese higher education, and students included by international students and domestic students. Shimauchi (2018) also stated that international students greatly influence other stakeholders. Those international students could be expected to enhance domestic students' international and intercultural competency and help Japanese universities move higher on very competitive global rankings (Shimauchi, 2018). Moreover, these students stand to become highly skilled human resources that can sustain Japan's economic position in an increasingly globalized and competitive world market (Ishikawa, 2009). To study more successfully and get a good job in Japan, international students must have good professional and intercultural abilities.

However, little attention has been given to international students' course experience related to their professional and intercultural abilities. This research aimed to reveal international graduate students' course experience and learning outcomes in specialized courses at one flagship Japanese university.

Research method

Participants

Among international graduate students who studied in Japan for one year to four years, six graduate students majoring in various subjects at one top Japanese university were selected for the current study (see Table 1).

Table 1 Demographic Information of the Participants

Name	Country of origin	Language	Gender	Major	Grade	Program
L	China	Japanese-speaking	female	Educational Policy	M2	Master Program
Q	China	Japanese-speaking	female	Educational Informatics	M2	Master Program
X	China	English-speaking	male	Environmental Studies	D1	Doctoral Program

C	China	English-speaking	female	Biofunctional Chemistry	D2	Doctoral Program
F	Indonesia	English-speaking	male	Robotics	D2	Doctoral Program
G	China	English-speaking	male	Robotics	D3	Doctoral Program

Data collection and analysis

The ethical review process was obtained prior to the data collection at the author's university.

Data were collected through two qualitative research methods: PAC analysis and semi-structured, in-depth interviews.

PAC analysis (Naito, 2002) is abbreviated by Personal Attitude Construct analysis. It is a research method for measuring and analyzing the individual structure of attitudes and images from free association. One of the advantages of PAC analysis, it can promote the interviewee's deep reflection in a way that minimizes the intentions and influence of the interviewer (Naito, 2002). This study intended to explore the more comprehensive and reflective course experience of international graduate students. Therefore, PAC analysis and semi-structured, in-depth interviews were regarded as appropriate research methods. The design of questions in the semi-structured interview was based on Biggs' 3P model (Presage-Progress-Product) (Biggs, 1993; 2003).

All the interviews lasted from 120 to 150 minutes and were recorded and fully transcribed. MAXQDA coded transcription of the interview data.

Findings

The results show that the course experience of international graduate students can be divided into [high satisfaction], [dissatisfaction], and [academic challenges] (see Figure 1). In the [high satisfaction] part, six international graduate students highly evaluated the professionalism of teachers, and they thought they were very kind. On the other hand, there are still many [dissatisfaction], [academic challenges] in their learning experience. Moreover, those [dissatisfaction] and [academic challenge] may be related to their actual learning outcomes. However, those issues were hidden because of good final grades with unsolved [dissatisfaction] and [academic challenge].

Figure 1 The course experience of international graduate students

Challenge and Dissatisfaction

The challenge and dissatisfaction in international graduate students' course experience could be listed as impractical syllabus, limited choice, impractical course content, inappropriate pedagogy, language barrier, unpleasant collaborative learning, useless assignment, barely feedback, and unclear assessment.

Impractical syllabus

Student Q and student F stated they needed help getting helpful enough information from the syllabus to choose courses.

> So many courses have similar names that sometimes I get confused. (Student Q)

Student F also mentioned same trouble.

> Moreover, the syllabus sometimes did not provide enough information to help me understand the course's goal or structure. Thus, I need to ask some senior students to give me more details about the course, such as course content, pedagogical approach, assignment, grade assessment, and so on. (Student F)

Limited choice

English-speaking international students have complained that they do not have enough choices when they choose the courses.

> Some courses are only available for Japanese-speaking students, but those courses may be beneficial to my research field. So I could not take them even if I would like to. (Student F)

Student G also stated the same difficulty.

> The specialized courses in English-medium instruction (EMI) are too easy. It's much easier than those specialized courses that are taught in Japanese. This makes me feel dissatisfied. The courses I chose are all taught in English. Moreover, the contents of

these courses are not helpful to my study because they are too simple. I think the course wasted my time since I took nearly one hour from the K campus to the A campus to take the course. I found that the courses Japanese students take are much better than those I take. (Student C)

Impractical course content

Although the course content involved some cut-edge research or meaningful theory, it is hard for the students to connect their previous knowledge with the course content. Moreover, some students do not believe the knowledge they have learned will be applied to their future careers.

Most of the courses are closely related to the teacher's research. Nevertheless, the content of these courses does not necessarily help my research direction, and many of them are outside my body of knowledge. (Student C)

Student G and Student F also stated the same thinking.

It is tough to find any relevance or connection between what I have known and course content. (Student G)

I took many courses, and it seemed like I learned many things. But now I cannot recall any of the content I learned. (Student X)

Student Q also shared the same statement.

And I do not think the content will help me in my future work. (Student Q)

Inappropriate pedagogy

All six students have complained that international students only have a few chances to communicate with teachers and peers due to one-directional class instruction. Student G and Student X stated that the class pace was too fast to understand.

Most teachers only use one directional instruction, read the PowerPoint slides from beginning to end, do not interact with students, and do not ask students to do some collaborative learning such as group discussions. (Student L)

Student Q, X, C, G, F also have the same statement as Student L.

Some courses require a foundation of expertise to be understood. We did not have the prerequisite knowledge, but the teacher just acquiesced that we knew. Often, they start with complicated knowledge. My knowledge of the content is still at the first step, and the teacher has already talked about the 5th step. (Student G)

Even in the same course, the content of each lesson spans very wide and has little relevance to each other. Often, before I understand the content of the previous lesson, the teacher starts talking about the new content already. Also, the teacher does not leave the course materials for the students, so It's tough to learn by myself after the class. (Student X)

Student G also shared the same experience.

Language barrier

Japanese-speaking international students stated that they have some language issues in course learning. On the other hand, English-speaking students said that the teacher could not explain the course content clearly when they used English.

> I understand every word that appears in the sentence, but I cannot understand the meaning of the whole sentence. I think there are two reasons for this: my Japanese is not good enough, and the other is that understanding these contents may require some related prerequisite knowledge that I do not have. (Student L)

Student Q also stated the same difficulty.

> Sometimes, I even cannot understand the assignment. (Student Q)

> There was an inorganic chemistry teacher who had a good course content set. However, he could not communicate well with the students because of his poor English. The course contained lots of professional terminology and mechanics. However, the teacher could not explain the content very clearly in English, and he often used words that did not make sense. So, we were perplexed about his explanation. (Student C)

Unpleasant collaborative learning

Besides student G and student L, the rest of the four students have yet to experience collaborative learning activities with domestic students. Regarding the collaborative learning activities, student L stated that she could have some new ideas through group discussions with domestic students. Student G also stated that the learning outcomes were relatively high. However, student G did not think that he enjoyed the collaborative learning activity due to the ineffective communication and cooperation among group members.

> Although there were four in our group, only the Pakistani international student and I engaged in serious work. The other two members (a Chinese international student and a Japanese student) hardly contributed anything; they were very passive in the collaborative work and demonstrated no interest in putting in any effort. They were silent during our group discussions, preventing us from effectively communicating and cooperating. In the end, the Pakistani student and I did all the work assigned to all four of us. We received the only AA grades in the class, even though I do not think it is a pleasant collaborative learning experience. (Student G)

Useless assignment

Students show less satisfaction in reporting assignments because they need to have a clear goal in academic writing and encounter some difficulty in their writing.

> I do not think the report assignment was beneficial. The topics were not very relevant to the course content taught by the teacher. Simply put, I could have completed the

report without going to class. I knew some students who rarely went to class and got an A. (Student G)

Some courses take weekly report assignments, and each has a small word count. I do not think such assignments are beneficial for my study. I do not spend much time on information gathering and thinking. I am busy completing the assignments, not using them for deeper study or review.   (Student X)

I was encountering some difficulties while researching and writing my report. During the research stage, I often wanted to know whether I was using the correct keywords in conducting searches or whether the information I collected was true and reliable. Moreover, I struggled to determine whether my analysis method was flawed when analyzing the collected information.（Student G）

No feedback

Students also complained that the teachers did not provide helpful feedback on their report assignments, which has brought a negative effect on their study motivation.

After submitting the report, I did not get any feedback except the grade. (Student L)

Student Q, X, C, G, F also mentioned the same thing.

So I had no idea if my report was well written or what needed to be improved and how to make such improvements. (Student Q)

Student G, X also shared the same confusion.

As a result, I put less and less effort into writing reports—I realized the teachers may not be reading our reports very carefully or spending much time or energy on our courses. (Student G)

Unclear assessment standard

All six students stated they needed clarification with teachers' assessment standards.

I had no sense of the teacher's evaluation criteria. I felt that the final grading was more like a black-box operation. Maybe the teachers have their assessment standard in their head, but they did not tell us what it was. (Student G)

Student X also shared the same opinion.

There is a course called [+++ science]. I got a B in that course. This is the only B in my whole course. However, I do not know what his grading standard was. So the grade of B did not improve my understanding or ability or anything at all. (Student C)

I got an A in one course, but I did not understand the course content. (Student Q)

Conclusion

To sum up, the dissatisfaction and challenge of international graduate students can be described as impractical syllabus, limited choice, impractical course content, inappropriate pedagogy, language barrier, unpleasant collaborative learning, useless assignment, no feedback, unclear assessment standard. Students may have some difficulty to set their learning goals with impractical syllabus. Limited choice, impractical course content and useless assignment could lower student's learning motivation. Students may face more difficulties in their course learning and get lower learning outcomes due to the inappropriate pedagogy and language barrier. Unpleasant collaborative learning experience may lead a negative attitude of international students towards intercultural communication. Students may have no idea how to do better and have low self-determination to improve their learning outcomes due to no feedback and unclear assessment standard. Since most graduate students could get high final grades, they may ignore their challenge and remain silent about their dissatisfaction. As a result, the academic failures of international graduate students could possibly be hidden.

Acknowledgment

References

Biggs, J. (1993). From Theory to Practice: A Cognitive Systems Approach, *Higher Education Research and Development*, *12:1*, 73-85.

Biggs, J. (2003). *Teaching for quality learning at university* (2nd ed.). Berkshire, UK: Open University Press, 2003.

Fukushima,M.(2017). Japanese International Student Policy in the "The Global Competition for Talent" Era. *Public Policy and Social Governance, 5,*165-179.

Ishikawa, M. (2009). University rankings, global models, and emerging hegemony: a critical analysis from Japan. *Journal of Studies in International Education, 13(2),* 159–173.

Natio,T.(2002). *PAC 分析実施法入門[改訂版] :「個」を科学する新技法への招待 ナカニシヤ出版*.

Ota, H.（2020）. International Student Policy in Japan and Challenges for the post-300,000 International Students Plan. *Intercultural Education,51,*38-57.

Shimauchi, S. (2018). English-medium instruction in the internationalization of higher education in Japan: rationales and issues. *Educational Studies in Japan: International Yearbook, 12,* 77–90.

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Realization of a Configuration Tool for a Learning- and Gaming-Analytics-Environment for an Applied Simulation in the Context of Psychology Studies

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

Based on the work in our previous paper, this one describes a novel configuration tool for a work task simulation, including a gaming and learning analytics environment. A central content focus of the study module "Work and Organizational Psychology" in psychology is job design, which deals with the effect of work on the working person. The critical teaching of theoretical basics of psychological work design, which is mainly done by reading and discussing relevant theories and research results, is unfortunately mostly lacking in the experience of practical job design training during these studies. This can only be achieved by experiencing a simulated training situation, trying out job design skills, and experiencing the effects of different forms of job design. To achieve this, nine psychologically relevant work design characteristics from work content, workflow/organization, and social relations can be manipulated in the simulated work training tasks and their training context. These characteristics must be able to be configured and saved by the teacher before the simulation is played. Subsequently, the configuration must be automatically available to the students when the simulation is started. For the characteristics to be measured in the game, settings must be configured for gaming and learning analytics based on this. Finally, the paper presents the proposed configuration tool's conceptual considerations and overall concept. Furthermore, the proof-concept implementation of the tool mentioned above and the evaluation are presented. Finally, the paper concludes with a summary and the remaining challenges of the approach.

Keywords: xAPI, eXperience API, Configuration Tools, GALA4QBLM, PAGEL, HEI, Learning Analytics, Gaming Analytics, Applied Simulations, Psychology Studies, QBL, QBLM, Simulation Configuration

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1. Introduction

The research project PAGEL (Psychologische ArbeitsGestaltung ErLeben) (Fernuni Hagen LG Arbeits- and Organisationspsychologie, 2022), which is carried out in the context of work psychology (AO) at the University of Hagen (FUH) (Fernuni Hagen, 20223has the objective of making the effects of work on human health, psyche, and motivation tangible. Students in the field of industrial and organizational psychology should have the opportunity to experience these effects themselves, especially in the form of stress, using a simulation (Fernuni Hagen LG Arbeits- und Organisationspsychologie, 2022). Based on a pilot study by (Hertel et al., 2003), a web-based simulation (hereafter referred to as PAGEL simulation) for the performance of work tasks in the context of a serious game is to be realized to enable the study of these effects. A serious game generally describes an educational or game-like concept in an educational context. In contrast to pure entertainment games, serious games have a characteristic goal that is in the foreground in addition to the entertainment factor (Göbel, 2017). The pilot study of (Hertel et al., 2003) describes the re-enactment of work in a computer store, where salaried employees have to process customer orders, interact with colleagues and make decisions.

Based on these findings, this "computer store simulation" was conducted as a pilot study to further investigate this effect (Hertel et al., 2003). This idea of a "computer store simulation" will be extended in the PAGEL project to include interaction with colleagues and supervisors so that the player can receive virtual requests from colleagues and employees within the PAGEL simulation (Srbecky et al., 2022). In the PAGEL simulation, employees are supposed to have several different tools at their disposal that they can use for their work in a virtual environment modeled on the Windows operating system. The tools are deployed and communicated in a higher-level PAGEL tool (Srbecky et al., 2022). The evaluation of PAGEL simulation runs will be performed using configurable Learning Analytics and Gaming Analytics components. In this context, learning analytics describes collecting and evaluating data about learners and their learning environments to measure the extent to which intended learning goals have been achieved (Srbecky et al., 2022). Analogously, Gaming Analytics deals with collecting and evaluating data in the context of virtual games and simulations (Marks, 2022). The evaluation of the response to queries in the simulation is to be assigned to competencies to be presented collectively in the learners' personal Competence and Qualification Profile (CQP). These CQPs are stored within the QBL4Moodle (Then, 2020) system. This is an extension of the Learning Management System (LMS) Modular object-oriented dynamic learning environment (Moodle) (Moodle - Open-source learning platform | Moodle.org, o. D.) that builds on research in the department of Multimedia and Internet Applications (MMIA) at FUH (Fernuni Hagen LG MMIA, 2023) on competency-based learning management and enables integration of competency-based learning approaches into Moodle (Then, 2020). QBL4Moodle builds on the Qualifications-Based Learning Model (QBLM) (Then, 2020). The QBLM describes a machine-readable approach to managing competencies and qualifications, also known as CQs, based on skills in digital learning." (Then, 2020) Building on QBLM, gaming analytics, and learning analytics framework is to be developed in this context in the MMIA in the future in the Gaming Analytics Learning Analytics for Qualifications-Based Learning Model (GALA4QBLM) (Marks, 2022) project, which is being carried out in parallel to the PAGEL project, which will be used for the analysis and attestation of competencies, among other things (Marks, 2022). This framework is also intended to include a free text analysis component that will be used to analyze customer queries in the PAGEL simulation. These texts shall be available within an authoring tool (Srbecky et al., 2021). As already (BMAS, 2020) shows, such

simulations are ideally not performed exclusively with static game parameters since the individual results of such a simulation often depend on different parameters like the number of customer requests and the game duration. Thus, to implement this practice, a configuration tool is needed to adapt the PAGEL simulation to the user specifications.

The following Problem Statement (PS) can be derived from the objectives and motivation mentioned above. The main problem of the lack of reconfigurability can be divided into three problem areas. First, for the meaningful implementation of a web-based, it is necessary to define a set of parameters for the PAGEL simulation in advance. Currently, however, there is no way to define the parameters of the PAGEL simulation or to start a PAGEL simulation with configured parameters. Furthermore, there is no configurability of the learning objectives of the students who will perform the PAGEL simulation in the future. The aspect of learning analytics, as well as a configuration option to define the simulation goals in the context of gaming analytics. However, these three configuration options above are necessary to perform the PAGEL simulation described above. In this context, it should also be that the permissions for entering and displaying configuration data are different for teachers and students. In summary, this results in the PS1: There is no input facility to configure PAGEL simulation runs.

To allow students and teachers to run PAGEL simulations at different times with the same simulation configurations, it is necessary that configuration parameters can be stored. However, from today's point of view, there is no possibility to save and reuse simulation configurations before a game session. PS2, therefore, is that there does not exist any storage procedure to reuse configuration data of the PAGEL simulation.

The communication between the configuration tool and the PAGEL simulation should be done via a web-based user interface. Since neither the PAGEL simulation nor the configuration tool exists, there is the problem that no user interface is defined to enable an exchange of configuration data between both applications. PS3, therefore, is that currently, there is no user interface definition to use configuration data in the PAGEL simulation.

The PS mentioned above results in the following Research Questions (RQ). RQ1: "How can a software system support the input of configuration data in a configuration tool for the PAGEL simulation to meet the requirements for students and teachers?", RQ2:" How can configuration data be stored in such a software system and reused in later be reused in later PAGEL simulations?", and RQ3: "How can user interfaces be defined in such a software system between the tool and the PAGEL simulation in such a way that the configuration data of a configuration data of a game session can be provided to the PAGEL simulation?"

Based on the research methodology of (Nunamaker et al., 1990) the following Research Objectives (ROs) were derived from the RQs. RO1 is assigned to the Observation Phase (OP). This phase identifies suitable concepts and existing software tools for a configuration tool in the educational area. RO2 is assigned to the Theory Building Phase (TBP). A concept is designed that shows what system components and interfaces are needed. The System Development Phase (SDP) moves the concept into a prototype and is assigned to RO3. The result of the SDP is evaluated in the Evaluation Phase (EP) in the context of a Cognitive Walkthrough (CW) (Wilson, 2013). Finally, the EP is assigned to RO4. In this phase, all RQs are evaluated. The remainder of this paper is structured according to the ROs. This means that in the State-of-the-Art section, the OP is described. In the Conceptual Design section, the TBP is described, and the SDP phase is presented in this paper in the Proof-of-Concept

implementation section. Finally, in the Evaluation section, the EP is presented. Finally, the paper concludes with a summary and indications of future developments.

2. State of the Art

This section presents tools, user interfaces, and concepts for a configuration tool. Also, the current state of the art for the existing research software landscape at FUH at the MMIA department is shown. This section reviews specific examples of visual user interfaces in which configuration data input is provided in serious games, gaming analytics, and learning analytics.

2.1 Visual User Interfaces and Tools for the Input of Configuration Data

For the configuration of serious games, for example, there is a platform called uAdventure (Perez-Colado et al, 2017). This is a development platform primarily intended for use in the field of game development for educational purposes. uAdventure, as shown in Figure 1, was initially designed for the development of so-called "Graphic Adventure Games" (also known as Point & Click Adventures) (Perez-Colado et al, 2017). The uAdventure user interface includes an editor window that allows users to customize game settings and manage and create new games via buttons. To edit the game configuration, the user is provided with various submenus grouped by configuration type within a hierarchically designed main menu. Configuration settings can be made within these menus using input fields, buttons, and other standard control components (e-ucm, 2022).

Figure 1 uAdventure menu for game settings (e-ucm, 2022)

Another example of visual user interfaces for configuring serious games is the web application Gameblox (Gameblox, 2018), a visual game editor. As shown in Figure 2, this editor uses a so-called "blocks" programming language and allows visual code blocks to be linked and combined within an editor area using a modular system. Game configurations can be adjusted directly via the visual editor. Via sidebars, it is possible to add new components

and configure existing ones. User interaction occurs via input fields, buttons, selection fields, and other controls.

Figure 2 Screenshot of the configuration user interface of Gameblox (Gameblox, 2018)

Next, visual user interfaces in software systems from the gaming analytics environment are considered. An example of a visual user interface in gaming analytics frameworks, shown in Figure 3, is Unity Analytics, a part of the Unity Gaming Services platform (Unity, 2023). Within Unity Analytics, the configuration of Gaming Analytics parameters is done through an event manager. Visualization of recorded events takes place via a dashboard on an overview page. Users can select entries from a list of available events via drop-down menus, define recording for specific user groups and market segments, and display the resulting tracking data within a timeline. The filtered data can also be used to create various charts and reports.

Figure 3 Screenshot of the Administration and Visualization of Gaming Analytics Parameters in Unity Analytics (Unity,2023)

As an alternative to Unity Analytics, the Unreal Engine also provides a way to collect gaming analytics data. It is possible to set up a higher-level service (Analytics Provider), which can be used to configure gaming analytics. This setup is done via an initialization file in the project directory. The required analytics provider is defined within this file and responsible for collecting the data. The events to be recorded can be configured via the user interface of a so-called Blueprint Analytics plugin (Blueprint Analytics Plugin, 2023) , shown in Figure 4. In this user interface, events can be defined within window views, with associated attribute names and attribute values, which are to be recorded. The following figure shows an example of how the equipping of a specific object in a game is recorded via a defined event (Blueprint Analytics Plugin, 2023).

Figure 4 Screenshot of the Blueprint Analytics Plugin to track gaming analytics events (Blueprint Analytics Plugin, 2023)

In the area of Learning Analytics, the Learning Analytics interface, shown in Figure 5, available within Moodle, will be presented as an example configuration interface (Learning Analytics – Moodle Docs, o.D.).

The current configuration of learning analytics in 2022 is done in Moodle using an approach based on predictive models (Moodle, 2020). These models consist of several components, some of which are optional and configurable. In summary, these are indicators and goals to be predicted by these indicators, assessments, and notifications that are sent based on the assessments and actions suggested to the recipient of a notification. A distinction is made between static and dynamic models based on machine learning. In addition, within the Moodle Learning Analytics platform, it is also possible to use multiple models simultaneously. In addition, analytics models are managed within the administration area of Moodle in a table view. Users can make a variety of configurations related to models within the user interface. In addition to general editing of models, they can also be enabled and disabled.

Furthermore, models can be exported to Comma Separated Values (CSV) (Desai, 2021) format. Furthermore, within the user interface, it is possible to create predictions, view estimates for analyzable elements, and view evaluation and log data. This is only a simplified

overview of the current state of the Moodle Analytics user interface, as it offers many more features which will not be considered further in this research.

Figure 5 Screenshot of the Analytics models administration in Moodle (Moodle, 2020)

In this section, visual user interfaces and tools for the input of configuration data were considered. It should be noted that the examples considered in serious games, learning analytics, and gaming analytics predominantly follow the standard design principles of user interfaces. These principles can also be used to design the configuration tool.

2.2 Existing Tool Landscape

It is also necessary to determine the state of the art concerning the target platform in which the configuration tool will be integrated since this significantly influences which user interface technology can be used for the configuration tool. Therefore, the following section deals with the Knowledge Management Ecosystem Portal (KM-EP) (Vu, 2020) since the configuration tool will be integrated as a component within the KM-EP in the context of this research project. The KM-EP describes a knowledge management platform used to manage knowledge and scientific content within FUH (Fernuni Hagen, 2023). The portal has a web interface, is technically based on the Hypertext Preprocessor (PHP) (PHP, 2023) framework Symfony (Symfony, o.D.), and is built in a Model View Controller architecture. A MySQL (Oracle, 2023) database is used for data storage. For the provision of Representational State Transfer Application Programming Interfaces (REST APIs) (REST-APIs, 2021), the PHP Framework API Platform (Dunglas, 2023) is already used for various modules within the KM-EP, so the use of this framework for the user interface to be created for the configuration tool can be considered.

2.3 Data Communication between Configuration Tools and Web Applications

When considering user interfaces for data communication of web applications, both the transmission technology and the data format are relevant. Regarding the transmission technology of user interfaces in web applications, REST APIs are now established as a widespread standard (REST-APIs, 2021). REST APIs conform to the principles of REST architecture. These principles consist of interface unification, client-server decoupling, and

state independence (REST-APIs, 2021). This paper will use a REST API since this concept is used in the context of the KM-EP, as presented in the previous section.

In the context of e-learning, there are several interoperability standards used by different institutions and companies. In the following, some of these interoperability standards in e-learning will be considered. An overview of possible standards and concepts is provided by (Sun microsystems, 2017). According to (Sun microsystems, 2017), depending on the application area, there is a distinction between five types of interoperability standards in the e-learning environment. Concerning the superordinate task, a closer look at Content Packaging Standards seems to be reasonable because the transmission of configuration data to the PAGEL simulation is comparable to the transfer of learning resources between different learning platforms. In the area of content packaging standards, the Sharable Content Object Reference Model (SCORM) and eXperience API (xAPI) (ADL, 2023) have established themselves as widely used standards (Sun microsystems, 2017) (ADL, 2023). SCORM has been widely used in the past, but from today's point of view, it is technically less flexible and structurally designed to transfer entire courses between learning systems. Therefore efforts have been made to select a successor format for SCORM, which has resulted in the xAPI standard (ADL, 2023). The xAPI standard allows, through its open JavaScript Object Notation (JSON) (JSON, 2023) format through the use of REST APIs, the xAPI standard makes it possible to use a variety of data structures from the field of e-learning between several learning systems transfer (ADL, 2023).

3. Conceptual Design

This chapter describes the configuration tool's use cases and the relevant stakeholders. Subsequently, the concept of reaching RO2 is presented.

The PAGEL game configurations should be operable without programming knowledge within a web browser for the two user groups of teachers and students. Preliminary to the design of the user interface of the configuration tool, the most critical use cases are first mapped here using a use case diagram. The use cases include customizing, loading, and saving game configurations, starting PAGEL simulation runs, and customizing gaming analytics and learning analytics settings.

Figure 6 Use Case Diagram for the Configuration Tool with relevant Stakeholders

The use cases defined in Figure 6 will be implemented via a web-based user interface divided into three areas, shown in Figure 7, Game Settings, Learning Analytics, and Gaming Analytics. Each of these three configuration types is represented via a separate view that can be accessed via navigation buttons in the header of the user interface. For students and instructors to meaningfully run the PAGEL simulation, it is necessary to set all of the required configuration parameters for this simulation before starting the simulation. Specifically, the parameters are the duration of the game session and the number of requests a player receives from customers and colleagues via chat and email during a game session. These game parameters are to be entered via numeric input fields.

Furthermore, the setting of so-called work characteristics shall be possible via sliders, whereby these work characteristics can assume integer values between 1 and 4. The total

number of customers and colleague requests is also determined by multipliers, which teachers can adjust for some work characteristics via additional input fields. Teachers shall also have customizable text fields to describe the work characteristics. For students, only static predefined work feature texts shall be displayed, which shall not be changeable by students. Gaming Analytics settings shall be based on specified Learning Analytics learning objectives and the basis for recording student learning objective progress. In addition, the configuration tool will be integrated within the KM-EP as a new module. For this purpose, an additional menu item will be made available within the KM-EP user interface.

A unique code is generated by pressing a "Save Configuration" button, which will be displayed to the user after the saving process. Existing codes shall be able to be entered via an input field. Via a "Load configuration" button, it shall be possible to reload the saved configuration for an entered code. In addition, calculated intermediate and final results for all game-relevant parameters shall be displayed within the user interface, which results from the current game configuration and is automatically updated when the configuration is adjusted within the user interface. The PAGEL simulation shall be able to be started via the "New Game" button, which transmits the current configuration to the simulation.

Figure 7 Concept for the User Interface of the Configuration Tool and Learning and Gaming Analytics Configuration Environment

For the data management of the configuration tool, it is necessary to conceptually extend the existing database in KM-EP with new tables. Existing tables of KM-EP do not have to be retrieved or changed. Only the table of KM-EP users is taken into account to distinguish between students and teaching users of the configuration tool. To ensure a transparent integration of the tables of the configuration tool within the existing KM-EP database structure and to visualize the relationship of the tables, all database tables newly created in this work for the configuration tool are created with the prefix pagel_. Figure 8 visualizes the data structure and the relationships of the designed tables within the configuration tool on the database level.

Figure 8 Database model for the configuration tool

In the following, the conception of the data management within the configuration tool is explained using this entity relationship diagram. The table pagel_config contains the list of the existing configuration data records. Each configuration record consists of a configuration code and a JSON file containing the configuration code's associated configuration data. The texts of the functional properties that teachers can store are independent of the configuration data. They are stored within the pagel_workingproperty table, which contains the working property name and the current description text. The current Gaming Analytics game settings are stored as a single record in the pagel_trackingsettings table. The list of existing learning objectives that can be tracked within the Learning Analytics configuration is stored in the pagel_analytics_events table. All tracking records associated with these learning objectives are stored within the pagel_tracking table.

The following component diagram in Figure 9 provides a simplified overview of the provision of the user interfaces for data communication of the configuration tool to the PAGEL simulation, as well as to the PAGEL analysis tool, which according to the current status of the PAGEL research work will use the provided user interface of the configuration tool.

Figure 9 Component Diagram for the Interfaces between the Components of the PAGEL Simulation and the Configuration Tool

4. Proof of Concept Implementation

This chapter describes the Proof-of-Concept (PoC) implementation in the context of RO3 based on the previously described concept.

This section addresses the implementation of the configuration tool user interface within the KM-EP system. Twig templates (Symfony, 2023) were designed for all conceptualized design templates from the conceptual design following the structure of the Symfony framework used in the KM-EP. The technologies used to design the Twig templates were Hypertext Markup Language (HTML) (HTML Standard, 2023), Cascading Style Sheets (CSS) (CSS Snapshot, 2022), and JavaScript (W3C, 2016). The created user interface consists of four views for which templates were created:

- The PAGEL game configuration from a student perspective (studentconfig.html.twig)
- The PAGEL game configuration from the teacher's perspective (teacherconfig.html.twig)
- The learning analytics configuration view (learning_analytics.html.twig)
- The Gaming Analytics configuration view (gaming_analytics.html.twig)

To distinguish whether the user interface of the teachers or students, as shown in Figure 10, is displayed to a user, a check of the KM-EP user group rights takes place within the PHP controller so that only teachers can open the corresponding view. In contrast, the views for students have no restrictions in terms of accessibility, so they can also use the configuration tool even without a KM-EP user account. Furthermore, to ensure good usability of the configuration tool, confirmation dialogs have also been introduced for significant user interactions, as well as success and error messages displayed to the user within the interface.

Figure 10 Screenshot of the implemented Configuration Tool in the students' view in German language

Implementing the user interface for Learning Analytics, as shown in Figure 11, the area includes all necessary input fields and buttons for intuitive creation, editing, and deletion of learning objectives.

Figure 11 Screenshot of the implemented Learning Analytics Configuration User Interface in German language

Based on the design draft of the Gaming Analytics user interface created in the conceptual part, this was implemented as shown in Figure 12 within the instructor view of the configuration tool. The tracking of learning goal progress should occur to determine which learning objectives should be evaluated and in which PAGEL configuration runs. A list of all learning goals is displayed here in the selection fields.

Figure 12 Screenshot of the implemented Gaming Analytics Configuration User Interface in German language

Building on the concept of the data interfaces, the next section will present the implementation of the interfaces in KM-EP. MySQL version 5.7 was used for data storage based on the KM-EP databases. The database access of the API is done via the Doctrine Entity Manager (Doctrine, 2023) integrated with Symfony (Symfony, 2023). As the data format for returning the configuration data of the PAGEL simulation and the Learning Analytics tracking data, the JSON format was used considering the xAPI standard. Within the getApi method, called via the class annotation, the conversion of the configuration data records, which are stored within the database in the JSON format, into the xAPI standard. For this, a JSON character string is put together according to the rules of the xAPI standard, which consists of the superordinate parts "Actor", "Verb", and "Object". Within this

implementation, the "Actor" was defined symbolically as "Pagel player", as "Verb", the verb "starts" was chosen, and as "Object", the URL of the PAGEL configuration. Additionally, under "Object," there is a "Result" element, which contains the resulting configuration data, as visible in Figure 13.

```json
{
  "actor": {
    "name": "PAGEL Spieler",
    "mbox": "mailto:student@fernuni-hagen.de"
  },
  "verb": {
    "id": "http://registry.tincanapi.com/#uri/verb/149",
    "display": {
      "de-DE": "startet"
    }
  },
  "object": {
    "id": "https://studev4.fernuni-hagen.de:27880/pagel/config/999999"
  },
  "result": {
    "response": {
      "game_duration": "30",
      "customer_requests": "25",
      "colleague_requests": "15",
      "result_customer_requests": "20",
      "result_colleague": "13",
      "result_comments": "7",
      "result_offers": "13"
    }
  }
}
```

Figure 13 Screenshot of the xAPI data from the Configuration Tool

5. Evaluation

A CW was selected as the initial evaluation methodology for this paper to reach RO4 (Wilson, 2013). This task-oriented inspection method is performed without an end user (Wilson, 2013). However, a CW can be usefully applied already in an early development state of software (Wilson, 2013).

A CW is divided into three phases (Wilson, 2013). First, the system users are described in the preparation phase, sample tasks are designed to be completed with the system under test, and possible solutions are developed (Wilson, 2013).In the analysis phase, the actual CW takes place (Wilson, 2013).In this phase, the domain expert documents each of his actions and considers possible problems real users might have with the system (Wilson, 2013). In the Follow-Up phase, identified usage problems are documented, and their causes (Wilson, 2013).In addition, possible alternatives for them are named (Wilson, 2013).

A detailed documentation of the CW can be found here (Bürger, 2022). Also, the following "Follow-Up-Phase" of a CW is documented in (Bürger, 2022) with the questions, comments, and possible future improvements and enhancements of the implementation.

6. Conclusion and Future Work

As an orientation for the future use of the configuration tool, the integration task and a test within the overall system of all PAGEL software components arise first. In particular, the functionality of the simulation start is an essential aspect that must be added to the configuration tool. In addition, the Cognitive Walkthrough, in particular, has generated a list of enhancement and improvement possibilities for the configuration tool, such as the introduction of an additional admin login for the customization of the work feature texts, as well as an assignment of the created Learning Analytics learning objectives to learning competencies. For these and other changes, one possible approach, taking into account the user-centered design concept already used in this work, is first to prioritize all adjustments by consultation within the PAGEL project team involved, as well as to evaluate and specify all requirements in more detail and finally to implement them in priority order.

References

ADL. (2023). Experience API (xAPI) Standard. ADL Initiative.
https://adlnet.gov/projects/xapi/

Blueprint Analytics Plugin. (2023). Unreal Engine 4.27 Documentation.
https://docs.unrealengine.com/4.27/en-
US/TestingAndOptimization/Analytics/Blueprints/

BMAS. (2020, 3. Dezember). BMAS - Psychische Gesundheit. www.bmas.de. Abgerufen am
23. Januar 2023, von https://www.bmas.de/DE/Arbeit/Arbeitsschutz/Gesundheit-am-
Arbeitsplatz/psychische-gesundheit.html

Bürger, M. (2022). Realisierung eines Konfigurationstools für eine webbasierte Simulation
[Bachelorarbeit]. Fernuniversität in Hagen.

CSS Snapshot 2022. (2022, 22. November). https://www.w3.org/TR/CSS/

Desai, G. (2021, September). Comma seperated values to rows. Microsoft Q&A. Abgerufen
am 23. Januar 2023, von https://learn.microsoft.com/en-
us/answers/questions/536431/comma-seperated-values-to-row-with-same-query.html

Doctrine. (2023). Getting Started with Doctrine - Doctrine Object Relational Mapper (ORM).
https://www.doctrine-project.org/projects/doctrine-orm/en/current/tutorials/getting-
started.html

Dunglas, K. (2023). API Platform Documentation. API Platform. Abgerufen am 23. Januar
2023, von https://api-platform.com/docs

e-ucm. (2022). GitHub - e-ucm/uAdventure: Serious game editor for Unity based on
eAdventure. GitHub. Abgerufen am 23. Januar 2023, von https://github.com/e-
ucm/uAdventure

Fernuni Hagen. (2022). Arbeits- und Organisationspsychologie - FernUniversität in Hagen.
https://www.fernuni-hagen.de/arbeitspsychologie/

Fernuni Hagen. (2023). FernUniversität in Hagen - Startseite. https://www.fernuni-
hagen.de/?pk_campaign=2017

Fernuni Hagen LG Arbeits- und Organisationspsychologie. (2022). Psychologische
Arbeitsgestaltung erleben (PAGEL) - Arbeitsaufgabensimulation zur Vermittlung von
psychologisch relevanten Merkmalen der Arbeitsgestaltung - FernUniversität in
Hagen. https://www.fernuni-
hagen.de/arbeitspsychologie/forschung/pagelprojekt.shtml

Fernuni Hagen LG MMIA. (2023). Willkommen beim Lehrgebiet Multimedia und
Internetanwendungen - FernUniversität in Hagen. https://www.fernuni-
hagen.de/multimedia-internetanwendungen/

Gameblox. (2018, 27. Oktober). MIT Scheller Teacher Education Program. https://education.mit.edu/project/gameblox/

Göbel, S. (2017). Autorenumgebung für Serious Games - StoryTec: Eine Autorenumgebung und narrative Objekte für personalisierte Serious Games - TUprints. https://tuprints.ulb.tu-darmstadt.de/6941/

Hertel, G., Deter, C. & Konradt, U. (2003). Motivation Gains in Computer-Supported Groups1. Journal of Applied Social Psychology, 33(10), 2080–2105. https://doi.org/10.1111/j.1559-1816.2003.tb01876.x

HTML Standard. (2023). https://html.spec.whatwg.org/multipage/

JSON. (2023). JSON. https://www.json.org/json-de.html

Marks, A. (2022, 17. März). Hochschulinterne Ausschreibung „Fellowship in der digitalen Hochschullehre (digiFellow)" gestartet – Zentrum für Lernen und Innovation (ZLI). https://www.fernuni-hagen.de/zli/blog/neue-hochschulinterne-ausschreibungsrunde-fellowshi+p-in-der-digitalen-hochschullehre-digifellow-gestartet/

Moodle. (2020). Learning Analytics – MoodleDocs. https://docs.moodle.org/401/de/Learning_Analytics

Moodle. (2023). Moodle - Open-source learning platform | Moodle.org. https://moodle.org/

Nunamaker, J. F., Chen, M. & Purdin, T. D. (1990). Systems Development in Information Systems Research. Journal of Management Information Systems, 7(3), 89–106. https://doi.org/10.1080/07421222.1990.11517898

Oracle. (2023). MySQL :: MySQL Workbench. https://www.mysql.com/de/products/workbench/

Perez-Colado, I. J., Perez-Colado, V. M., Martinez-Ortiz, I., Freire-Moran, M. & Fernandez-Manjon, B. (2017). uAdventure: The eAdventure reboot: Combining the experience of commercial gaming tools and tailored educational tools. 2017 IEEE Global Engineering Education Conference (EDUCON). https://doi.org/10.1109/educon.2017.7943087

PHP. (2023). PHP: Was ist PHP? - Manual. https://www.php.net/manual/de/intro-whatis.php

REST-APIs. (2021, 26. August). https://www.ibm.com/de-de/cloud/learn/rest-apis

Srbecky, R., Then, M., Wallenborn, B. & Hemmje, M. (2021). TOWARDS LEARNING ANALYTICS IN HIGHER EDUCATIONAL PLATFORMS IN CONSIDERATION OF QUALIFICATION-BASED LEARNING. EDULEARN Proceedings. https://doi.org/10.21125/edulearn.2021.1046

Srbecky, R., Winterhagen, M., Wallenborn, B., Then, M., Vu, B., Fraas, W., Dettmers, J. & Hemmje, M. (2022). Towards a Work Task Simulation Supporting Training of Work Design Skills during Qualification-based Learning. Proceedings of the 14th International Conference on Computer Supported Education. https://doi.org/10.5220/0011072800003182

Sun microsystems. (2017). e-LEARNING INTEROPERABILITY STANDARDS. Abgerufen am 23. Januar 2023, von https://eduworks.com/Documents/eLearning_Interoperability_Standards_wp.pdf

Symfony. (o. D.). Symfony, High Performance PHP Framework for Web Development. https://symfony.com/what-is-symfony

Symfony. (2023). Creating and Using Templates (Symfony Docs). https://symfony.com/doc/current/templates.html

Then, M. (2020). Supporting Qualifications-Based Learning (QBL) in a Higher Education Institution's IT-Infrastructure [Dissertation]. Fernuniversität in Hagen. https://doi.org/10.18445/20200309-141118-0

Unity. (2023). Unity Analytics. Unity. https://unity.com/products/unity-analytics

Vu, B. (2020). A Taxonomy Management System Supporting Crowd-based Taxonomy Generation, Evolution, and Management [Dissertation]. Fernuniversität Hagen. https://doi.org/10.18445/20200404-144028-0

W3C. (2016). JavaScript Web APIs - W3C. https://www.w3.org/standards/webdesign/script

Wilson, C. (2013). User Interface Inspection Methods: A User-Centered Design Method (Illustrated). Morgan Kaufmann.

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Digital "Hack Your Future" Event as Approach to Support Entrepreneurial Capacity of Students Through the Design Thinking Process

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

The hackathons provide rapid, hands-on opportunities to explore the innovative creation of new business ventures, digital solutions, start-ups and students' entrepreneurship capacity, which incorporate novel technology as a vital component of their business models and operations. A hackathon is an event in which participants involved in software development collaborate intensively over a short period of time on solving the company's problem. In this work, a hackathon is proposed to generate creative concepts, rapid innovation capacity, design methods, and tools to co-create and solve the companies' problems with the help of students. However, at the same time in hackathon events, problem-solving opportunities create business opportunities for 55 participating students. This paper describes the process and results of the event and shows that a hackathon is a viable approach to accelerate the co-creation, design thinking process, and support entrepreneurship education to increase student entrepreneur capacity.

Keywords: Entrepreneur Education, Design Thinking Hackathons, Entrepreneurship Capacity

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Introduction

For many companies, the hackathon event has evolved into a new design thinking process and a platform that facilitates the rapid development of fast-paced innovations. (Komssi et al. 2015). In this study, we try to understand if the hackathon event aligns with the design thinking process and does it support participants' creativity and expectations and experience of entrepreneurial possibilities. Our research problem is: How we can use Hackathons as a tool to increase students' entrepreneurial interest? and how the design thinking process in Hackathon events can raise awareness of entrepreneurial and problem-solving skills? In this case Hack of Your Future event (a hackathon organized at and in collaboration with Satakunta University of Applied Sciences, has been developed fully on a digital Discord platform. Discord is an open-source and free platform. Discord servers are organized into topic-based channels where users can collaborate, share, and just talk about their ideas. Hackathon events have used digital technologies to enable the creation of new business ventures and digital start-ups. These companies incorporate novel technologies as a vital component of their business models and operations. In this sense, digital technologies are enablers of entrepreneurial activity. (Von Briel et al. 2018) Digital technology also supports the creation of new contexts in which several actors with different goals and motives interact dynamically to implement business and innovation processes (e.g., hackathon events).

The spread of digital technology has thus created new opportunities for the development of entrepreneurship projects by leveraging collective intelligence (Anderson 2014). Hackathons and similar time-limited events have become a global phenomenon (Taylor & Clarke 2018) of interest to both companies and students (Anfarita & Nolte 2020). During such events participants typically form teams and engage in intensive collaboration over a short period of time to complete a challenge that is of interest to them (Pe-Than et al. 2019). Because they are diverse ways to develop innovative ideas (Cobham et al. 2017), add features to existing software (Trainer et al 2014), promote learning (Affia et al. 2017), and build new or expand existing communities (Trainer et al 2014), they are adopted in a number of areas, such as entrepreneurship (Nolte 2019), small and medium-sized enterprises (Komssi et al. 2015), large enterprises (Nolte et al. 2018), (higher) education institutions (Porras et al. 2019), (online) communities (Angelidis et al. 2016) and others.

Hackathons, the development of open innovation, and participation are associated with the development of digital communities able to streamline crucial entrepreneurial activities such as start-up entrepreneurship. More than a new type of entrepreneurship, the concept of community entrepreneurship like "sister entrepreneurship" is thus delineating the emergence of a new entrepreneurial paradigm, which possesses two main features. First, it is strongly focused and/or enabled by the adoption of digital technologies and the online entrepreneurial community. Second, it is leveraging the innovation potential embedded into large and dispersed groups of individuals with heterogeneous backgrounds that participate in entrepreneurial activities sometimes students become entrepreneurial (Elia et al. 2020).

Hackathon supports the design thinking process because it encourages collaboration, iteration, and optimism using techniques that make addressing ambiguity and failure during the creative process more comfortable. In addition, it drives participants forward with ideas and can encourage confidence in an individual's creativity. Engaging educators, coaches, students, and company participants in the design thinking process can equip individuals with the techniques and mindset needed to address complex problems in technology solutions, sustainability circular economy solutions, and beyond. In this study, we understand the

design thinking process to be an important part of the students 'design process, which provided tools and mindset to solve companies' challenges, innovate something new and increase entrepreneurial mindset. The novelty of the study is to combine hackathon events with the design thinking process and ideas developed by individuals during hackathons and facilitate a transition from hackathon teams to building start-ups and generally make students interested in entrepreneurship.

Design Thinking and Hackathons

The paradigm of design thinking shifts from traditional product design to address complex issues and focus on consumer experiences. A design thinking strategy is a human-centred approach (Kelley 2001). The problems are significant: it will involve complex constructs (eg. how to define students' ability to work effectively on a business challenge while supporting student entrepreneurship and their own goals). One challenge is to build a sustainable guest boat harbour area and community activities with other businesses. The third challenge because of the shutdown of peat production and creating completely new business ideas for land and related machinery. We suggest that design thinking can provide a unique approach to address this and similar types of problems within hackathon events and provide examples from different backgrounds people to participants and shared experiences to co-create the solutions, which can increase business start-ups and even joint venture companies. The design thinking process provides structure and systematic approaches to creative problem-solving. Design thinking was first described more than 50 years ago (Archer 1979). Brown (2008) presented the design thinking process as a three-phase cycle: inspiration, ideation, and implementation. Kelley (2013) presents design thinking as an expanded five-stage process that includes: emphasising, defining, ideating, prototyping, and testing. A summary of the design thinking process, definitions, and sample strategies is presented in Figure 1. As illustrated by the diagram, design thinking starts with the understanding that it is an iterative process that can occur in cycles. We have extended the design thinking process to include the Hackathon process layer the figure 1.

Figure 1: Design Thinking Process extended with Hackathon tools.

Hackathons can be seen as an inspiration and a vehicle in the first and most critical phase of design thinking. The goal of this step is to identify and describe the problem to be addressed. The hackathons are usually based on a problem that is set to be solved. The inspiration phase has two components: empathize and define. The goal of the empathize phase is to connect with the user through observation, interviews, empathy maps, personalities, and other

strategies to learn from their experience (Wolcott & McLaughlin 2020). For example, when solving companies' problems in the competition of hackathon and same time planning to establish their own business, this phase could include interviewing company staff members, subcontracting companies, and other students.

The purpose of this is to describe their current experiences, understand how they perceive the company problem and same time could a solution to the problem be their own business idea. At this stage, the perspective of the participants, their challenges, and their needs may differ from expectations. The information from the Empathize step is then used to define the problem, which guides the specific need to be addressed with the solution to be created. (Brown 2019) The inspiration phase is critical when it sets the phase for the remainder of the process and has consequences if not correctly performed. For example, if the problem is not clearly defined or targeted in the inspiration phase (Wedell-Wedellsborg 2017). Ideation is the second stage of the design thinking process. The goal of this phase is to produce as many ideas as possible, i.e. brainstorming, and emphasizing them quantity over quality. To optimize production potential creative solutions, design thinking is different and converging thought processes. Different thinking includes strategies to expand and grow several ideas, such as brainstorming, word association, and improvisational games (Curedale 2019).

The final phase, implementation, focuses on evaluating the proposed solution and verifying whether it sufficiently addresses the defined problem. The goal of the implementation phase is to conduct two processes: prototyping and testing. Prototyping includes having end-users engage with mock-ups, models, or samples of the proposed solution before finalized version is created. Early prototyping allows the students to get feedback and gain insights on how to refine the idea to improve the problem. The creation of prototypes leads to a constant convergence of ideas until a decision is taken on the proposed final solution. Insights from testing often identify whether the problem has been adequately addressed in earlier stages and whether further consideration is needed. Design thinking supports collaboration, inspiration, and implementation while offering a systematic process for creativity. In addition, design thinking benefits not only those for whom the solution is created but also those who engage in the process. We strongly encourage individuals with an interest in design thinking to explore the resources and try the strategies provided in this commentary to investigate how they can be applied to Hackathon events. (Wolcott & McLaughlin 2020) Same time we encourage students to establish start-up companies or design joint companies with the student group which has solved the problem in hackathons.

Data Gathering

We have created Hack Your Future event 2021, which takes a whole day 11 hours (18.03.2021). The hackathon event was four challenges and at least one to three company members participate in the event. Our Hackathon events staff includes a ceremony leader, a design thinking mentor, six coaches, digital platform ICT persons, a music DJ, and an additional four persons who helped the companies. The Hackathon event itself had 55 student participants, most of the participants were from Satakunta University of Applied Sciences, and a few students were vocational education students from Sataedu and Winnova.

The data was collected forms 1) mentor and company interviews and feedback form, 2) participant whiteboards, and solution ideas and 3) from a post-survey targeted for participants. 24 participants answered the post-survey.

Technical Infrastructure

We used Discord as the Hackathon platform, where we split people into groups, and they all have group video chatting. Separate rooms for companies, the stage and IT support were created. Discord has launched in 2015, it has branched out to include communities from all over the internet. It has boomed in popularity during the pandemic, as more people have worked, played games, and socialized online, and the Discord describes that it now has more than 140 million active monthly users. (Kumar 2012) We have around more than 20 teams because we have around 55 participants in Discord platform.

We also used YouTube and Twitch for streaming for the Hackathon. Participants were able to follow the stage at all times through the stream. We had live performances, interviews, and such for people only following the stream. Hack Your Future has been live streaming on Twitch. Twitch is a live streaming platform focused on video games generally. It was founded by Justin Kan in 2011, originally as a spin-off Justin.tv. Amazon saw the potential of Twitch and by August 2014, Twitch had become an Amazon property, with just short of $1 billion changing hands in its acquisition of the streaming platform, which was now up to 55 million monthly active users. (Nelly 2021) YouTube live streaming has become increasingly mainstream. Live video is an incredibly powerful tool and YouTube Live transforms online video into an interactive experience. There is more than 500 hours of video uploaded every minute, they're a way to stand out. (Iqbal 2021) Livestreaming fits well in Hackathon events, where it is for the participants to follow event flow. In our Hackathon event, we streamed to both YouTube and Twitch at the same time, as our audience is familiar with both channels. We can recommend that live streaming happens on both channels because it the same time as a backup plan, if one channel doesn't work, the other is likely to work.

Hackathon Structure

As a structure for the hackathon, we used an in-house designed workflow. During a one-day hackathon, the schedule and flow need to be carefully pre-structured. All components of the hackathon flow, including the facilitation, mentor support, and support materials, are design based on the design process. We have six mentors in our event and more than 20 teams. Each mentor had five teams to mentor. Live mentoring / coaching: Mentoring was provided during each stage of the hackathon. For this particular hackathon, the work started from ideate focus due to time limitations. Emphasis and ideate were done in a way that participants had one hour question time with the challenge owner. The overall structure, with durations, was as follows (8am start – 7pm finish):

Emphasize and define - Challenge overview by the challenge owners and questions time for participants. The participants were mentored to formulate questions before meeting the challenge owners. One mentor also sat in each challenge group to actively push for more questions and a careful breakdown of the expectations and limitations.

Total duration around two hours.

Ideate – for one hour the teams were asked to only focus on generating ideas. A small briefing of ideation and idea harvesting was given. An interactive whiteboard was used in each team to collect ideas. Teams could also choose post-it notes. The specific briefing was to only focus on brainstorming and the generation of ideas. A typical challenge is that participants 'fall in love' with the first idea they come up with and the whole ideation phase

is skipped. Mentors were once more circulating in each team to make sure the teams focused on idea generation.

Total duration around one hour.

Prototyping – the majority of the work time was allocated to prototyping. The work was started with another workshop to discuss strategies to build concepts and prototypes. A structure that was provided was based on the NABC pitching model (Need, Approach, Benefit, Competition) to reduce the workload on the final stage of the hackathon. Mentors were once more circulating in the teams to provide alternative perspectives to building the concept and how to break the solution into meaningful parts, parts that also fit the NABC mode.

Total duration around three hours.

Testing – since one-day cycle rarely offers opportunities for actual development work and product testing, the test part was handled by pitching the idea and 'testing' it by hearing the crowd's thoughts and comments. Also, a professional jury including the challenge owner reviewed the solution and gave feedback. The participants had around two hours to prepare their pitch-style presentation using the NABC mode, including a brief workshop on how to create good pitches/presentations. Finally, all solutions were presented in challenge groups and the best ideas were picked for the finals. Similar to previous stages, mentors were constantly helping the teams and ensuring none of the teams presented without at least one or two practice pitches to a mentor. Total duration around two hours and the final presentations.

Survey and analysis

For this study, we collected data from hackathon participants through two types of instruments: a survey (quantitative data) and observation (pictures, videotapes, whiteboards) and some interviews (qualitative data). On the week after the hackathon event, an online survey was sent by email to students, and interviews were performed during the Hackathon.
The survey consists of background, Hackathon events, Design thinking process professional attraction, entrepreneurial capacity, entrepreneurial intention, and feedback and there was a total of 14 open questions and 29 claims with a five-point Likert scale response format. The survey data analysis content analysis. One of the researchers performed the interviews, recorded, and later codified them. The first cycle consisted of a coding process where a generic coding method was applied followed by a second cycle where the number of codes was condensed, and codes categorized (Reidy 2020).

Survey. The survey aim was to get quantitative and qualitative data about the participants' perception of the hackathon methodology and the effectiveness of the different design thinking techniques that were used, but also their interest in professional attraction with companies, entrepreneurial capacity, and creating their own startup.

Observation. The researchers observed different teams during the entire duration of the hackathon and observed their activities, took detailed field notes (screen pictures) because the hackathon happens in online, and made video recordings when possible.

Interview. The interviews were in-depth interviews with occasional students during the Hackathon. The interviews were recorded with the permission of the students. The interviews

took place in groups of about 3-4 people. These interviews lasted between 15 and 30 minutes. The aim was to make qualitative data to support the specificity of Hackathons, which supports both the design thinking process and the raising of awareness and encouragement of entrepreneurship.

Ethics. Although this approach may raise ethical controversy, we present information about the study at the beginning of the Hackathons and every student has the possibility to voluntarily participate in the study and answer the survey. The survey form detailed the objectives of the study, guaranteeing the confidentiality of the collected data and anonymity of the participants.

We have used content analysis as a systematic and objective means of describing and quantifying phenomena of Hackathon events. The aim is to obtain a concise and comprehensive description of the phenomenon, and the outcome of the analysis is the concepts or categories that describe the phenomenon.

Usually, these concepts or categories are intended to build a model, a conceptual system, a conceptual map, or categories. The researcher makes a choice between the terms 'concept' and 'category' and uses one or the other (Saldana 2015).

Results

This was the first time for the Hack on Your Future event to happen completely online. It consists of a one-day online event that brings together 55 participants and 20 staff who share opinions and interact to identify themes and actions for exploring emerging challenges for new products, services, solutions, and business models.

The result shows that 72,7% have participated Hackathons before and 27,3% haven't had any experience before for Hackathons. As this was the first Hack on Your Future online, the participants' feedback was very positive and give us the opportunity to develop the Hackathon concept further. The participants raise up their expectations of the Hackathon, which were networking opportunities, interesting speakers, teamwork, and creativity. As one participant mention "Awesome experience" his/her expectation of the Hackathon. Participants describe the most important reason to participate in Hackathons three of main reasons were 1) Curiosity about trying new things 36,4%, 2) to learn about new things in Hackathon design methods, pitch, etc., 18,2% 3) to promote me and improve my professional career's prospects 18,2%. Participant expresses disagree about Hackathon's length 54,5% says that they didn't have enough time to design their concepts and 36,4% opinions were that hackathon challenges are too broad and the long hours for working was third reason 9,1%. Combined with how the organizers can improvements the hackathon event is that we could make more breaks and make Hackathon event to be two days long, which gives companies more time to present their challenges and give time to make deeper design thinking workshop, for example, used more tools like empathy map, different kind of free digital tools.

Design thinking aligns with the hackathon was only a small part of the hackathon, which hasn't been clear for every participant. At the hackathon, we propose some tools for brainstorming. For the ideation stage. Participants used Miro, Google Docs, Google Slides, Flinga, as a brainstorming tool. We encouraged participants to brainstorm as many ideas as possible and then combine the ideas together / pick the best one. Some participants started

searching for information on the Internet and doing "research work". Some teams started to think about solutions directly and got a few ideas immediately. Some teams started to investigate for the company and trying to understand their values. Some teams even understood the need of the customer perspective and started doing interviews with customers. At the following design thinking process, we were asked our participants to highlight their concept work with emphasize stage. Some of the team focused on the stage of empathizing how to understand the needs of peoples and companies, as one participant mentioned "Empathy is one of the most important things if you want to understand people and their needs". Some teams asked questions from the companies and co-workers. Some participants did not understand the importance of the design process for the Hackathon event, as some participants mentioned "Yes, but I didn't think it was important". However, all the winners from each track demonstrated a high skill level and routine with following the hackathon structure and design process inside it. The same time those students describe that they are willing to established start-up company in the future.

Understanding the Design thinking process and problem-solving centered on human problems can be seen in three spaces. These are, as mentioned before, inspiration, ideation, and implementation. These can be seen in the five stages: empathize, define, ideate, prototyping, and test. The inspiration is the "problem or challenge that motivates the search for a solution, which means that empathize and define stages are the time participants explore all necessary information about the companies' challenges, meet company members, ask a lot of targeted questions, and finally define the problem. That stage is also students thinking about their personal entrepreneurial skills, and tested their idea is the enough idea to make a company. Second is the ideation stage which is the creating, developing, and prototyping of ideas. However, the hackathon ideation stage needs to focus on making as many ideas as possible and the ideas were evaluated on a low prototype, such as the paper prototyping stage, allowing participants to better understand their concepts and find out what still they need from it. The last part is the implementation path that leads from the implementation stage into people's lives. This is time to test the concept with users and see the result. Hackathon provides an opportunity to bring an early-stage concept into the testing part, allowing companies to test and understand innovation and potential quickly.

In this case study we have combined the Design Thinking process with hackathon tools and techniques, accelerate the structure of the Hackathon event, and systematizes the concepts of ideas to transform them into solutions. The participants create wonderful concepts. To mention a few examples: "Gamified experience combined with sports activities. Purpose - engage people with location and promote sustainable tourism conducted in a hybrid way." Another group designed "Drone school business. Purpose - to sell drones piloting lessons and attract people to the local area that would help the local business."

The result has shown that Hack Your Future most participants recommended our hackathon 36,4% and they graded our Hackathon 4,5/5. The student behind of the idea is ready to established drone business, they already have knowledge enough and business plan.

Discussions

Hackathon support participants to expand their individual network within the company. As Komssi et al. (2015) has mention that "an often understated by-product of hackathons is the participants personal development and sense of achievement from working with new technologies, meeting, and collaborating with people they otherwise wouldn't". However, as

a Hackathon bring team members with a wide range of complementary skills and to initiate a good team environment and spirit, it is certainly worthy of consideration. When building a hackathon with multiple organization and especially with SME/Corporations, the participants can greatly expand their network in surrounding companies. Hack your future –event was especially targeted for companies with recruitment needs in the relevant fields (compared to the challenges and participant body) bringing career and project opportunities for the participants.

When looking at the final challenge proposals the participants' work was outstanding. Challenge owners, such as large local corporations, reported idea that 'our r&d departments would have never come up with'. This gives confidence in the strictly facilitated design process and its wider applications inside a higher education institute, in which the event was organized.

Feedback from students have also been very positive. Often the comments received directly from students are 'I would have no come if this would not have been mandatory, but I enjoyed it a lot and felt it was very meaningful for my studies. Looking forward to the next one.' This has encouraged our local higher education institutions to include more hackathons and design thinking in their curriculums. Teachers have, albeit unofficially, also reported back the increase in creative work capacity from participating students. This we'd like to verify and build methods to study this more carefully.

Conclusion and Future Thoughts

The greatest potential and value of hackathons is to provide an opportunity for people to meet and collaborate to create new innovative solutions and even startups.

Clearly more evidence is needed, and our next step is a larger cohort data from the whole student population. The data will be collected each year and after every meaningful 'event', such as a hackathon, a delayer posttest is done to measure the change in entrepreneurial self-efficacy and competences in general. With self-efficacy we refer to student own assessment on their entrepreneurial capabilities, including the competences etc. By doing this we aim to receive a better understanding of each activity we provide to our student and how these activities build their entrepreneurial capacity and readiness to act entrepreneurial in general.

From our experience and the data collected for this study, we argue that facilitated design thinking processes in a form of a hackathon increase the overall entrepreneurial capability of students.

References

Affia, A-A., O., Nolte, A., and Matulevičius, R., (2020). *Developing and Evaluating a Hackathon Approach to Foster Cyber Security Learning*. In Nolte, A., Alvarez, C., Hishiyama, R., Chounta, IA., Rodríguez-Triana, M., Inoue, T. (eds) Collaboration Technologies and Social Computing. CollabTech 2020. Lecture Notes in Computer Science, vol 12324. Springer, Cham.

Anderson, C. (2014). *Makers: The New Industrial Revolution*. Crown Business.

Angarita, M.A.M, and A., Nolte (2020). *What do we know about hackathon outcomes and how to support them? - A systematic literature review*. In Collaboration Technologies and Social Computing, Springer.

Angelidis, P., Berman, L., de la Luz., M., Casas-Perez, L. A., Celi, G. E., Dafoulas, A., Dagan, B., Escobar, D. M., Lopez, J., Noguez, J., Osorio-Valencia, S. (2016). The hackathon model to spur innovation around global mHealth. *Journal of medical engineering & technology* 40(7-8), 392–399.

Archer, B., (1979) Design as a discipline. Design Studies, 1(1), 17-20.

Brown, T., (2019). *Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation*. 2nd ed. New York, NY: Harper Business.

Brown T. (2008). *Design thinking. Harvard Business Rev*. 2, 86(6), 84-95.

Cobham, D., Hargrave, B., Jacques, K., Gowan, C., Laurel, J., Ringham, S., (2017). From hackathon to student enterprise: an evaluation of creating successful and sustainable student entrepreneurial activity initiated by a university hackathon. *In 9th annual International Conference on Education and New Learning Technologies. EDULEARN*.

Curedale, R., (2019). *Design Thinking: Process and Methods*. 5th ed. Topanga, CA: Design Community College Inc.

Elia, G., Margherita, A., Passiante, G., (2020) Digital entrepreneurship ecosystem: how digital technologies and collective intelligence are reshaping the entrepreneurial process. *In Technological Forecasting & Social Change,* 150.

Iqbal, M., (2021) *Twitch Revenue and Usage Statistics, Business of Apps*, March of 29, 2021. Accessed on 4 of April 2021. https://urly.fi/1ZR2

Kelley, T. (2013). *Creative Confidence: Unleashing the Creative Potential Within Us All*. New York, NY: Crown Business; 2013.

Kelley. T.A., (2001). *The art of innovation: Lessons in creativity from IDEO, Americas leading design firm*. Vol. 10. Broadway Business.

Komssi, M., Pichlis, D., Raatikainen, M., Kindstrom, K., and Järvinen, J., (2015). What are Hackathons For? In IEEE Software, *IEE Computer Society* 32(5), 60-67, Washington, USA.

Kumar, V., (2012). *101 Design Methods: A Structured Approach to Driving Innovation in your Organization*. Hoboken, NJ: Wiley.

Nelly (2021) *Discord Welcomes Tomasz Marcinkowski as New CFO*, Discord 18.3.2021, Accessed on 4 of April 2021. https://discord.com/blog/discord-welcomes-tomasz-marcinkowski-as-new-cfo

Nolte., A., (2019). Touched by the Hackathon: a study on the connection between Hackathon participants and start-up founders. *In Proceedings of the 2nd ACM SIGSOFT International.*

Nolte, A., Pe-Than, E.P.P., Filippova, A., Bird, C., Scallen, and S., Herbsleb, J.D., (2018). You Hacked and Now What? -Exploring Outcomes of a Corporate Hackathon. In *Proceedings of the ACM on Human-Computer Interaction 2*, CSCW (2018), 1–23.

Pe-Than, E.P.P., Nolte, A., Filippova, A., Bird, C., Scallen, S., and Herbsleb, J.D., (2019). Designing Corporate Hackathons with a Purpose: The Future of Software Development. *IEEE Software* 36(1), 15–22.

Porras, J., Knutas, A, Ikonen, J., Happonen, A., Khakurel, J., and Herala, A., (2019). Code camps and hackathons in education-literature review and lessons learned. In *Proceedings of the 52nd Hawaii International Conference on System Sciences.*

Reidy, T., (2020) *How to Use YouTube Live to Engage Your Audience: A Step-by-Step Guide*, Accessed on 5 of April 2021 https://socialmedianz.com/social-media/2020/04/02/how-to-use-youtube-live-to-engage-your-audience-a-step-by-step-guide/

Saldana, J., (2015). *The coding manual for qualitative researchers*. Sage.

Taylor, N., and Clarke., L., (2018). Everybody's Hacking: Participation and the Mainstreaming of Hackathons. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. ACM, 172.

Trainer, E.H., Chaihirunkarn, C., Kalyanasundaram, A., and Herbsleb, J.D., (2014). Community code engagements: summer of code & hackathons for community building in scientific software. In *Proceedings of the 18th International Conference on Supporting Group Work*. ACM, 111–121.

von Briel, F., Davidsson, P., Recker J.C., (2018). Digital technologies as external enablers of new venture creation in the IT hardware sector. Entrepreneur. In *Theory Practice* 42(1), 47–69.

Wedell-Wedellsborg, T., (2017). Are you solving the right problems? Harvard Business Review 95(1), 76-83.

Wolcott, M.D., McLaughlin, J.E., (2020). Promoting Creative Problem-Solving in Schools of Pharmacy with the Use of Design Thinking. *American Journal of Pharmaceutical Education* 84(10), Article 8065, 1271-1276.

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Impact of Vertical and Horizontal Mismatches on Earnings Among Highly-Educated Employees in Japan

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

This study investigates the vertical and horizontal mismatches among highly-educated employees in Japan. The critical point of view on the effects of job-education mismatches on graduate earnings is that job-education mismatches leads to the waste of human capital accumulated during graduates' study years and brings negative consequences-earnings penalties. Our analysis reveals that vertical mismatch is more likely to significantly lower annual earnings compared with horizontal mismatch for both men and women. We also find that this mainly applies to university graduates and there is no significant penalty of vertical or horizontal mismatch among employees with a master's or a doctoral degree. Our results also suggest that the horizontal mismatch is more common among female employees and that the penalty for overeducation is more severely pronounced in the fields of natural sciences or medicine and pharmacy.

Keywords: Vertical Mismatch, Horizontal Mismatch, Higher Education

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Introduction

Educational mismatch among university graduates is well known in two forms: vertical and horizontal mismatch. Vertical mismatch is defined as the situation where the degree level held by a worker does not match the required degree level for their job. Overeducation exists when a worker is employed in a job that requires a lower level of degree than that possessed by the worker. Under-education exists when a worker has a lower level of degree than that required for the job. Meanwhile, horizontal mismatch occurs when the type of the worker's specified field is not appropriate for the job (Park 2018).

Regarding vertical mismatch, two different measures can be derived from the objective analyses. The first measure, based on Verdugo and Verdugo (1989), defines required schooling as one standard-deviation range around the mean level of schooling within an occupation. The second measure, suggested by Kiker *et al.* (1997), defines the modal value instead of the mean level of education within a given occupation to measure required schooling. Meanwhile, to determine the required field of study as the objective viewpoint, Nieto *et al.* (2015) used the actual distribution of educational fields within the different occupations. They measured horizontal mismatch in terms of the percentage mode of fields within an occupation.

Mahuteau *et al.* (2015) pointed out that both horizontal and vertical mismatch can lead to the largest wage penalty for men. Tao and Hung (2014) described that the impact of vertical educational mismatch is greater compared with horizontal educational mismatch. Carroll and Tani (2013) found that the effect of overeducation on wages varies among fields of study. Verhaest *et al.* (2017) also investigated vertical and horizontal mismatches simultaneously and reported that graduates with an arts and humanities degree are more likely to experience any type of mismatch. Robst (2007) explained the interaction effects between being mismatched and college major: the wage penalties to being mismatched are higher in degree fields where there is less risk of being mismatched, such as health professions, engineering, and computer science. Furthermore, Frenette (2004) found that the magnitudes of vertical mismatch are different across degrees; there is a strong negative earnings effect for the bachelor's degree and little or no earnings effect for the master's or doctoral degrees.

In Japan, some researchers have investigated vertical mismatch (ex. Ichikawa 2016, Hirao 2016, Hirao 2020). However, no study has explored the effect of horizontal mismatch. Our contribution is to investigate vertical and horizontal mismatch using recent Japanese panel data. The rest of this paper is organized as follows. Section 2 explains the data and estimation model. Section 3 presents the results, and Section 4 concludes.

Data and estimation model

We used panel data from the "Japanese Panel Study of Employment Dynamics" conducted by Recruit Works Research Institute, a Japanese think tank, for the years 2016–2020. The survey is conducted every January and is a follow-up survey. Although samples are added every year, there are some non-response years in the continuous samples, thus making for unbalanced panel data.

The targets of our analysis were highly educated persons (college graduates and above) under the age of 60 years who were employed in December of the previous year at the time of the

survey. Those who had been with their company for less than one year were excluded in consideration of annual income declines.

The dependent variable is the logarithm of the annual income of the subjects in the previous year. Values that exceeded the mean annual earnings ± standard deviation×3 were excluded as outliers and logarithmically transformed. The analysis method used the random-effect model.

We used 44 classifications of occupations, excluding "unclassifiable occupations." Regarding the number of years of education used to determine vertical mismatch, we set the following: 9 years for junior high school graduates; 12 years for high school graduates; 14 years for vocational, junior college, and technical college graduates; 16 years for university graduates; and 18 years for medical and pharmaceutical school graduates. In addition, we set 18 years for those who completed a master's course in a graduate school, and 21 years for those who completed a doctoral course in a graduate school. We used eight categories of majors to determine horizontal mismatch: Humanities (base), Social Sciences, Natural Sciences, Medicine and Pharmacy, Architecture, Arts (Music and Fine Arts), Welfare, and Other.

We used the deviation and mode methods to create vertical mismatch variables. According to the deviation method, those in the range of ±1 standard deviation years of education from the average number of years of education for each occupation possess the required education; those with more years of education are overeducated; and those with fewer years of education are undereducated. According to the mode method, in each occupation, those with the most common number of years of education are deemed as having the required education; those with more years of education are overeducated; and those with fewer years of education are undereducated.

We used two methods to create the horizontal mismatch variables: number of people and distribution. The number of people is a method in which the majors with the largest number of persons in each occupation are deemed as "horizontal match" and the rest as "horizontal mismatch." Distribution is a method in which, given the bias in the number of people in each major, the number of students in all majors is standardized at 100, and how they are distributed in each occupation is ascertained. Those that comprise the highest percentage of majors in each occupation are deemed as "horizontal match," and the others as "horizontal mismatch."

Based on the above, employees who belong to any of the 44 occupational categories can be classified into three categories in terms of mismatch in years of education: overeducation, required education, and undereducation. Mismatch in terms of major can be classified into two categories, horizontal match and horizontal mismatch. As such, each employee can be classified into any one of 3×2, or a total of 6 categories.

The most common mismatch was overeducation × horizontal mismatch at 29.3% for men and 47.2% for women in the case of vertical mismatch measured by the deviation method and horizontal mismatch measured by the number of persons. This indicates that although university graduates tend to be overeducated, horizontal matching is more pronounced in women.

Other explanatory variables included years of experience, years of experience squared, years of service, dropout dummy, four-level junior high school performance dummy, job title

dummy, company size and civil service dummy, regular employee dummy, married and unmarried dummy (base), with children dummy, youngest child is aged 0–3 years dummy, industry 16 classification dummy, 2019 survey dummy, on-the-job training experience dummy, off-the-job training experience dummy, and self-development dummy.

We used required education × horizontal mismatch as the base category. We measured the wage penalty for those falling under the other five categories. In addition, we estimated the wage penalty by education and major.

Analysis results

Table 1 shows the analysis results for men. The "omitted" variable was the one for which the number of relevant samples was small and the estimation results omitted. Being overeducated implied a reduction in annual earnings of about 4.9% to 7.7% even in the horizontal match. The results also showed that the overlap of overeducation and horizontal mismatch could reduce wages by about 5.9% to 7.0%. The mismatch between the two was not very large. In other words, being overeducated could reduce wages more than the effect of mismatch in major. Indeed, the horizontal mismatch was not significant in the two estimates for those meeting the required education.

Vertical classification method	Deviation	Mode	Deviation	Mode
Horizontal classification method	Mode of employees		Mode of distribution	
Overeducation×horizontal match	-0.049 ***	-0.058 ***	-0.051 ***	-0.077 ***
	(0.010)	(0.012)	(0.012)	(0.014)
Undereducation×horizontal match	(omitted)	-0.015	(omitted)	-0.021
		(0.045)		(0.045)
Education required×horizontal mismatch	-0.015	-0.020 *	-0.012	-0.028 ***
	(0.012)	(0.011)	(0.011)	(0.009)
Overeducation×horizontal mismatch	-0.067 ***	-0.070 ***	-0.059 ***	-0.069 ***
	(0.011)	(0.012)	(0.010)	(0.011)
Undereducation×horizontal mismatch	0.128	-0.001	0.130	-0.008
	(0.088)	(0.070)	(0.088)	(0.070)
Other explanatory variables	✓	✓	✓	✓
R squared	0.390	0.390	0.390	0.390
Number of observations	20,112	20,112	20,112	20,112

Notes: robust standard errors in parentheses. ***$P < 0.01$, **$P < 0.05$, *$P < 0.1$

Table1: Effects of vertical and horizontal mismatch for male employees

Table 2 shows the analysis results for women. For women, overeducation × horizontal match reduced annual earnings by about 5.5% to 10.1%, whereas overeducation × horizontal mismatch reduced annual earnings by about 7.1% to 11.1%, indicating that horizontal mismatch was also a wage penalty. Even for women with the required education, annual earnings were reduced by about 5.6% to 7.7% for horizontal mismatch.

Regarding annual earnings, men reported high values in the fields of medicine, pharmacy, and natural sciences (Table 1). For women, the major dummies were almost insignificant, and the difference in annual earnings by major could hardly be confirmed.

Vertical classification method	Deviation	Mode	Deviation	Mode
Horizontal classification method	Mode of employees		Mode of distribution	
Overeducation×horizontal match	-0.055 **	-0.101 ***	-0.060 **	-0.095 ***
	(0.025)	(0.029)	(0.025)	(0.031)
Undereducation×horizontal match	(omitted)	0.002	(omitted)	0.006
		(0.101)		(0.100)
Education required×horizontal mismatch	-0.059 **	-0.062 **	-0.077 ***	-0.056 ***
	(0.026)	(0.025)	(0.023)	(0.017)
Overeducation×horizontal mismatch	-0.071 ***	-0.111 ***	-0.096 ***	-0.100 ***
	(0.023)	(0.026)	(0.022)	(0.022)
Undereducation×horizontal mismatch	0.187	0.223 *	0.157	0.224 *
	(0.176)	(0.135)	(0.176)	(0.135)
Other explanatory variables	✓	✓	✓	✓
R squared	0.469	0.470	0.469	0.470
Number of observations	8,429	8,429	8,429	8,429

Notes: robust standard errors in parentheses. ***$P < 0.01$, **$P < 0.05$, *$P < 0.1$

Table 2: Effects of vertical and horizontal mismatch for female employees

Conclusion

We examined the effects of vertical and horizontal mismatch on annual earnings using Japanese data. The results showed that for both men and women, vertical mismatch is more likely to lower annual earnings significantly compared with horizontal mismatch. Our results also indicated that the negative effect of horizontal mismatch might be significantly larger for women than for men.

Some of our findings are consistent with the results of previous researches. However, the detailed reasons for the wage penalties could not be clarified in the present analysis and shall be left as an issue for future research.

References

Carroll, D. & M. Tani (2013). Over-education of recent higher education graduates: New Australian panel evidence. *Economics of Education Review 32, 207-218.*

Frenette, M. (2004). The overqualified Canadian graduate: The role of the academic program in the incidence, persistence, and economic returns to overqualification. *Economics of Education Review 23, 29-45.*

Hirao, T. (2020). The effect of educational background mismatch on wages: An empirical analysis using official statistics. *Ritsumeikan Economic Review 68(5-6), 644-658.*

Hirao, T. (2016). Educational background mismatch in the youth labor market: Overeducation and its impact on wages. *Japan Journal of Personnel and Labor Research 17(2), 4-18.*

Ichikawa, K. (2016). A comparison of gender-specific empirical analyses on the persistence of educational background mismatch between Japan and the Netherlands. *Gender Studies 19, 137-155.*

Kiker, B.F., M.C. Santos & M.M. De Oliveria (1997). Overeducation and undereducation: Evidence for Portugal. *Economics of Education Review 16(2), 111-125.*

Mahuteau, S., K. Mavromaras, P. Sloane & Z. Wei (2015). Horizontal and vertical educational mismatch and wages. NILS working papers, 216.

Nieto, S., A. Matano & R. Ramos (2015). Educational mismatches in the EU: Immigrants vs natives. *International Journal of Manpower 36, 540-561.*

Robst, J. (2007). Education and job match: The relatedness of college major and work. *Economics of Education Review 26, 397-407.*

Teachers' Readiness, Teaching and Research Competence in the New Normal: Implications to Educational Policy

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

This descriptive-correlation research was conducted to determine the levels of readiness, teaching and research competence of teachers in the Schools Division of Iloilo as they adapt to the new normal. There were 380 public secondary junior and senior high school teachers who were surveyed using an adapted and modified questionnaire. They were categorized into age, sex, educational attainment, teaching experience, position, school classification and congressional district. The data were analyzed using frequency count, percentage, mean, standard deviation, t-test for two independent samples, One-way Analysis of Variance and the Pearson's r with significance level set at .05 alpha. Results revealed that the teachers as an entire group have very high level of readiness in terms of safety protocol and high level of readiness in terms of duties and responsibilities, and ICT skills. They showed a very satisfactory level of overall teaching competence. Further results revealed that they had a satisfactory level of research competence. The age, position, school size and location were determinants of the level of teacher readiness, teaching and research competence. Courses of actions were recommended to DepEd officials, curriculum makers, school administrators, teachers, parents, learners, community and future researchers. Furthermore, policy implications drawn from the results were laid out to address some of the salient findings of the study.

Keywords: Teacher Readiness, Teaching Competence, Research Competence

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Introduction

The COVID-19 pandemic has brought extraordinary challenges and has affected the educational sectors, worldwide. Every country is presently implementing plans and procedures on how to contain the virus, however, the infections are still continually risin In the educational context, to sustain and provide quality education despite lockdown and community quarantine, the new normal should be taken into consideration in the planning and implementation of the "new normal educational policy" (Tria, 2020).

Section 3 of Presidential proclamation No. 929 s. 2020, mandates all government agencies to render full assistance and cooperation to mobilize the necessary resources to undertake, critical, necessary and appropriate disaster response aid and measures to curtail and eliminate the threat of COVID-19. Thus, the Department of Education took initiatives to mitigate the impact of the pandemic in our educational programming by designing different learning modalities to ensure that quality education still be delivered across the country while strictly following the health and safety protocols set by the Department of Health to safeguard public health. These demand that schools make significant effort to implement the Basic Education Learning Continuity Plan (BE - LCP) stipulated in DepEd Order 012, s. 2020 to ensure that students' learning progresses even amidst disasters such as natural calamities, storms and pandemics in line with the DepEd Order 018, s. 2020, following the Policy Guidelines for the Provision of Learning Resources in the Implementation of the Basic Education Continuity Plan.

Today, quality of teaching determines the quality of education. The teacher's personal qualities, attitudes, commitment and dedication towards teaching profession, educational qualification and professional training play a vital role in modern education. Achievement of effective education can be brought about by the efforts of a team of high quality and competent teachers. The role of the teacher is pivotal in arousing enthusiasm and inspiring a person for learning and sharpening one's intelligence and wisdom (Aktharsha &S engottuvel, 2015).

At the same time, teachers are catalysts of national development. With them, the nation is able to produce and develop learners, who may lead the country to development and progress. Enhancing teachers' quality and upholding quality teaching standards, therefore, should be given utmost importance for the long term and sustainable nation building (Gepila, 2019).

Statement of the Problem

Therefore, the ultimate goal of this research study is to assess the current situation and state of readiness and competence of teachers in teaching and conducting researches amidst the pandemic. In which, the result could serve as the basis for the formulation of an educational policy that is appropriate, applicable and timely as the nation adjust to the setting of the new normal. The development of policy out of this context could further improve the quality of teaching and learning process not only in one's locality but also across the country while adapting to the challenges brought about by the worldwide pandemic. The success of the schools in sustaining its programs and ensuring the delivery of quality education despite the critical conditions lies in the hands of an effective and highly competent teachers as facilitators of learning in the new normal.

This study determined the readiness, teaching and research competence of Secondary Teachers in the Schools Division of Iloilo, Philippines for the School Year 2020-2021 as bases for an educational policy in the new normal. Specifically, it determined the level of readiness of teachers in the new normal in terms of safety protocol, duties and responsibilities and ICT skills; level of teaching competence in the new normal in terms of content knowledge and pedagogy, learning environment and diversity of learners, curriculum and planning, and assessment and reporting; and level of research competence in the new normal in terms of the ability to plan and conduct research, knowledge of research methodologies and capacity to prepare a manuscript for publication. Significant differences of these variables were determined when the teachers were classified according to age, sex, educational attainment, teaching experience, position, school classification and congressional district. The final output of the study was the formulated implications for educational policy in the new normal.

Legal Bases and Theoretical Framework

This study is anchored on the Teachers' Professional Competence Theory proposed by Guerriero and Revai (2017) which states that teacher competence is the ability to meet complex demands in a given context by mobilizing various psychosocial (cognitive, functional, personal and ethical) resources. In this sense, competence is dynamic and process-oriented, and includes the capacity to use and to adapt knowledge. The opportunity to learn will influence teachers' content and pedagogical knowledge and have affective motivational competences and beliefs. Guerriero and Revai note the work of Shulman (1987) to show how content and pedagogical knowledge have three specific categories: subject knowledge; knowledge of teaching; and knowledge of learning, including knowledge of teaching and learning processes particular to both the subject and general teaching. Guerriero and Revai (2017) further stated that affective motivational competences do not only include aspects 'such as career choice motivation, achievement motivation and goal orientation, but also teachers' belief about their subject area, about teaching and learning, as well as their perceptions of teaching and of the profession. Affective and motivation competences are, however, also influenced by how teachers view the extent to which they have self-efficacy. But teacher knowledge, motivational competences and beliefs are not in themselves enough to lead to teacher competence (i.e. the ability to meet complex demands in a given context by mobilizing various psychosocial (cognitive, functional, personal and ethical) resources. As such, teachers also need to be able to use their knowledge and expertise to make quick-fire decisions in response to what they see within the classroom and other settings. Likewise, Guerriero and Revai cited the work of Seidel et al. (2011), who identify three aspects of the decision-making and reasoning process: 1) the ability to describe what has been noticed; 2) higher-order processes to connect the observed classroom event to prior knowledge and understanding of teaching and learning; and 3) knowledge-based reasoning processes to evaluate and predict what might happen as a result of connecting the observed situation to prior knowledge of teaching and learning. As such, decision-making and professional judgment provide the connection between formal knowledge, competencies and teaching, as noted by Guerriero and Revai in the context of this model of professional competence.

Thus, applied in this current study, teaching and research competence of teachers are evaluated through self-assessment to determine their strengths and weaknesses as they adjust and adapt to the flexible learning modalities in the new normal. Teachers' level of competencies describe their qualities, abilities and capacities as learning facilitators in their respective locality. It gives a realistic picture of teachers' readiness, flexibility and resiliency

in overcoming the challenges of the new normal in the Philippine Educational System. In this study, teachers are being assessed of the probability that their effort in terms of readiness, teaching and research competence will lead to the required performance level despite experiencing critical condition. This will encourage them to uplift their teaching qualities, school performance and research skills that has been found to be a necessary concomitant for school improvement.

Hence, the BE-LCP aims to ensure the health, safety, and well-being of the learners, teachers, and personnel in the time of COVID-19, while finding ways for education to continue amidst the crisis. In particular, the BE-LCP has been designed with a legal framework responsive to the "new normal," keeping in mind the constitutional mandate to uphold the right of all citizens to quality education at all times. In line with this, the learning delivery modalities that schools can adopt may be one or a combination of face-to-face, distance learning, blended learning and home schooling, depending on the local health conditions, the availability of resources, and the particular context of the learners in the school or locality. Marchuk (2013 cited in Fedina et al., 2017) defines distance learning as such instruction, whereby its subjects are separated in space and, presumably, in time. It is implemented, taking into account the communication and perception of information in a virtual environment, by a special system for organizing the educational process, a special methodology for developing training aids and teaching strategies, as well as, by using electronic or other communication technologies.

Research Design

This study employed a descriptive-correlation research design. Descriptive research is a design used if the research wants to provide a description of a phenomenon without manipulation of any of the variables. A correlation research as defined by McCombes (2020) measures a relationship between two variables without the researcher controlling either of them. It aims to find out whether there is either a positive correlation where both variables change in the same direction, a negative correlation in which the variables change in opposite direction; or a zero correlation when there is no relationship between variables. The degree of association, expressed as a number indicates whether the two or three variables are related ones. In this case the relationship or association that was determined was between the teacher readiness, teaching and research competence in the new normal.

Population and Sample

The population of the study were the 7786 public Secondary (Junior and Senior) High Schools teachers in the Schools Division of Iloilo, Province of Iloilo, Philippines, for the school year 2020-2021. From the population, a randomly selected 380 teachers were utilized as respondents. The data is shown on Table 1.

Table 1. *Distribution of Respondents*

Congressional Districts	N	n	Percentage
First	1457	71	19
Second	1360	67	17
Third	1852	90	24
Fourth	1165	57	15
Fifth	1952	95	25
Total	7786	380	100

Data Gathering Instrument

The instrument used in gathering the data was an adapted and modified questionnaire from the research studies of Ghavifekr and Rosdy (2015),Gepila (2019) and Molina (2019). The first part determined the respondents' profile like their age, sex, educational attainment, teaching experience, position, school classification, and congressional district. The second part is a rating scale used to measure the teachers' readiness in the new normal which is further subdivided into three subsections, namely, safety protocol, duties and responsibilities, and ICT skills. Each subsection contains 10 items which the respondents have to rate themselves using a five-point Likert scale. The third part measured the teaching competence of the teachers in terms of content knowledge and pedagogy, learning environment and diversity of learners, curriculum and planning, and assessment and reporting. The third part measured the teaching competence of the teachers in the new normal in terms of content knowledge and pedagogy, learning environment and diversity of learners, curriculum and planning, and assessment and reporting. Each subscale has 8 items where the respondents have to rate themselves using a five-point Likert scale. Lastly, the fourth part measured the research competence of the teachers in the new normal divided into three subscales, namely, ability to plan and conduct research, knowledge of research methodologies, and capacity to prepare a manuscript for publication, each containing 8 items.

The questionnaire was subjected to a content validation by experts in the field. All their comments and suggestions were incorporated in the questionnaire prior to the conduct of the study and its distribution to the respondents. The reliability of the instrument was determined using Cronbach's Alpha. Prior to the conduct of this study, appropriate notifications and safety health protocols required by Department of Health were strictly followed and observed by all the parties involved within the duration of the research investigation.

Conclusion

Results show that teachers have *very high* level of readiness in terms of Safety Protocols (M=4.29), and *high* readiness in terms of Duties and Responsibilities (M=3.97), and ICT Skills (M=3.85). The results also showed that overall, they have *high* Readiness (M=4.03) for teaching amidst the pandemic. Item analysis showed that in terms of Safety Protocols, the teachers have *very high* Readiness in all the indicators, especially, in the "practice of the proper use of face mask/face shield at all time" (M=4.49) which generated the highest mean among the 10 indicators. It was noted that the teachers' readiness in terms of "knowledge of emergency contact numbers such as public health authorities, nearest hospital or

health/medical center and DOH Assistance Center" (M=3.99) is *high* and is lowest among the indicators of Safety Protocol.

The government and private organizations have been very aggressive in disseminating information on the standard safety protocols since the beginning of the pandemic using different platforms such as television, radio, social media, among others. This has prepared teachers to possess a level of readiness to face the new norm in terms of safety protocol, especially in the use of protective gears such as face masks and face shields at all times that exceeds beyond expectation. Additionally, as front liners in the education sector, teachers have undergone various trainings and seminars to prepare them in the delivery of quality education amid the COVID-19 pandemic. It is a norm of the Department to train teachers not just for professional growth but to become ready for unexpected circumstances. However, it is to be noted that it is in the ICT skills where the teachers showed the lowest mean. This result may be attributed to the limited use of information and communication technology in the classrooms by the teachers in the previous school years when face-to-face learning modality was still the norm due to limited availability of these technological resources. However, the study further revealed that the teachers regarded technology infrastructure as the factor where they were least ready. In the present investigation, the results showed that among the three areas, the teachers felt least ready in terms of their ICT skills. As discovered by Al-Awidi and Aldhafeeri (2017), teachers' moderate readiness to implement the digital curriculum was due to factors such as time constraint, knowledge and skills, infrastructure, and technical support. Furthermore, David (2020) is of the opinion that many teachers are not as keen to be updated on the technical software or online social skills to be able to use the strategy in mitigating the effect of the crisis on the education of students. While online programs are great for upskilling teachers, they also pose a burden for many of them (especially the older generation) who have mastered teaching on site and are not equipped with teaching tools and basic modern technology and software. Having to relearn or even unlearn skills for teaching seems to be a herculean task.

Avvisati (2018) averred that years of reflective practice is needed to master a complex and sophisticated job like teaching. Studies have shown that teaching effectiveness and competencies are honed through years of practice. Such has been proven by the results of the present investigation, the more experienced teachers are, the higher is their teaching competence. As the teacher gain experience, the learnings from the experiences were accumulated to enhance competence in teaching. These results serve as a reminder that enhancing one's competencies is cumulative and incremental. Furthermore, Desjardins in Massing and Schneider (2017) discoursed that the imperfect correlation between educational attainment and competencies suggested that knowledge acquisition and competency formation are not limited to formal education. He said that competency development is an "experience that is both 'lifewide' (occurring in the home, at school, work and in the community) and 'lifelong' (starting during fetal development and continuing into old age)". This explains the higher means for teaching competency of the teachers with longer teaching experience, technological, instructional, class size, technical support, and collaboration. Based on the results, teachers from large schools have the highest teaching competence means. Teachers, given the right support, will be able to enhance their teaching competence in the new normal. Alvarez (2020) identified in his study five road blocks in blended learning as reported by the teachers, namely: schools have more resources to address the road blocks compared to the small and medium schools. This enabled large schools to provide more support to their teachers and consequently improved their teaching competence.

As noted, among the three phases of research, the teachers found to be less competent in the preparation of research manuscripts for purposes of publication. While the results are *satisfactory,* there is a need to further enhance the competencies of the teachers in research. Research is one of the standards of accreditation in assessing the development of competent professionals. Likewise, in the evaluation of programs and institutions relative to accreditation, the research element is one of the areas being assessed by the accreditors. Teachers as purveyor of knowledge need to be competent not just in teaching but also in research. While the teachers in the present study meet the needed competency requirements in this aspect, there is a need for them to continue developing their research competencies. The same scenario is also true even in other educational institutions. In the study conducted by Daylo (2016), teachers of private institutions in Western Visayas also showed good performance as researchers while being excellent as instructors. They, too, rated themselves low in conducting action research, and submitting researches for publication.

Perhaps, what would ensure the development of research competence is the experience of conducting research instead of the experience in teaching. Reder (cited in Massing & Schneider, 2017) articulated that the acquisition of competency continues after formal education through work life and experience, opportunities for skill use and efforts of life-long learning. In this investigation, for the research competency of the teachers to level up, teachers must use their research skills by conducting research and submitting outputs for publications.

While teaching experience may be considered an important factor in the development of one's competence, in terms of readiness in the new normal it generated a no significant results. Meaning, teachers no matter the number of years that they have in the teaching profession, their level of preparedness for the new normal in education is of the same level. Again, across teaching experience, the Department of Education was able to provide teachers with the same training to prepare them for the first year of the implementation of the new learning modality. The fact that different educational administrations have had to carry out a transfer of the educational system from face-to-face teaching to online teaching at a speed of real urgency is causing the use of ICT to have gone from being one more methodological resource to a necessary solution so that the teaching and learning process is not interrupted, thus avoiding the collapse of educational systems worldwide. This has been an educational, but also a health measure since the closure of schools and the adoption of online education would help stop the spread of the pandemic (Diaz et al.,2020).

All schools regardless of classification have to comply with the standard safety protocols as mandated by the government to ensure the health and safety of the learners, teachers, administrators, and other stakeholders. As such, the same level of preparedness in terms of information, training and webinars were provided to teachers. But in terms of duties and responsibilities, and ICT skills, teachers from large schools have the advantage of having more and better resources to support them in preparing for the new normal far better than teachers from the small and medium schools. The shift in the teaching and learning processes means transition that necessitate teacher and infrastructure support. Thus, teachers from large schools showed the highest mean score for readiness among the three groups. As found by Al-Awidi and Aldhafeeri (2017), teachers' readiness in implementing a digital curriculum can be realized with the right knowledge and skills, infrastructure and technical support, all of which are quite limited for the small and medium schools.

There are significant differences in the level of Teachers' Readiness in the new normal when the teachers were grouped according to age, sex, position, school classification, and congressional district. No significant results were found when they were grouped according to educational attainment and teaching experience. The level of readiness of the teachers in the new normal is affected by some of the demographic characteristics such as their age, sex, position, school classification, and congressional district.

There were significant differences in the level of teachers' readiness in the new normal, $F(3, 376)= 4.46$, $p=.004$, and in terms of ICT Skills, $F(3, 376)= 16.55$, $p<.000]$ when the teachers were grouped according to age. Post hoc test revealed that for the overall readiness, the significant differences were found between the group of teachers aging 30 and below and 51 and above, and 31 to 40 years old and 51 and above. Teachers in the oldest age bracket (51 and above) showed significantly lower level of readiness. As to their ICT Skills, the teachers also showed significantly lower level of readiness when compared to the three other age groups. A significant difference in the ICT Skills readiness was also found between the 31 to 40 years old and 41 to 50 years old, with the former showing a significantly higher level of readiness. In terms of Safety Protocol, $F(3, 376)= .242$, $p=.867$, and Duties and Respondents, $F(3, 376)= .796$, $p=.497$, no significant differences were found between groups. David (2020) is of the opinion that many teachers are not as keen to be updated on the technical software or online social skills to be able to use the strategy in mitigating the effect of the crisis on the education of students. While online programs are great for upskilling teachers, they also pose a burden for many of them (especially the older generation) who have mastered teaching on site and are equipped with teaching tools and basic modern technology and software. Having to relearn or even unlearn skills for teaching seems to be a herculean task. This explains the significantly lower level of readiness among older teachers, especially in ICT Skills.

Further results revealed the significant differences in the level of Teachers' Readiness in the new normal when grouped according to sex. For the overall level of readiness, the male teachers have significantly higher level of readiness than the female teachers, $t(378)= 3.77$, $p<.01$. Similar results were found in terms of Safety Protocol, $t(378)= 3.58$, $p<.01$; Duties and Responsibilities, $t(378)= 3.29$, $p=.001$; and ICT Skills, $t(378)= 2.89$, $p<.01$. Similar results were discovered by Badri and colleagues (2014) where male teachers demonstrated higher level of technology readiness than the female teachers. Also, Van Deursen and Van Dijk (2015) noticed men scoring higher than women on all skill domains of technology like the operational skills, formal skills, information skills, formal skills and strategic skills.

When the teachers were grouped according to Position, the results revealed that significant differences existed in the level of the overall Teachers' Readiness in the new normal, $F(4, 375)=3.48$, $p=.008$; and in terms of Safety Protocol, $F(4, 375)=4.28$, $p=.002$; Duties and Responsibilities, $F(4, 375)=3.24$, $p=.012$; and ICT Skills, $F(4, 375)=2.79$, $p=.026$. Post hoc test revealed that the significant differences in the overall level of readiness in the new normal are between the groups of Teacher II and the Master Teacher I and II, with the master teachers showing significantly higher level of readiness. In terms of Safety Protocol, the significant differences are between the Mater Teacher I compared to those with positions of Teacher I, II, and III, with the master teachers having significantly higher level of readiness in terms of safety protocol. A significant result was also found between the Teacher I and II with the former showing a significantly higher mean score on their level of readiness. In terms of Duties and Responsibilities, the Master Teacher I and II have shown significantly higher level of readiness than those with positions of Teacher I, II and III. The same post hoc results were also true in terms of ICT Skills, i.e., the master teachers have significantly higher

level of readiness than the Teacher III. The teachers have prepared themselves exceptionally with the knowledge and skills on safety protocol, duties and responsibilities and in information and communication technology skills that are needed in teaching in the new normal.

There was a *very satisfactory* level of overall teaching competence among the teachers in the new normal when taken as a whole group and when classified according to age, sex, educational attainment, teaching experience, position, school classification, and congressional district with the exception of the doctoral degree holders, and master teachers whose level of teaching competence are *Outstanding*. For the overall level of teaching competence in the new normal, significant differences are present when the teachers were grouped according to age, sex, educational attainment, position, school classification, and congressional district. When they were grouped according to teaching experience, no significant differences were found. Results showed that there were significant differences in the overall level of Teaching Competence of the teachers in the new normal, $F(3, 376)= 2.74$, $p=.043$. There were also significant differences found in terms of Learning Environment and Diversity of Learners, $F(3, 376)=2.95$, $p =.033$; and Assessment and Reporting, $F(3, 376)=3.86$, $p =.010$, when the teachers were grouped according to age.

Analysis of the post hoc test showed that the teachers 51 years old and above have significantly lower level of teaching competence when compared to the 31 to 40 years old. The latter also have significantly higher level of teaching competence when compared to the 30 years old and below. In terms of Learning Environment and Diversity of Learners, and Assessment and Reporting, the 51 years old and above still showed significantly lower level of teaching competence when compared to the 31 to 40 years old, and 41 to 50 years old. The 41 to 50 years old also showed significantly higher level of competence than the 30 years old and below for Assessment and Reporting.

In terms of Content Knowledge and Pedagogy, $F(3, 376)= 1.91$, $p=.127$, and Curriculum and Planning, $F(3, 376)= 1.89$, $p=.131$, no significant differences were found between groups. In terms of Learning Environment and Diversity of Learners, and Assessment and Reporting, the hypothesis was rejected, whereas, in terms of Content Knowledge and Pedagogy, and Curriculum and Planning, the hypothesis was not rejected. The implication of the results is that older teachers have significantly lower level of teaching competence compared to the younger ones. The new normal in education requires the upskilling of the teachers which is quite difficult for teachers above 50 years old. David (2020) believed that many teachers are not as keen to be updated on the technical software or online social skills. Learning new processes and technology in teaching pose a burden for many of the older teachers who have mastered teaching on site and are equipped with teaching tools and basic modern technology and software. Having to relearn or even unlearn skills for teaching seems to be a herculean task.

The teachers' age, sex, educational attainment, position, school classification, and congressional district were found to be significant determinants of the teachers' level of teaching competence in the new normal. The research competence of the teachers in the new normal as a whole group and when grouped according to age, sex, and teaching experience is *satisfactory* across groups in all areas. When they were grouped according to educational attainment and position, the doctoral degree holders and the master teachers have *very satisfactory* level of research competence, along with those from the fourth congressional district.

There were significant differences in the level of Research Competence of the teachers in the new normal when they were grouped according to age, sex, educational attainment, position, school classification, and congressional district, whereas, no significant differences were found when they were grouped according to teaching experience. When the teachers were grouped according to Educational Attainment, their level of Research Competence in the New Normal, the results showed that there were significant differences $F(2, 377) = 10.53$, $p=.000$. Significant results were also found in terms of the three research competence aspects. In all the aspects of research and in the overall research competence of the teachers when grouped according to educational attainment, the post hoc test results showed that the teachers with bachelor's degree as their highest level of education have significantly lower mean scores when compared to the teachers with master's and doctoral degrees. The result of this study is a confirmation of the previous findings on the relationship of educational attainment and competence. In the study of Massing and Schneider (2017) they explained that in comparing competencies, the differences could come from factors especially educational attainment. Basic competencies, according to Baumet et al. (in Massing & Schneider, 2017) are results of cumulative processes of knowledge acquisition facilitated by formal education. Therefore, the more opportunities for knowledge acquisition are provided to and used by an individual, the higher the level of formal education and basic competencies achieved. This point of view thus leads to the expectation that educational attainment and basic competencies are closely related.

Significant relationships were found between the levels of Teachers' Readiness, and Teaching Competence, Teachers' Readiness and Research Competence, and Teaching Competence and Research Competence in the new normal. The levels of Teachers' Readiness and Teaching Competence, Teachers' Readiness and Research Competence, and Teaching Competence and Research Competence in the new normal are directly related variables, i.e., as one variable increases or decreases, the other variable also followed the same direction.

Policy implications

Based on the findings of the study, the policy implications which could serve as reference in the formulation of educational policies in the new normal are laid down in the following matrix. For each of the salient finding, policy implications were identified as recommendations to the education policy formulators.

Table 2. *Policy Implications*

Findings	Policy Implications
• The teachers, as an entire group had Very High level of Readiness in terms of Safety Protocol and High Readiness in terms Duties and Responsibilities, and ICT Skills. When they were grouped according to age, sex, educational attainment, teaching experience, position, school classification, and congressional district, the teachers have High level of Readiness except for the Master Teachers and those from the Fourth Congressional District who manifested that they have Very High level of Readiness. • There are significant differences in the level of Teachers' Readiness when the teachers were grouped according to age, sex, position, school classification, and congressional district. • Significant relationships were found between the levels of Teachers' Readiness, and Teaching Competence, Teachers' Readiness and Research Competence, and Teaching Competence and Research Competence	• There is a need to revisit and redefine the framework of teacher competencies being used in the country so that necessary adjustments can be made to address the call of the times in the education sector. • Policy reforms should be comprehensive, and not just focus on how educational services be delivered. This is to highlight the point of view that teacher competencies are developed incrementally starting from the tertiary education to pre-service training, to in-service training, graduate and post graduate education and career long professional development.
• The level of research competence of the teachers as whole group and when grouped according to age, sex, and teaching experience is Satisfactory across groups in all areas. • There were significant differences found in the level of Research Competence of the teachers when they were grouped according to age, sex, educational attainment, position, school classification, and congressional district.	• Research is part and parcel of the teaching and learning process. There must be some policy measures on research that will cover not just the master teachers if our educational system wants to foster a culture of research in our educational institutions across educational levels. The policies must include the general guidelines, implementation procedures, incentives, publications, among others.

References

Aktharsha, U. &Sengottuvel, A. (2015). Teacher effectiveness and professional competency in school education.International Journal of Management, 6 (1), 181-190.

Al-Awidi, H. &Aldhafeeri, F. (2017). Teachers' readiness to implement digital curriculum in Kuwaiti schools. Journal of Information Technology Education: Research, 16, 105-126.

Badri, M. Rashedi, A.A., Yang, G., Mohaidat, J. & Hammadi, A.A. (2014). Technology readiness of school teachers: An empirical study of measurement and segmentation. Journal of Information Technology Education Research, 13, 257-275.

Daylo, R. (2016). Boundary management, role identification, and role performance of teachers in Catholic higher education institutions in Western Visayas: Basis for a Catholic teachers' formation program. [Doctoral dissertation, University of San Agustin].

DepEd Order No. 012, s. 2020. Adoption of the basic education learning continuity plan for school year 2020-2021 in light of the Covid-19 public health emergency.

DepEd Order 018, s. 2020. Policy Guidelines for the Provision of Learning Resources in the Implementation of the Basic Education Continuity Plan.

Fedina, N. V., Burmykina, I.V., Zvezda, L.M., Pikalova, O.S., Skudnev, D.M., Voronin, I.V. (2017). Study of educators' and parents' readiness to implement distance learning technologies in preschool education in Russia. URASIA Journal of Mathematics, Science and Technology Education ISSN: 1305-8223 (online) 1305-8215.

Ghavifekr & Rosdy, (2015). Teaching and learning with technology: Effectiveness of ICT integration in schools. International Journal of Research in Education and Science, 1(2).

Gepila, E. JR. (2019).Assessing teachers using Philippine standards for teachers.Universal Journal of Educational Research.

Guerriero, S. &Revai, N. (2017) Knowledge-based teaching and the evolution of a profession. In: Guerriero, S. (ed) Pedagogical Knowledge and the Changing Nature of the Teaching Profession. Paris: OECD Publishing http:www.brighthubeducation.com/teaching-methods-tips/15761-importance-of-teacher-self-assessment

Massing, N. & Schneider, SL. (2010). Degrees of competency: The relationship   between educational qualifications and adult skills across countries. Springer Open. doi: 10.1186/s40536-017-0041-y

McCombes, S. (2020). How to create a research design. Retrieved December 10, 2020 www.scribbr.com

Tria, J. Z. (2020). The COVID-19 Pandemic through the Lens of Education in the Philippines: The New Normal. International Journal of Pedagogical Development and Lifelong Learning, 1(1), 2001. doi:10.30935/ijpdll/8311

Tupas, F.P. &Laguda, M.L. (2020). Blended learning: An approach in Philippine Basic Education Curriculum in New Nornal: A Review of Current Literature. Universal Journal of Educational Research, 8(11), 5505-5512.

Ventayen, R.J. M., Salcedo, R.E., Orlanda-Ventayen, C.C., Ventayen, L.M. &Ventayen, T.J.M. (2020). Senior highschoolteachers' practices and readiness in blendedlearning environment: Basis for a blendedlearning preparednessframework.International Journal of Scientific & Technology Research, 9(2).

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Investigating the Impact on Learner Interest With the Incorporation of Active Learning Activities in a Tertiary CLIL Context

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

This interactive presentation will discuss the benefits and time-saving nature of the inclusion of Active learning(AL) techniques emphasizing the positive effect on learner interest (LI) in Japanese tertiary Content and Language Integrated Learning (CLIL) oriented classes. This presentation will offer a brief background into the concept of AL as a methodology for instruction as well as a brief explanation of the LI theoretical framework, highlighting Hidi and Renninger's (2006) 4-phase model of interest development and its application to the current study. Additionally, results from exit interviews as well as student evaluations of course content will be presented revealing that students claimed to be more engaged and interested in the content of the course as a direct result of the Active learning activities. Of note with regard to findings was that although some students voiced favor for the safety of a traditional passive activities such as reading and writing, the majority of the students reported that upon participating in the active learning activities they felt more confidence dealing with content. Useful, transferable Active Learning techniques that may be easily applied to other classes will be discussed. This research although preliminary adds optimism that active learning methodology maybe successfully integrated into tertiary classes with LI, English study as well as student satisfaction with class content affectively increased.

Keywords: Active Learning (AL), Learner interest (LI), Content and Language Integrated Learning (CLIL), Tertiary Education

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Introduction

There is an ever growing amount of evidence to suggest that utilizing "active learning" in lecture classes encourages students to actively engage in course material more effectively than traditional "passive" lectures appear to (Smith et.al., 2011). The benefits of active learning have been studied extensively in a wide-variety of disciplines including the natural sciences, social sciences and humanities but the reality is that traditional passive lecture classes continue with students more often than not commenting they are dissatisfied with the content vis-à-vis the delivery method (Deslauriers et.al,2019). This presentation began with an overview of Hidi and Renninger's (2006) 4-phase model of interest development followed by a discussion of the benefits of Active Learning(AL) as a methodology for instruction in lecture classes. A description of the context for this teaching intervention, specifically a Japanese tertiary Content and Language Integrated Learning (CLIL) oriented Lecture classes was discussed. Examples of transferable AL techniques were elaborated upon with an emphasis on "activating" the lecture class under investigation as well as the benefits and time-saving nature of the inclusion of AL techniques. This paper will detail preliminary results from exit interviews as well as student course evaluations upon completion of the course which emphasized the positive effect on learner interest, engagement, and English study.

Interest

Consulting a dictionary a common definition of interest found is "a feeling that you have when you want to know or learn more about somebody/something" (Oxford University Press,n.d.). Learner Interest as a body of research defines the concept of "interest" more comprehensibly as a psychological state, as well as a predisposition to reengage particular disciplinary content over time with a complex interplay between affective and cognitive components that drive motivation (Hidi,2016). Interest may be considered a Motivational variable important role in supporting learning and developing knowledge and expertise(Silvia, 2008). Learner interest and engagement is an aspect of educational practice that has been described as both significant as well as complex there is a need for better detail about how "students behave, feel, and think" (Fredricks, et al., 2004).

Researchers, Hidi and Renninger (2006) have proposed a four phase theory of interest development with the phases sequential but are dependent on the context, level of inherent challenge, reward and support (Figure 1). The first two phases, Situational interest are of particular interest to educators it is highly changeable. Situational interest has been defined as an immediate affective response to certain conditions and/or stimuli in the learning environment that focuses one's attention on the task, which may or may not last over time and is highly changeable therefore Situational interest may or may not lead to well-developed individual interest (Hidi & Renninger, 2006). With regard to language learning; Situational interest is closely linked to the classroom environments, content, themes, personal relevance as well as linking prior knowledge and novelty as many of these factors are controllable in classroom activities.

Figure 1 *Four-Phase Theory of Interest Development*

Active Learning

People remember:10% of what they read, 20% of what they hear, 50% of what they see and hear, 70% of what they say and 90% of what they do (Dale,1969). Active Learning (AL) is a concept that is often proposed as a means to increase learner interest and engagement. Active learning defined as a set of specific instructional methods that promote greater student involvement and responsibility for learning than traditional instructional approaches provide. Researchers Bonwell and Eison (1991) comment that AL should meet the following conditions:

- Students are involved in more than listening.
- Less emphasis is placed on transmitting information and more on developing students' skills.
- Students are involved in higher order thinking (i.e. analysis, synthesis, evaluation).
- Students are engaged in activities (e.g. reading, discussing, writing).
- Greater emphasis is placed on students' exploration of their own attitudes and values.

Table 1 summarized from Mello and Less (2013) offers an illustration of the differences between traditional lectures and lectures that incorporate AL. The benefits of AL for the students include increased attention and engagement, promotion of critical thinking skills as well as deepen students understanding. The reflective nature of AL aids the instructor in investigating the authenticity or relevance of course material to the students as this will promote LI and assist in assessing student understanding (Hidi, 2006).

• Instructor talks & students listen with minimal interruptions. • Student concentration can be observed dropping after 10-15 minutes • Instructor's questions are largely rhetorical • Students' responses to an instructor's questions are made by students raising their hands • Student-to-student talk is discouraged • Students listen and take notes independently • Student comprehension during the lecture is not monitored explicitly • Opportunities to correct misunderstandings are not provided	• Instructor talks with periodic pauses for structured activities • As student concentration begins to wane, a short structured in-class activity is assigned • Instructor's questions require responses • Students' responses to an instructor's questions are commonly checked and monitored • Student-to-student talk is encouraged • Students often work with partners or in groups • Student comprehension during the lecture is assessed directly • Opportunities to correct misunderstandings are periodically

routinely during the lecture • Student absenteeism often is quite high	provided within the lecture • High rates of attendance often are reported

Table 1:Traditional verus Interactive Lectures

Background to the Study

The researcher's university was experiencing significant student dissatisfaction with lecture classes. Pre pandemic course Evaluation questionnaires found that students found the lectures boring and many commented that they spent "more time on their phone than listening to the professor." This is problematic as many of the lecture classes students are required courses therefore the content would be deemed necessary not only for graduation but conceivably for students' future careers. As commented previously AL techniques have been found beneficialand easily implemented in many different streams of education therefore it seemed logical to investigate AL as way to increase LI as well as promote English study in the current lecture class.

The current research was conducted in a small private university in Tokyo during the 2022 Spring term. The sample utilized was a third year soft CLIL language driven lecture class on the language curriculum consisting of 91 female, 34 male Japanese students (n=125). The course taught in-person by the instructor allowing easy access for observation, interviews and the students enrolled the class had an average TOEIC score between 500-600.

The methodology employed was an Intrinsic Case Study (Stake,1995) with mixed methods (Creswell and Creswell,2018), utilizing data from the form of Classroom observation course Evaluations (self -reporting questionnaire) and purposeful sampling interviews (Patton, 2002) with exit interviews(n=6) . The reasoning for this mixed methods approach was specifically the necessity to follow-up the questionnaires with qualitative data as merely self-reporting may be viewed as subjective.

Active Learning Intervention

The general categories of AL learning strategies are Collaborative learning and cooperative learning. These strategies shift learning from a solitary to group activities in small groups to complete a specific instructor-assigned task or goal, promoting a relatively high level of student interaction and engagement (Cusea, 1992). There are a multitude of AL activities that are easily implemented into lectures classes (see Yamauchi, 2018 for an extensive list).

In each of the 15 lectures given in the 2022 Spring term the following three AL techniques were utilized for the purposes of this study: The Pause Procedure (Rowe, 1980), Think-Pair-Share (Millis et.al, 1995) and Jigsaw Learning (Johnson and Johnson, 2009).

The Pause Procedure (Rowe, 1980) is most arguably the easiest implemented AL technique available to an instructor promotes greater student engagement with minimal modification to one's traditional lecture presentations. The instructor pause for two minutes every 12-15 minutes during the lecture. During the pauses, students work in pairs to discuss and rework their notes without instructor-student interaction. This technique allows for the instructor assess student understanding and promote peer learning.

The Think-Pair-Share activity (Millis et.al, 1995) During this activity The instructor asks a question and students reflect on information that provided initially through a reading assignment, a short lecture, a videotape, etc. The students think about the question and refer to their notes write a response. The activity may stop there or if time permits students may work in pairs and share their responses with another pairs, classmates. This allows students to privately formulate their thoughts before sharing them with others, increasing their English speaking time, fostering higher-order thinking skills as well as reflecting on personal relevance promoting situational interest (Hidi,2016).

Arguably the most well-known AL intervention is The Jigsaw Technique (Johnson and Johnson, 2009). The name is derived from the jigsaw puzzle because it involves putting the parts of the assignment together to form a whole picture. During this activity the students are put into groups with each student given a piece of an assignment for example a part of a reading passage. Students must work with their group members in order to successfully complete the task, thus making students dependent on each other to succeed. (See Johnson and Johnson, 2009 for a more extensive explanation).

Results and Discussion

Upon the completion of the course the students completed Course evaluations. Students individually reported a higher attendance rate. This was also confirmed by the instructor. There was a 95% attendance rate. This finding is in agreement with Deslauriers and colleagues (2019), who found higher rates of attendance in university lecture classes utilizing AL techniques. Of further interest the instructor also observed that this was the first time in five years teaching this course that no students dropping the course.

An increase in student self-confidence was also noted with a number of students expressing their opinions in English with relation to the lecture content and commenting that they felt comfortable and confident expressing their opinions in English. With regard to English study, students also commented that they felt more prepared for vocabulary quizzes. This was particularly encouraging as this course although heavily content based was part of the English Language curriculum and presented entirely in English. Specifically two students interviewed commented their vocabulary scores increased in comparison to another English lecture class that was delivered in a traditional manner. These findings are in agreement with Mello and Less (2013) who found that AL techniques increased test scores in the tertiary context across the various subjects including ESL classes. A cross-fertilization of content and language study as well as enjoyment was commented on by a student who stated: "This class was very busy but I liked it. My vocabulary quiz score increased and some of the vocabulary was in my business class so I already could remember it so I was very happy."

In closer examination of Learner Interest with this sample, comments from students during exit interviews offered examples of triggered Situational Interest such as enjoyment, personal relevance and novelty all viewed as instrumental in the achievement of Learner interest (Hidi, 2016). During exit interviews students commented expressed enjoyment with the course as well as relevance stating that groupwork was useful for clarification of content from the lecture. With regard to novelty, one of the six students interviewed commented: "This class was very different for me even though there were many students I didn't feel like it was a Lecture class." It was fun working in small groups" (novelty). Furthermore personal relevance was claimed by three students stating: "A lot of the things we studied in this class were similar to my Seminar so it was useful for me."

It should, however be commented that there was some hesitancy with at least one student who commented: "I felt pressure to work in a group. This is a lecture class so I didn't expect to be graded on participation I was worried about my grade but in the end I really enjoyed the class…(hesitancy). This comment concurs with the literature with regard to AL implementation as it in not unusual for students who have been taught exclusively in a passive lecture format to feel a certain degree of initial anxiety while acclimatizing to this new students centered teaching delivery/methodology (Deslauriers et.al, 2019).

Some further observations by the instructor were a larger number of questions and comments by the students as interest seemed to be activated with the content of the lectures (Silvia, 2008). As group work was implemented in at least 50% of the class time it allowed the freedom for instructor to circulate through the class instead of standing in front of the students and as such able to gauge students understanding of content. An interesting observation was that higher rates if L2 (English) were used than expected. This finding is in consensus with research into students language usage in groupwork in CLIL classes where it was discovered through classroom observations that students were more apt to prepare materials in English when there time restraints and the task was a presentation (Yamauchi, 2018).

Conclusion and Future Implications

Although the benefits of active learning have been studied extensively in a wide-variety of disciplines including the natural sciences, social sciences and humanities but it traditional passive lecture classes continue to be the norm with students' dissatisfaction and lack of interest often cited by students as reasons for poor course performance. This presentation discussed the implementation Active Learning (AL) techniques in a soft CLIL lecture class to ascertain how Learner was affected by this intervention. Hidi and Renninger's (2006) 4-phase model of interest development was utilized to determine the degree to which Learner Interest (LI) was affected.

A description of the context for this teaching intervention, specifically a Japanese tertiary Content and Language Integrated Learning (CLIL) oriented Lecture classes was discussed and examples of transferable AL techniques were elaborated upon with an emphasis on "activating" this lecture class benefits and time-saving nature of the inclusion of AL techniques. Preliminary results illustrated that there was a positive effect on LI to the this CLIL context lecture class.The factors associated with triggered situational interest specifically novelty, enjoyment and relevance were reported. Other than some hesitancy with the student-centered approach all students commented that they enjoyed the class and reported higher than the norm attendance rates.

A major drawback for this research was that the intervention was only one term of 15 classes therefore future implications would be to look at this group longitudinally to determine if AL techniques would promote more sustainable Individual Interest. Another finding of particular interest to language teachers and future research was that student vocabulary score increased as did L2 (English) usage in group work. This research although preliminary adds optimism that active learning techniques are a valuable tool thatmaybe successfully integrated into tertiary lecture classes leading to increased triggered situational interest as well as higher student satisfaction.

References

Creswell, J. W., & Creswell, J. D. (2018). Research design (5th ed.). SAGEPublications.

Dale E. (1969). Cone of experience, in Educational Media: Theory into Practice. Wiman RV (ed).

Deslauriers, L., McCarty, L. S., Miller, K., Callaghan, K., & Kestin, G. (2019). Measuring actual learning versus feeling of learning in response to being actively engaged in the classroom. Proceedings of the National Academy of Sciences, 116(39), 19251–19257. https://doi.org/10.1073/pnas.1821936116

Hidi, S.(2016). Revisiting the role of rewards in motivation and learning: Implications of neuroscientific research. Educational Psychological Review, 28(1):61–93.

Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest development. Educational Psychologist, 41, 111–127.

Ikeda, M., Izumi, S., Watanabe, Y., Pinner, R., & Davis, M. (2021). Soft CLIL and English Language Teaching: Understanding Japanese Policy, Practice and Implications (1st ed.). Routledge. https://doi.org/10.4324/9780429032332

Johnson, D. W., & Johnson, R. T. (2009). An Educational Psychology Success Story: Social Interdependence Theory and Cooperative Learning. Educational Researcher, 38, 365-379.

Mello, D., &Less, C. A., (2013). "Effectiveness of active learning in the arts and sciences". Humanities Department Faculty Publications & Research. Paper 45,46-58.

Millis, B., Lyman, F. T., & Davidson, N. (1995). In H. C. Foyle (Ed.). Interactive learning in the higher education classroom (pp. 204-225). National Education Association.

Oxford University Press. (n.d.). interest. In *Oxford Advanced Learner's Dictionary*. Retrieved October 22, 2020, from https://www.oxfordlearnersdictionaries.com/us/definition/english/interest?q=interest

Patton, M. Q. (2002). Qualitative Research & Evaluation Methods. 3rd edition. Sage Publications, Inc.

Rowe, M. B. (1980). Pausing Principles and Their Effects on Reasoning in Science. In F. B. Brawer(Ed.), Teaching the Sciences: New Directions for Community Colleges (pp. 27-34). Jossey-Bass.

Silvia, P.J., (2008). Interest—the curious emotion. Curr. Dir. Psychol. Sci. 17, 1(February 2008), 57–60.

Smith, M. K., Wood, W. B., Krauter, K., & Knight, J. K. (2011). Combining peer discussion with instructor explanation increases student learning from in-class concept questions. CBE Life Sciences Education, 10(1), 55–63. https://doi.org/10.1187/cbe.10-08-0101

Stake, R. E. (2005). Case Studies. In N. K. Denzin, & Y. S. Lincoln (Eds.), Handbook of Qualitative Research (pp. 443-454, 3rd ed.). Thousand Oaks, CA: Sage Publications.

Yamauchi, D.,(2018). Translanguaging in the Japanese Tertiary Context: Student Perceptions and Pedagogical Implications. NUIS Journal of International Studies 3 15-27.

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Examining the Type of Relationship That Exit Between Higher Education and Economic Growth in USA

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

For a long time, economists and policymaker have argument relationship between higher education and economic growth (especially in long-term economic growth). In the face of the epidemic and financial shortages, some researchers have increased their interest in the rational use of limited resources to drive economic growth. The purpose of this paper is to examine the relationship among higher education investment, education acquisition, and growth rate. The fundamental determinants of growth theory for economic growth are human capital and labor. With the development of theoretical and empirical research in growth, a variety of viewpoints and controversies have been generated, and there are multiple development directions (Hanushek, E. A, 2016). The test results show that higher education expenditure indicators are factors that continue to affect economic growth fluctuations both in the short-term and in the long-term, and have made contributions that cannot be ignored. Higher education has brought huge returns to personal income and reduced unemployment. The educational investment will not directly lead to economic growth but will ultimately affect growth through human capital accumulation and STEM technology innovation. The impact process is a dynamic, self-reinforcing, and circular process. Higher education investment is an essential source of human capital, and the positive effect of human capital on economic growth can only be seen for a long time. Therefore, investment in higher education requires a long-term vision and a quickly transferred mindset.

Keywords: Higher Education, Economic Growth, Capital Accumulation

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Introduction

For a long time, economists and policymaker have argument relationship between higher education and economic growth (especially in long-term economic growth). In the face of the epidemic and financial shortages, some researchers have increased their interest in the rational use of limited resources to drive economic growth. The research on growth has developed in both theoretical and empirical fields, and there are many contradictory theoretical views on the relationship between educational investment and economic growth. Economic growth mainly depends on capital growth, labor growth, human capital growth, and STEM progress. Higher education is a crucial way to increase human capital. Higher education and economic development influence and promote each other. Higher education promotes technological innovation by improving the quality of workers, thereby effectively driving economic growth. Economic growth is the material basis and conditions for educational development. This is a symbol of the economic status of individuals and nations at the same time.

The purpose of this paper is to examine the relationship among higher education investment, education acquisition, and growth rate. It also provides an in-depth analysis of how to measure human capital and labor. Then, it provides data on the impact of human capital differences on economic growth, confirming the mutual relationship.

Conceptual Background

The fundamental determinants of growth theory for economic growth are human capital and labor. With the development of theoretical and empirical research in growth, a variety of viewpoints and controversies have been generated, and there are multiple development directions (Hanushek, E. A, 2016). Resources and policies Different potential models of how to affect growth. Moreover, in empirical analysis, people have been looking for the difference between education investment and economic growth maximization. This time, we use education income, unemployment rate, and growth rate to evaluate the value of education investment to economic growth in terms of human capital.

Investment in education obtains more human capital, thereby promoting sustained economic growth. On this basis, human capital investment will affect technological progress and long-term impact economic growth (Lucas, 1988). This has been proven in many endogenous growth models. Education promotes economic growth by increasing human capital and increasing physical capital and social capital. To enhance the status of personal income and national economic strength.

The research on the influence of the difference in growth rate has always maintained a high degree of enthusiasm. Different growth analysis methods are used for different problems, and at the same time, the differences caused by the use of different growth models are used. This article's focus is to understand further the potential and inherent impact of education and human resources by analyzing education investment, unemployment rate, and income.

How necessary are human capital in higher education and economic growth? At the same time, there are apparent differences in the impact of STEM on the economy, but like most theorists, this article pays little attention to the influencing factors of STEM. We consider the role of higher education investment and verify the value of human capital through the return

on investment, thereby determining the relationship between higher education and economic growth.

The modeling and measurement methods of human capital provide essential background for a better understanding of higher education and economic growth (Toutkoushian & Paulsen, 2016). The impact of labor on productivity has promoted the rapid development of the theory, experience, and empirical application of the concept of human capital on a wide range of issues. There is a corresponding relationship between investment in education and the return on the labor market.

Growth Model

The Solow economic growth model is a theoretical framework used to study economic growth, which was developed by American economist Robert Solow in 1956 (Solow, R. M. 1956). In the long-term economic environment, the Solow Growth Model is a neoclassical model of economic growth that aims to explain the long-run evolution of output per capita. In this model, the main exogenous variable is the rate of productivity progress through educational attainment, while capital per capita and labor force participation are considered endogenous variables, meaning that they are determined within the model. The Solow model predicts that an economy will converge to a steady state where the rate of investment is equal to the rate of depreciation, and capital per capita is constant.

The basic assumption of the Solow growth model is fixed on the labor and capital ratio. The endogenous variable is investment. The exogenous variable is capital accumulation.

Assumptions of Solow growth model:

1. Only produce one product, this product can used as consumption or investment.
2. Price and earnings are variable.
3. Labor and capital are substituted for each other.
4. Exist technological progress.

The basic production function for the growth model is:

$Q = A * K^a * L^{1-a}$ $(0 < a < 1)$

Where A is a constant representing technology, a is the capital share, C is consumption, d is the rate of capital depreciation, I is investment, K is the present capital input, K' is the future capital input, L is the labor input, Q is the output, S is the incomes. 【Capital accumulation: K' = (1–d)K + I】

> Output per person:
> $q = AK^a$
> Where q=Q/L
> According to the assumption of competitive equilibrium:
> The attainment-investment identity: Q=C+I
> Investor's budget: Q=C+S
> Therefore, I=S=sQ.
> So, Capital accumulation: K' = (1–d)K + sQ=((1–d)K + sAK^a

The Solow Growth Model with these variables highlights the importance of investing in education for sustained economic growth and development. By taking into account the role of higher education inputs and educational attainment, policymakers can make informed decisions on how to allocate resources for education to maximize the economic benefits.

Higher Education Input

Figure 1: Annual percentage increase - A Budget Sub-Function of Education, Training, Employment, and Social Services in Higher Education, 2018-2020

Source: USASPENDING

A Budget Sub-Function of Education, Training, Employment, and Social Services and the relationship between higher education conducted in-depth research on the related influence relationship and the dynamics between them. The data comes from the official website of USASPENDING. The variables are the percentage of annual education funding growth and

education category. From the analysis in Figure 1, we find that from 2018 to 2020, the percentage of government funding for each type of education has increased, but it is worth noting that the percentage of investment in higher education each year is the largest—almost half of the funds invested in education.

Educational Attainment

Figure 2: Earnings and unemployment rates by educational attainment, 2020

Note: Data are for persons age 25 and over. Earnings are for full-time wage and salary workers.
Source: U.S. Bureau of Labor Statistics, Current Population Survey.

The relationship between higher education level, median weekly earnings, and the unemployment rate has been studied. The data comes from the official website of the U.S. Bureau of Labor Statistics. The variables are median usual weekly earnings and unemployment rate. From the analysis of educational attainment in Figure 2. As the degree of education increases, the median weekly earnings will also increase as the degree of education increases and the unemployment rate decreases.

Growth Rate

Figure 3: Growth Rate of Higher Education, Utility Patent Grants,
and GDP in USA, 2018-2020

Source: The World Bank, USPTO, and USASPENDING

This article focuses on the relationship between higher education investment, education acquisition, and economic growth and conducts an empirical study on its causality and the dynamic effects. The number of patents granted and the growth rate of patents are the two most common indicators that reflect STEM technology innovation. Since the number of patent authorizations is affected by human factors such as government organizations, the number of authorized patent applications is selected as the proxy variable to measure STEM technology innovation. The proxy indicators of economic growth and higher education investment will be represented by the current measured GDP and national fiscal expenditure on higher education.

Considering the above factors, the data from 2018 to 2020 are selected as the sample of this study. Respectively from the official websites of The World Bank, USPTO, and USASPENDING, empirical research is carried out based on a unified solution to the annual growth rate. Variables, using symbols such as GDP, spending, and patents to represent the current annual growth rate of GDP, the annual growth rate of national financial higher education funding, and the growth rate of patent application authorization.

From the analysis in Figure 3, we can see that from 2018 to 2020, the average annual growth rate of GDP at current prices has a slight downward trend. At the same time, the growth rate of the national financial higher education fund also showed an upward trend, but the fluctuation range of the growth rate of patent applications increased slightly and then slightly decreased. It is worth noting that the average annual growth rate of GDP, the growth rate of the national financial higher education fund, and the number of patent applications granted do not show the same fluctuating trend.

Discussion

How can investment in higher education promote economic growth through educational attainment? Education level is the source of power for social and economic development, and education is a crucial way to enhance cognition, labor, and human capital. Therefore, investment in higher education can improve the quality of talents and gradually increase human capital accumulation, thereby promoting economic growth. Furthermore, human capital and productivity, the core variables determining economic growth, will inevitably accelerate economic growth. Developed countries and developing countries have different levels of economic development and are human capital reserves at different stages. Therefore, investment in education, especially in higher education, accelerates economic growth through human capital.

How does economic growth support the development of higher education? Economic growth provides a material foundation for the coordinated development of education. To a certain extent, education refers to activities formed through the primary form of human capital investment to cultivate and train labor ability in a planned way. From this perspective, the investment and operation of education can be seen as an industry's input and output process. From the main body of burden, the cost of education can be divided into two parts: social cost and personal cost. The expansion of higher education requires an increase in related investment. To achieve the coordinated development of education, we must base it on sustained and stable economic growth to ensure the long-term sustainability of education investment. Economic growth has a restrictive and guiding effect on the development of education. Economic development determines the scale, content, organizational form, teaching methods, educational methods of education, the quality of the labor force, and the quality of talent training. Fundamentally speaking, education, as an activity to train people, is an essential part of social development, and the level of economic development ultimately restricts its development. The level of economic development determines the amount of investment in education and the supply of investment in education. This inevitably requires that the scale and speed of education at all levels match and coordinate with the scale and speed of economic development quantity.

Education investment and economic growth are not simply causal. Education investment will not directly drive economic growth. On the contrary, it uses the accumulation of human capital and technological innovation for economic growth. Moreover, the conduction process is a dynamic cyclic process. Although there is no direct relationship between educational investment and economic growth, it ultimately promotes economic growth through the transmission of human capital accumulation and technological innovation. At the same time, economic growth can also create conditions for educational investment, indicating that economic growth has a direct and positive supporting role for educational investment.

STEM promotes scientific and technological progress, and education investment is the driving force of economic growth. Conversely, economic growth will also drive technological progress and education investment. From the perspective of the impulse response, investment in technology and education has noticeable long-term effects on economic growth. In addition, from the perspective of the direction of influence, the influence of technological progress and education investment on economic growth shows a trend of repeated fluctuations. Among them, STEM promotes scientific and technological progress to stimulate economic growth in the short-term direction and has a positive

cumulative effect in the medium and long term. After the fourth stage, higher education investment has a positive impact on economic growth. From the perspective of contribution, economic growth is affected by innovation, technological progress, and new investment in education. It has evident inertia and remained stable at the beginning of the ninth stage. On the whole, STEM's promotion of scientific and technological progress has a more significant impact on economic growth.

Educational investment, educational level, and economic growth have a direct or indirect interactive relationship. Education investment can increase the accumulation of human capital. The accumulation of human capital will bring technological innovation and progress to a certain extent. In addition, technological innovation and progress have also promoted economic growth. Then, economic growth is more likely to invest in education. If we further increase investment in education, they will enter a new cycle. In addition, it promotes technological innovation through the accumulation of human capital, thereby accelerating economic growth. Therefore, it is a spiral and self-reinforcing process. Technological innovation and economic growths are a mutual cause and effect relationship that promotes and restricts each other and a dual relationship: technological innovation and economic growth are intertwined. The two change simultaneously in the same direction. This relationship reflects the role of technological innovation in the production process in promoting economic growth.

Conclusions

Higher education investment and education level are two factors that affect economic growth. The test results show that higher education expenditure indicators are factors that continue to affect economic growth fluctuations, both in the short-term and in the long-term, and have made contributions that cannot be ignored. Higher education has brought huge returns to personal income and reduced unemployment. This is part of the reason, but perhaps more because of the potential impact on productivity and economic growth. Growth is highly correlated with national intellectual capital. Economic growth will give the country the status of economic power.

It is worth noting that the superimposed impact of higher education investment and STEM technology innovation has a particular long-term nature and will not weaken over time, but increase, which is consistent with our theoretical analysis. The technological transformation and innovation of human capital will eventually affect economic growth through accumulation, transfer, and transformation. From a direct perspective, the increase in investment in higher education is the driving force for technological innovation in human capital, and technological innovation is a factor in economic growth. From the analysis of the impulse response results, higher education has primary technological innovation provides a cumulative positive impact on economic growth, which slowly decays over time and has a robust long-term nature, which corresponds to the general law of gradual elimination of the introduction of new technologies.

Educational investment and economic growth are not a simple causal relationship. The educational investment will not directly lead to economic growth but will ultimately affect growth through human capital accumulation and STEM technology innovation. The impact process is a dynamic, self-reinforcing, and circular process. Higher education investment is an essential source of human capital, and the positive effect of human capital on economic

growth can only be seen for a long time. Therefore, investment in higher education requires a long-term vision and a quick and quick mindset.

The impact of higher education investment on economic growth lacks a good index of higher education quality to measure the corresponding standard, so the treatment of very different results is the same. However, there is a big difference.

References

Agasisti, T., & Bertoletti, A. (2022). Higher education and economic growth: A longitudinal study of European regions 2000–2017. *Socio-Economic Planning Sciences*, *81*, 100940.

Bhorat, H., Cassim, A., & Tseng, D. (2016). Higher education, employment and economic growth: Exploring the interactions. *Development Southern Africa*, *33*(3), 312-327.

Bloom, D. E., Canning, D., & Chan, K. (2006). *Higher education and economic development in Africa* (Vol. 102). Washington, DC: World Bank.

Gyimah-Brempong, K., Paddison, O., & Mitiku, W. (2006). Higher education and economic growth in Africa. *The Journal of Development Studies*, *42*(3), 509-529.

Hanushek, E. A. (2016). Will more higher education improve economic growth?. *Oxford Review of Economic Policy*, *32*(4), 538-552.

Hanushek, E. A., Ruhose, J., & Woessmann, L. (2017). Economic gains from educational reform by US states. *Journal of Human Capital*, *11*(4), 447-486.

Holmes, C. (2013). Has the expansion of higher education led to greater economic growth?. *National Institute Economic Review*, *224*, R29-R47.

Huang, F., Jin, L., & Sun, X. (2009). Relationship between scale of higher education and economic growth in China. *Asian Social Science*, *5*(11), 55-60.

Keller, K. R. (2006). Investment in primary, secondary, and higher education and the effects on economic growth. *Contemporary Economic Policy*, *24*(1), 18-34.

Lucas, R. On the mechanics of economic development. *J. Monetary Econ.* 1988, *22*, 3–42.

McMahon, W. W. (2018). The total return to higher education: Is there underinvestment for economic growth and development?. *The quarterly review of economics and finance*, *70*, 90-111.

Pegkas, P., & Tsamadias, C. (2014). Does higher education affect economic growth? The case of Greece. *International Economic Journal*, *28*(3), 425-444.

Seetanah, B., & Teeroovengadum, V. (2019). Does higher education matter in African economic growth? Evidence from a PVAR approach. *Policy Reviews in Higher Education*, *3*(2), 125-143.

Solow, R. M. (1956). A contribution to the theory of economic growth. *The quarterly journal of economics*, *70*(1), 65-94.

Toutkoushian, R. K., & Paulsen, M. B. (2016). *Economics of higher education*. Springer.

Zhou, G., & Luo, S. (2018). Higher education input, technological innovation, and economic growth in China. *Sustainability*, *10*(8), 2615.

Critical Core Skills Profiling and Development in the Singaporean Workforce

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

Soft skills, core competencies and generic competencies are exchangeable terminologies often used to represent a similar concept. In Singapore, such skills are currently being referred to as Critical Core Skills (CCS). To understand how CCS are demanded and developed in different occupations of the Singapore workforce, this study adopted a mixed method approach. Drawing on the CCS framework developed by Skills Future Singapore (SSG) in 2019, a survey instrument was developed to measure the importance and self-efficacy of the use of CCS. Drawing on the results from 2500 participants, we managed to profile them into seven occupation groups based on the different patterns of importance and self-efficacy. Each occupation group is labelled according to the most salient and demanded CCS. Concurrently, the CCS which may require further strengthening were also identified for each occupation group. A purposive sample was then drawn from survey participants based on the profiled occupation groups, for a follow-up semi-structured interview with the aim to understand how these selected participants used and developed the most demanded and least demanded CCS in various contextual settings. In total, 39 semi-structured interviews were conducted. The interview questions focused on the tasks under each CCS to get a sense of their use and development of these skills. Adopting the situated learning theory (SLT), the development pathways of CCS for these participants were drawn out. Practical recommendations on how training in various settings could further facilitate the development of CCS were also provided.

Keywords: Employability, Skills Development, Skills Use

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Introduction

With the rapid transformation of the economy and business environment, as well as increasing digitalisation and adoption of technology at the workplace, there is a need to redefine the key skills to keep up with the future economy. This includes an increased emphasis on soft skills as part of the future work in the digital era. SkillsFuture Singapore (SSG) constantly scans the horizon to ensure the continued relevance and currency of its generic skills and competencies framework (GSCs), which was first introduced in 2016, for different groups of stakeholders.

In 2019, SSG reviewed the GSC and developed the Critical Core Skills (CCS) framework comprising 16 soft skills classified within three clusters. The CCS framework (Figure 1) was developed with inputs from more than 120 attendees from 78 organisations (e.g., Google, IBM, etc) across 28 industry sectors (e.g., professional services, manufacturing, etc). CCS are generally understood as valuable in many work contexts and transferable between those contexts, and therefore to be contrasted with technical skills and firm-specific skills. CCS are defined as:

> *...common, transferable skills that enable individuals to be employable and employed, facilitate their career mobility, and enable the acquisition of Technical Skills and Competencies relevant for specific job roles in the sector.* (SSG, 2023)

Figure 1: What are CCS in the Singapore context? (SSG, 2022)

The stated purpose of the CCS skills framework is to "create a common skills language for individuals, employers, and training providers". This further helps to facilitate skills recognition and support the design of training programmes for skills and career development. The Skills Framework is also developed with the objectives to build "deep skills for a lean workforce, enhance business competitiveness and support employment and employability" (SSG, 2023).

Measuring Critical Core Skills

One of the most prominent and well-used examples of measuring skills from the formative perspective is the U.S. Department of Labour's O*NET database. This extensive database provides scores of the importance of a large taxonomy of skills to each job listed in the Standard Occupation Classification. These constructs are defined clearly using task statements such as "using scientific rules and methods to solve problems". O*NET clearly employs the formative job analysis approach to skills, and provides an example of an extremely large scale, ongoing study which has taken years to complete.

Another extension of the formative, task-based approach towards skills research, and the methodology employed in this study, is found in the work of Ashton et al (2000). The measurement technique involved surveying workers on the importance of different activities and tasks to their work. The tasks were selected to represent common task-related skills within broad, pre-defined generic skills categories. This technique has been used heavily in skills research such as the Skills and Learning Survey (SLS) conducted at the Institute for Adult Learning in Singapore (in press) and the OECD's Programme for the Assessment of Adult Competencies (PIAAC) (OECD, 2013).

Ashton's method of skills measurement is well established and is appropriate from a theoretical perspective, due to its use of the formative approach understanding skills, and from a measurement perspective, as a survey-based approach. As such, this study draws heavily from this method.

Critical Core Skills Development

Situated Learning Theory (SLT) indicates that learning is a pervasive, embodied activity which involves the acquisition, maintenance, and transformation of the knowledge of practices through the processes of social interaction (Lave & Wenger, 1991). Knowledge of practices is an epistemological difference between "entities located in the head" and reconstructed learning from processes of social interaction. From a more relational social perspective, knowledge of practices is "distributed over both individuals and their environments, and learning is situated in these relations and networks of distributed activities of participation" (Hemetsberger & Reinhardt, 2006, p. 189). The theory argues that acquisition of objective knowledge is best achieved as the accomplishment of knowing in action through everyday practice in organisational and other social settings (Handley, Clark, Fincham & Sturdy, 2007).

These social cultural practices are built upon the concept of peripheral participation – members gaining skills by working and progressing from basic tasks to full participation (advanced tasks). Novices can progress in a linear and sequential manner as they inculcate themselves in the practice of more experienced 'old-timers'. Peripheral participation acts as a bridge to develop skills, experience and approbation by interacting and learning from peers and mentors, and learning occurs via "centripetal participation in the learning curriculum of the ambient community" (Lave and Wenger, 1991, p.100). Accordingly, this linear and sequential manner of novice to experienced "old timers" aligns with the design of CCS instrument (basic, intermediate, and advanced levels of task statements) e.g., a novice practicing basic level of creative thinking skills can progress to be an experienced "old timer" who will develop an advanced level of creative thinking skills through observations, interactions, and practices in the different situated contexts.

Aims and Objectives

There has been a growing awareness of the importance of CCS to influence individual and organisation performance outcome positively (Heckman & Kautz, 2012). Meanwhile, managers and executives of many companies globally have yet to fully recognise the importance of CCS and the impact of its development on employee performance, and some have misconceptions about CCS itself. The Singapore Talent Shortage Survey (2018) revealed that 65% of employers invest in technical training whilst 54% invest in CCS training, despite studies describing consistent skills gap between Singapore graduates and employers' requirements (Low, Gao, & Ng, 2021; Majid, Zhang, Shen & Raihana, 2012). And until recently, individuals do not view CCS as "must have" skills across occupations. CCS may therefore continue to remain as an awareness campaign exercise that relies on metaphoric assumptions and expectations. Thus, this study aims to address the following research questions to understand more about the CCS use and development in the Singapore context:

RQ1: How important is each CCS to the work to be performed in each occupation group?
RQ2: What is the CCS self-efficacy of Singaporean workers in each occupation group?
RQ3: How do participants typically develop CCS in their different working contexts?
RQ4: How do the participants typically develop CCS in their different working contexts?

Methodology

Phase One: An instrument was developed to measure CCS. Each CCS has a framework consisting of a set of 20 to 30 task statements, and each task statement is assigned to a skill level (basic, intermediate, and advanced). The initial stage of instrument development consisted of coding these statements into dimensions. The combination of these dimensions is intended to capture the essence of the skill as formulated in the framework. Care was taken to ensure that the dimensions were mutually exclusive, relatively specific to the CCS (and not highly relevant to other CCS), and preferably cover more than one proficiency level. This coding was conducted for all 16 CCS frameworks.

For each dimension, a task – or small set of tasks – were then identified that provide instances of the use of the dimension in the context of work, and each task was assigned a skill level by referencing the original framework. Here, the ideal task is understandable by most intended survey respondents, relevant to the dimension that it addresses, and free of standard sources of survey bias. Care was taken to avoid double barrelled statements, acronyms, or industry specific jargon. To gauge the self-efficacy of the respondent in using a skill, the instrument presents the same task items with the question stem: "How confident are you in your ability to…" This is a well-established method to estimate an individual's self-efficacy and is taken from Albert Bandura (2006). Note that the instrument only provides the self-efficacy question if the respondent has indicated that the task was important to their job, to avoid cases where the respondent is unlikely to know or be able to answer due to their not performing the task at work.

The survey questionnaire also included questions on the personal characteristics of the respondent and details about their job. It covered a target population of all employed Singaporean Residents aged 20 to 70. A systematic random sample of private households was selected based on a stratified design by broad dwelling type, with proportional allocation. A total of 490 respondents participated in the pilot study, while a total of 2007 respondents participated in the main study.

An initial cluster analysis was performed by calculating average CCS scores for each 4-digit Singapore Standard Occupation Classification (SSOC) group in the sample. Hierarchical cluster analysis was then performed on the sample of SSOCs using Ward's method with Euclidean distances (Ward's method is the most popular hierarchical clustering algorithm and tends to provide interpretable solutions). The decision to use SSOC group averages for the initial cluster solution, instead of the individual jobs sampled, was to reduce noise in the cluster modelling. A seven-cluster solution accounted for approximately 60% of the variance in the initial SSOC group averages and provided for highly interpretable clusters based on examination of the average skills scores and the SSOC groups distributed across clusters. The initial cluster solution was used to create a logistic regression classification model. This allowed the calculation of the final membership allocation of the full data set of jobs, regardless of their SSOC.

Phase Two: van Laar, Deursen, Dijk, and Hann (2020) expressed that contextual factors such as job quality, complexity of job tasks, nature and degree of support, and the degree of motivation, level of autonomy and self-belief and other value-based factors can be considered for the development of skills. These contextual factors influence the way employees may interact meaningfully with other individuals in their communal settings, which in turn impacts the way they construct shared conceptualisation for the development of skills in their lives and their social world. To unpack these contextual factors in the development of CCS, SLT was adopted to craft the interview questions with a focus on the understanding of how situated events trigger the development of CCS to reach the proficiency levels as required by different job roles. The support and challenges in the process of the development of CCS embedded in various situated events were also explored during the interview.

The interviewees were selected based on the seven occupation groups identified in Phase One, targeting those whose skills are representative of the skills profile of the seven groups. The research team aimed to select five interviewees from each occupation group. However, due to the uneven distribution of participants in different occupation groups and the high decline rate in certain groups, we did not manage to secure an even number across the groups. As a result, some groups have more interviewees than other groups. There are 39 participants recruited for this study. 26 participants are male while the remaining 13 participants are female. The interviewees and their respective job descriptions are listed below:

Occupation Groups	No. of Interviewees	Jobs of the Interviewees
Front-liners	10	Taxi Driver, Admin Assistant, Shipping Agent Executive, Social Service Worker
Administrators	3	Business Development and Marketing, Financial Service Consultant
Deal-makers	4	Technical Executive, Bakers, Account Executives
Nurturers	10	School Teachers, School Support Officer, Senior Executive in IHLs
Managers	3	Centre Supervisor, Social Media Manager, Assistant Admin Manager
Analysers	4	Electrician, Sale Executive for Machinery, Project Officer
Way-finders	5	Hair and Make-up Artist, Auditor, Legal Consultant and Trader

Table 1: Profile of selected interviewees

An inductive approach for thematic analysis of interview data proposed by Braun and Clarke (2006) was adopted. The final product of data analysis is a thematic framework with identified themes and their relationships. Memos were written throughout the research process. Methodological memos were used for discussing and clarifying methodological and organizational issues, while theoretical memos were used in data analysis as the main tool for describing initial codes, themes, and the relationships between themes in the developed framework.

Findings

The cluster analysis solution chosen provided seven groups of workers with relatively unique CCS use profiles.

Front-liners: Frontliners' jobs have a high level of customer engagement, daily work involved in managing unusual requests from customers where communication is a critical part of work. Work demands constant negotiation with tight business processes and regulations. Increasingly, digital applications are part and parcel of work, hence, learning to work with digital tools and apps prompts a need for constant learning.

The group is large but shrinking, representing an estimated 24% of the workforce and growing at an estimated annualised rate of only 0.5% in the last 10 years.[1] It has a relatively low proportion of university graduates (29%) and is also the lowest paid group on average.

The skills profile for Front-liners along with an explanation of the chart is shown in Figure 2, and the common occupations contained in this group are listed in Table 2.

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[1] Estimates made using MOM labour force reports 2010, 2020: EMPLOYED RESIDENTS AGED FIFTEEN YEARS AND OVER BY DETAILED OCCUPATION tables

Figure 2: CCS profile for Front-liners

Car, Taxi, Van and Light Goods Vehicle Drivers	General Office Clerks
	Cleaners in Offices, Commercial and Industrial Establishments
Receptionists, Customer Service and Information Clerks	Motorcycle Delivery Men
Food Preparation and Kitchen Assistants	Security Guards
Shop and Store Salespersons	Commercial and Marketing Sales Executives

Table 2: Common occupations for Front-liners

No skills deficiencies were identified, with no significantly negative average skills efficacy scores across any of the CCSs compared to the rest of the workforce. This is not unexpected, as the CCS requirements for jobs in this group is relatively low.

Administrators: The value proposition that their work revolves around is creating better solutions and improving and enhancing work processes and productivity. Jobs in this group demand orderliness, conscientiousness, and time management. With accountants and systems analysts, systematic critical thinking skills and problem solving are essential CCS for this group.

Administrators are estimated to be a relatively small proportion of the workforce, and that proportion is slowly shrinking. The group is 65% female with a medium to low average monthly salary.

The skills profile for Administrators is shown in Figure 3 and the common occupations contained in this group are listed in Table 3.

Figure 3: CCS profile for Administrators

Accountants	Supervisors and General Foremen
Accounting Associate Professionals	Advertising and Marketing Professionals
Shop and Store Salespersons	Administration Professionals Not Elsewhere
Software, Web and Multimedia Developers	Classified
Systems Analysts	Primary School Teachers

Table 3: Common occupations for Administrators

The Administrators group, on average, reported relatively low levels of efficacy when performing Self-Management tasks, when compared to the rest of the workforce, and when controlling for skills importance and demographics. This indicates that this group may face challenges in the areas of managing stress, emotions, mental health, and/or physical health.

Deal-makers: Deal-makers' job roles have high CCS requirements. These requirements extend to a wide spectrum of technical skills. There is a need to synthesise information and insights across a variety of sources and contexts. With the need to manage demands from employers and customers, decision-making and problem-solving ability has a significant impact on business outcomes and productivity.

The Deal-makers group is a large, growing proportion of the resident workforce in Singapore representing an estimated 25% of the workforce and growing at an estimated annualised rate of 2% per year since 2012. This profile is relatively young, more likely to be male, and 48% of them are graduates of IHLs.

The skills profile for Deal-makers is shown in Figure 4 and the common occupations contained in this group are listed in Table 4.

The radar chart to the left shows the average skills importance scores for Deal-makers in the blue line. To judge how important Traditional Practitioners' average scores are, the estimated average importance score for the whole workforce is provided with the orange line. *For skills where the blue line is higher than the orange line, we would say this skill is relatively important for the group.*

Figure 4: CCS profile for Deal-makers

Commercial and Marketing Sales Executives	Sales, and Business Development Managers
Accountants	Receptionists, Customer Service and
Software, Web and Multimedia Developers	Information Clerks
General Office Clerks	Finance and Administration Managers
Security Guards	Electrical Engineers

Table 4: Common occupations for Deal-makers

Deal-makers reported skills deficiencies in several areas, including:
- Building Inclusivity,
- Digital Fluency,
- Influence, and
- Problem solving**.**

Nurturers: The Nurturers group reflect job roles with a strong component of communication, building inclusivity, and creative thinking. Dominated by teachers, human resource practitioners, and the caring professions such as nurses, this group has a broad variety of CCS requirements including a strong component of interpersonal and emotional labour.

The Nurturers group is a large, growing proportion of the resident workforce in Singapore representing 23% of the workforce and growing at an annualised 1.9% per year since 2012. This group is relatively young and more likely to be female. Developers report a significant number of skills gaps.

The skills profile for Nurturers is shown in Figure 5 and the common occupations contained in this group are listed in Table 5.

The radar chart to the left shows the average skills importance scores for Nurturers Group in the blue line. To judge how important the Developers Group's average scores are, the estimated average importance score for the whole workforce is provided with the orange line. **For skills where the blue line is higher than the orange line, we would say this skill is relatively important for the group.**

Figure 5: CCS profile for Nurturers

Software, Web and Multimedia Developers	Private Tutors
Accountants	Secondary Education Teachers
Financial Analysts and Related Professionals	University, Polytechnic and Higher Education Teachers
Human Resource Professionals	
General Office Clerks	Primary School Teachers

Table 5: Common occupations for Nurturers

Nurturers reported the largest number of skills deficiencies in the study. These included:
- Adaptability,
- Problem solving
- Building Inclusivity,
- Sense making,
- Communication,
- Creative thinking,
- Develop People, and
- Influence.

Managers: The Managers group tends to work across multiple stakeholders to coordinate delivery of services and solutions. Information processing and collaboration across stakeholders are critical aspects of the work. Use of digital tools and platform is also an essential part of their work.

Managers represent a small but growing proportion of the resident workforce in Singapore, representing only 5% of the workforce and growing at an annualised 1.9% per year since 2012. This profile is relatively young, more likely to be male, and be graduates of IHLs.

The skills profile for Managers is shown in Figure 6 and the common occupations contained in this group are listed in Table 6.

*The radar chart to the left shows the average skills importance scores for the Managers Group in the blue line. To judge how important the Managers Group's average scores are, the estimated average importance score for the whole workforce is provided with the orange line. **For skills where the blue line is higher than the orange line, we would say this skill is relatively important for the group.***

Figure 6: CCS profile for Managers

Sales, and Business Development Managers	Management and Business Consultants
Supervisors and General Foremen	Software, Web and Multimedia Developers
General Office Clerks	Healthcare Assistants and Other Personal
Managing Directors, Chief Executives and	Care Workers
General Managers	Film, Stage and Related Directors and
	Producers

Table 6: Common occupations for Managers

Managers reported the following skills deficiencies:
- Adaptability,
- Customer Orientation, and
- Self-management.

Like Administrators, Managers reported low confidence when performing Self-management tasks. Self-management is a CCS that is relatively important to Managers also.

Analysers: Analyser jobs suit the typical knowledge worker in the digital economy. There is a strong requirement for cognitive skills to create value. Their decisions have major impacts on the organisations they work for.

Analysers represent a moderate sized proportion of the resident workforce at 12%. This group, however, is rapidly growing. This profile is relatively young, dominated by graduates and is well paid.

The skills profile for Analysers is shown in Figure 7 and the common occupations contained in this group are listed in Table 7.

The radar chart to the left shows the average skills importance scores for Analysers Group in the blue line. To judge how important the Analysers Group's average scores are, the estimated average importance score for the whole workforce is provided with the orange line. *For skills where the blue line is higher than the orange line, we would say this skill is relatively important for the group.*

Figure 7: CCS profile for Analysers

Financial Analysts and Related Professionals	Advertising and Marketing Professionals
Commercial and Marketing Sales Executives	Accountants
Management and Business Consultants	Buyers and Purchasing Agents
Systems Analysts	Managing Directors, Chief Executives and
Accounting Associate Professionals	General Managers

Table 7: Common occupations for Analysers

No skills deficiencies were identified for the Analysers group, with no significantly negative average skills efficacy scores across any of the CCSs compared to the rest of the workforce.

Way-finders: Way-finder jobs tend to be in general management or sales. These jobs ensure smooth operation of businesses and organisations. Managing customers' and stakeholders' needs is the core of their work, including anticipating needs and issues.

The way-finder group of jobs are a small but rapidly growing proportion of the workforce. Representing 6% of the resident workforce, the profile has grown at an annualised rate of 2.6% compared to 1.6% for the entire resident workforce since 2012. The Negotiator group tends to be relatively senior, highly educated, and has the highest pay of all the CCS skill groups.

The skills profile for Way-finders is shown in Figure 8 and the common occupations contained in this group are listed in Table 8.

Figure 8: CCS profile for Way-finders

Sales, and Business Development Managers	Accountants
Commercial and Marketing Sales Executives	Financial Analysts and Related Professionals
Financial and Investment Advisers	Management and Business Consultants
Real Estate Agents	Senior Government and Statutory Board
Managing Directors, Chief Executives and	Officials
General Managers	Specialised Goods Sales Professionals

Table 8: Common occupations for Way-finders

The way-finders group, on average, reported relatively low levels of efficacy when performing Creative Thinking tasks, when compared to the rest of the workforce, and when controlling for skills importance and demographics.

CCS Development Pathway

This section will present the findings on how the selected participants in each of the seven groups identified in Phase One of the study, developed their confidence in using the top three most demanded skills in their respective working contexts. Even though the most demanded skills for different occupation groups are not similar due to the different job nature, the development pathways of these different CCS are highly similar. SLT helped us shape the presentation of the development pathway for these selected participants as shown in Figure 9 below. After the visualisation of this pathway, we will use some transcript excerpts to illustrate the pathway. Next, we will select one of the most demanded CCS from some occupation groups to illustrate how they experience such a pathway in their development of different CCS.

Figure 9. CCS development pathway in the present study

Deal-makers – Decision Making (Use and Development): In this occupation group, one of the most demanded CCS is decision making. Tuk, a technical executive working in a government agency, shared with us that in making decisions at work, he has to refer closely to the 'cardinal rules' and manage projects according to company targets of costs and profits, or municipal regulations:

> *We go for many site meetings, need to make many decision on the spot specifically at the construction site, our job involves many municipal issues and cardinal rules very important to keep a calm mind to make decision that is beneficial to the project like issuing licence to contractors, when issuing licence, notice if there is any residential or commercial property for the licence, we cannot promise the licensee that we can process their application, need to consider all the rules (like noise, dust or other factors) for processing the licence application, timing for the licensee and the residents moving into the construction. (Tuk, Technical Executive)*

In terms of CCS development:

> *As a technical executive, I need to issue licences for contractors to use vacant land of HDB. Use for marriage, use for storage or for other uses. We need to consider municipal issues and regulations on the site and decisions need to be made on site, on the spot. We need to consider, e.g., issue a licence to use vacant land for a contractor. If the land is very near to residential properties, will there be noise pollution, also to take note of residential moving in… so need to gauge the timing of licensee and the surrounding environment…takes lots of practice, usually on the job training. (Tuk, Technical Executive)*

Tuk's daily job involves managing the usage of vacant land. The concern to issue licences for contractors initiated the development pathways for his decision-making skill. He needs to refer to municipal regulations to issue licences for contractors. He works closely with his boss and contractors (members of community of practice) to approve licences. He aims to be well-versed in the regulations as decisions are made usually at the site for recommendation. If he encounters a new situation that he cannot decide, he executes the assignment in a socially coordinated manner (coordinated participation) with his boss. The more situations he encounters (constellation of situated circumstances**),** the more well versed he gets when

referring to procedures to make decisions. Gradually, he builds his confidence by practising decision-making tasks from basic to advanced level to complete the work well.

Nurturers – Communication (Use and Development): In this occupation group, one of the most demanded CCS is communication. Wario, a Director in Real Estate sales, needs to manage stakeholders' expectations through lots of asking and clarifying of information to achieve the desired outcome, e.g., managing pricing expectation in negotiation. Wario has over 20 years of experience. The concern to negotiate a business deal created his learning pathway for communication skill. He works closely with developers and investors (social relationships) with whom he established a long-standing relationship. Over the years of experience (constellation of situated circumstances), he learns to manage expectation (practice-linked learning) of clients to close deals successfully. He has developed his communication skill from basic to advanced levels to better cater to the needs and requirements of his work.

> *Communication skills usually used for managing negotiation. So negotiation wise, there comes in many forms, right? Some are like, you mean the technique that we taught? Okay, in our mind we look at the documents first, and then process in our mind and see what is fair and what is not fair, and what is market practice and then basically, gauge, try to get more for the owners, okay. If we can't, at least we meet the middle ground, and if we can't meet the middle ground, there are clauses whereby those they can accept, we try to trade off those conditions, so as to make the deal go through. Is that what you're expecting? As in, we try to give and take within those conditions. I think not all conditions will be acceptable by all parties, at least certain conditions will be acceptable, some are not acceptable, so we tend to trade these conditions with the other side, to see which is more acceptable to try to make the deal go through. (Wario, Director)*

Way-finders – Problem Solving (Use and Development): In this occupation group, problem solving is one of the most demanded CCS. Daisy, a hair and make-up artist, has to meet customers' needs and foresee specific problems which may arise for the purpose of completing her projects, e.g., settings in a shoot scene, at the spot of her different workplace settings, in order to progress with the work smoothly.

> *Identifying problems in my job. For sure, because if there is any problem, it will be raised. And it will be my fault, so I cannot let that be? Like I have to identify it first before it becomes a problem, and it delays the entire production. Say for example, if the wardrobe for a particular scene was dictated by the director. Say for example, just a collared shirt. But that scene that they are going to shoot is a scene where he's going to be beaten in the back, and I'm doing a special effects thing. So I have to raise it up to them, say "Maybe you want to choose another wardrobe because the collar will hinder the shooting. (Daisy, Hair and Make-up Artist)*

Daisy has the concern to complete the project, which helps her establish her development route for problem solving skill. She works closely with the scene directors and others at the same place (community of practice) in a socially coordinated manner. The more projects she completes (constellation of situated events) with trial and error (practice- linked learning), the more competent she is to identify and resolve problems at scene. As she works through the levels of problem-solving skills, she grows to become a more professional make-up artist who can foresee and solve any problems that arise before or at the scene.

> *Performance ah. It's a lot of trial and error so it may work, it may not work. And we have to work with it. My performance at work, I guess like I said, production is a teamwork, so everyone has a part to play lah. And I try to be, I think I am quite a teamwork person, so yeah. We'll work together and like, if they need help, I readily offer to help, even if it is not my department. (Daisy, Make-up Artist)*

We observed that most participants have a similar skills development pattern across the diverse contextual settings. The pattern of the three overarching themes (Figure 9) appears to imply that there is a "must have time" space to practise the "executing them in a coordinated manner". Our observation lends evidence to a study by Noe (1986) and Russ-Eft (2002) who expressed that the extent to which trainees have sufficient time and resources available to practise and internalise what they have learnt determines the extent to which the training content will be used or constrained on the job.

In addition, we observed that the social relationships that are peripheral to the job design for the purpose of successful execution of the tasks, influence the degree of motivation to develop CCS. When healthy relationships are fostered within an organization, they fuel the informal sharing amongst the community of practice. These storylines then act as an enabler for the development of CCS. When conflictual and unhealthy relationships exist, they posed as a potential barrier for development of CCS. Similar studies have concluded similar findings as well (Contu & Willmott, 2003; Fox, 2000).

Conclusions and Recommendations

The study concludes that measuring CCS from a formative perspective **(**Ashton, Felstead, Davies & Green, 2000**)**, e.g., job task-based, is an effective way to profile the occupations in terms of importance and self-efficacy in the use of CCS at workplace settings. The profiling results of seven occupation groups from Phase One show clearly that certain occupations share some commonalities in their job requirements for CCS. The development pathway as identified in Phase Two reinforces that concern or interest raised from the job requirements is the main drive for CCS development. The practice-linked learning, e.g., OJT, trial and error, observation of and support from peers or mentors at workplaces, are the main route for their development of CCS. The participants from across the seven occupation groups shared such commonalities in their development pathway.

Therefore, it would be appropriate to recommend that training of CCS be conducted through in-person (but not lecture style) contexts or e-learning portals, to allow the individual the time and space to practise the tasks peripheral to their job design so that they can stay on task or continue to be on-the-job. Such a strategy is advised because of the emerging evidence that skills are work-based concepts (Sung, Ng, Loke & Ramos, 2013). The in-person training could be informal sessions at workplaces to avoid unhealthy competition but be a safe environment to share storylines of development of CCS. Such informal sharing sessions can be spaced over a longer but targeted period to suit the needs of the training objectives. Another approach would be to leverage on e-learning portals that are used by companies for staff's professional development. The CCS learning program could be designed for these e-learning portals through working with training providers, e.g., IAL, to design customised training programmes to suit the operating environment of each organisation. The employees could then work with their respective department heads to pace their learning pathways in a targeted manner to coincide with "must have time" space to practise.

Acknowledgement

Mr Simon Freebody, our research associate, who designed the survey instrument, deserves the greatest appreciation from the research team. In addition, he also contributed significantly to the literature review and data analysis for Phase One of this study. We would also like to give our special thanks to Ms Lena Boo, our research assistant, for her extensive literature review, data collection, data analysis and insightful discussion time to time. We also would like to extend our sincere appreciation to Mr Issac Lee for his hard work on Phase One and Phase Two data analysis which make a significant contribution to the study.

References

Ashton, D., Davies, B., Felstead, A., & Green, F. (2000). Work skills in Britain. *SKOPE Monograph*, (1).

Bandura, A. (2006). Guide for constructing self-efficacy scales. In F. Pajares & T. Urdan (Eds.), *Self-efficacy beliefs of adolescents* (Vol. 5, pp. 307-337). Greenwich, CT: Information Age Publishing.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*,3(2). pp. 77-101. https://doi: 10.1191/1478088706qp063oa

Contu, A., and Willmott, H. (2003). Re-embedding situatedness: the Importance of power relations in learning theory. *Organization Science,* 14(3) 283-296. https://doi.org/10.1287/orsc.14.3.283.15167

Fox, S. (2000). Communities of practice, Foucault and Actor-Network Theory. *Journal of Management Studies*, 37: 853-868. https://doi.org/10.1111/1467-6486.00207

Handley, K., Clark, T., Fincham, R., & Sturdy, A. (2007). Researching situated learning: participation, identity and practices in client—consultant relationships. *Management Learning*, 38(2), 173-191.Hay, D. B., & Kinchin, I. M. (2006). Using concept maps to reveal conceptual typologies. *Education+ Training*. 48 2/3, 127-142. https://doi.org/10.1108/00400910610651764

Heckman, J., & Kautz T. (2012). Hard evidence on soft skills, *Labour Economics,* 19(4), 451-464.

Hemetsberger, A., & Reinhardt, C. (2006). Learning and knowledge-building in open-source communities: A social-experiential approach. *Management Learning*, *37*(2), 187-214. https://doi.org/10.1177/1350507606063442

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation.* Cambridge university press.

Low, S.P., Gao, S., Ng, E.W. (2021). "Future-ready project and facility management graduates in Singapore for industry 4.0: Transforming mindsets and competencies, Engineering, *Construction and Architectural Management*, 28(1), pp270-290. https://doi.org/10.1108/ECAM-08-2018-0322

Majid, S., Zhang, L., Shen, T., & Raihana, S. (2012). Importance of soft skills for education and career success, *International Journal for Cross-Disciplinary Subjects in Education*, 2(2) 1036-1042. https://doi10.20533/ijcdse.2042.6364.2012.0147

Noe, R. (1986). Trainees' attributes and attitudes: Neglected influences on training effectiveness. *Academy of Management Review*, 11, 736-749.

OECD. (2003). (Organisation for Economic Co-operation and Development), Definition and Selection of Competencies: Theoretical and Conceptual Foundations (DeSeCo), Summary of the final report Key Competencies for a Successful Life and a Well-functioning Society Paris: OECD Publishing.

OECD. (2013). OECD Skills Outlook 2013: first results from the survey of adult skills. OECD Publishing.

Russ-Eft, D. (2002), "A typology of training design and work environment factors affecting workplace learning and transfer", *Human Resource Development Review*, 1(1), 45–65. https://doi.org/10.1111/j.1467-6486.2006.00618.x

SkillsFuture Singapore. (2022, September 27). *Critical Core Skills*. https://www.skillsfuture.gov.sg/skills-framework/criticalcoreskills

SkillsFuture Singapore. (2023, January 12). *Skills Framework*. https://www.skillsfuture.gov.sg/skills-framework

Sung, J., Ng, M. C. M., Loke, F., & Ramos, C. (2013). The nature of employability skills: empirical evidence from Singapore. *International Journal of Training and Development*, *17*(3), 176-193. https://doi.org/10.1111/ijtd.12008

van Laar, E., van Deursen, A. J., van Dijk, J. A., & de Haan, J. (2020). Determinants of 21st-century skills and 21st-century digital skills for workers: a systematic literature review. *Sage Open, 10*(1), https://doi.org/10.1177/2158244019900176

Reimagining Resilience at Historically Black Colleges and Universities (HBCUs): Emergent Governance, Leadership, and Crisis Management Practices

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Abstract
The COVID-19 pandemic served as a catalyst for an array of challenges in higher education, particularly at Historically Black Colleges and Universities (HBCUs). These challenges included not only reinventing traditional pedagogical approaches but restructuring their academic service delivery options. As a result, examining these complexities warrants reviewing the role of governing boards, leadership, and their decision-making processes, which will be critical to the resilience of these institutions. Moreover, this crisis has demonstrated the need for HBCUs to collectively work together and not in silos, as well as igniting the urgent call for university board members to play a more active role in the governance of their institutions. Board members have a unique responsibility to engage in crisis management best practices to mitigate severe risks to their organizations. Essentially, poor crisis management can have egregious effects on organizational reputation and financial performance. Considering these challenges, this study examined the role of crisis management and investigated the decision-making processes of the governing boards and leadership at four (4) HBCUs. Utilizing a qualitative case study approach, this study will highlight the importance of leadership in times of crisis, explore the complexities of board decision-making, and provide insights and strategies to strengthen and improve HBCUs through crisis management models. The paper will also foster a dialogue about how university boards can address constantly changing educational priorities in the wake of the pandemic.

Keywords: HBCUs, COVID-19, Crisis Management, Governance, Leadership

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Introduction

Although HBCUs across the country have reopened since the COVID-19 pandemic, they are still experiencing aftereffects, which have highlighted the need for them to reimagine how they plan to move forward when crises occur. Often, governing boards and leadership at these institutions do not think about managing crises until they occur, but ultimately, their decisions impact if these institutions can remain resilient. In the context of higher education, resilience is defined as the capability to bounce back from difficulty and cope with stress (Southwick and Charney, 2018). COVID-19 and other crises have "illuminated the necessity for Historically Black Colleges and Universities (HBCUs) to build on their history of their resilience and develop effective crisis management practices to respond, mitigate and recover in the face of ongoing risks and crises" (Quiett Smith, 2020, p1). For this study, governance is operationalized and defined as the governing board members and administrative leadership at their respective institutions (AGB, 2015). According to the American Governing Board (AGB) governing boards and leadership within higher education have fiduciary responsibilities to the institutions they serve (AGB, 2015). Subsequently, these fiduciary obligations require governing board members to do more than just oversee the college or institution, they should also make decisions in the "best interest of the institutions with loyalty and obedience" (AGB, 2015, p.1). According to the U.S. Department of Education White House Initiative on Advancing Educational Equity, Excellence, and Economic Opportunity through Historically Black Colleges and Universities, they have taken the charge to develop ways to improve and increase the HBCU campus crisis preparedness and resilience through the provision of grants (U.S. Department of Education, 2022). It is for these reasons HBCU governing board members and administrative leadership should consider innovative ways to circumvent crises and develop a crisis management plan with detailed information on identifying, preventing, and recovering from vulnerable threats like COVID-19. Today, there are 101 HBCUs, of which 51 are public institutions and 50 are private nonprofit institutions (National Center for Education Statistics, 2022). The governing structure for these institutions is divided into three categories: 1) statewide; 2) local; and 3) shared. The purpose of this study is to conduct a post-COVID-19 assessment of four (4) HBCUs that were previously studied (Johnson & Thompson, 2021) and determine if leaders were successful at implementing any crisis management strategies. The researchers sought to understand if the lack of crisis management at public state-funded HBCUs impacted the decision-making processes of the governing boards and administrative leadership at HBCUs in the post-pandemic period. Understanding the decision-making of governing boards and leadership will continue to provide deeper insight into why crisis management preparedness should be at the forefront of the HBCU agenda to remain resilient.

Study Background

In March 2020, HBCUs across the county were forced to close their doors due to COVID-19. As a result, when these schools had to reopen it was evident that due to the lack of funding, technology, and other resources, HBCUs were in desperate need of funding to reopen their doors and provide a safe environment for faculty, staff, and students. As a result, a State-by-State analysis was conducted, which resulted in the American Rescue Plan Investment Act instituted by the White House. This act allocated $2.7 Billion to Historically Black Colleges and Universities across the country (U.S. Department of Education, 2022) but how these resources were spent post the COVID-19 crisis has yet to be determined. The following four (4) HBCUs' governing and leadership structures were reviewed: 1) Fort Valley State University; 2) Savannah State University; 3) Grambling State University and 4) Southern

University and A & M College. These HBCUs are all public-state funded institutions, where Fort Valley and Savannah State Universities are governed by a statewide board, known as a *"Superboard"* comprised of thirty-five (35) colleges and universities, and Grambling State University, which is part of a consolidated statewide governing board comprised of nine (9) institutions within a statewide system and makes it one of the most unique systems in the country (Johnson & Thompson, 2021). Southern University and A & M College is the only HBCU system in the country and is considered a statewide governing structure, responsible for governing four separate institutions within the Southern University System (Southern University System, 2023). These HBCUs were reexamined to see if the lack of crisis management at public state-funded HBCUs impacted the decision-making processes of the governing boards and administrative leadership at HBCUs. Literature suggests that COVID-19 has added much uncertainty within the realm of higher education and how we mitigate these negative impacts is important to organizational resilience (Abdullah, Husin & Haider, 2020).

The Cycle of Crises

HBCUs continued to face significant crises in the post-pandemic period, encompassing bomb threats, natural disasters, and emergent communicable diseases. On January 4, 2022, and then at the outset of Black History Month in February 2022, 24 HBCUs received threats that bombs were going to explode on their campuses (on January 31 and February 1, 2022) (U.S. Department of Homeland Security, 2022. Since the beginning of 2022, at least 49 HBCUs and 19 Predominantly Black Institutions have received bomb threats (U.S. Department of Homeland Security, 2022). However, the protracted investigation that extended over almost a year engendered an atmosphere of uncertainty, stress, anxiety, and heightened discomfort, especially among students, making it difficult to focus on academic responsibilities (Owens, 2022). The emotional calamity caused by the bomb threats continues to take a toll on HBCU stakeholders. The COVID-19 pandemic along with the racial reckoning that occurred during the Summer of 2020 had already exacerbated mental health measures among faculty, staff, and students; these bomb threats served as the proverbial straw that broke the camel's back. Following these terroristic threats, the U.S. Department of Homeland Security met with HBCU leadership to extend resources and support and provide bolster partnerships with these institutions (U.S. Department of Homeland Security, 2022). Subsequently, the U.S. Department of Education created the Project Schools Emergency Response to Violence (SERV) program (U.S. Department of Education, 2022) to provide grant funding to support mental health programs at affected institutions.

Without a sufficient recovery period from the active 2020 storm season, many parts of the State of Louisiana were devastated by Hurricane Ida, one of the most powerful hurricanes in 2021. Institutions within the Southern University System were impacted by the storm with Southern University of New Orleans incurring $384,000 in storm damages while Southern University A & M College sustained $270, 000 in damages from Hurricane Ida (Canicosa, 2021). Furthermore, during the fall of 2022, HBCU leaders just like other higher education institutions, had to contend with the spread of several viruses as infection rates substantially increased towards the end of the year, which inevitably affected students and faculty, and staff on their campuses (Knox, 2022). Unfortunately, the holiday season brought an increase in infection rates for COVID-19, the Flu, and Respiratory Syncytial Virus (RSV) (McCrimmon, 2022). The aforementioned crises have a cumulative effect, compounding myriad challenges of HBCUs. Moreover, these unexpected threats to the security, health, and mental well-being of HBCU students, faculty, and staff are consummate examples of why

HBCU leaders must be intentional about excogitating crisis management strategies for their institutions to ensure future resilience.

Funding

Historically Black Colleges and Universities are culturally distinctive institutions, but they all possess a shared mission to educate young scholars from underrepresented backgrounds and prepare them to be feature leaders. Notwithstanding, these higher education institutions have been historically underfunded compared to Predominantly White (PWI) universities in the United States (The Hunt Institute, 2022). Consequently, COVID-19 was a crisis that disproportionately impacted HBCUs and their ability to respond because of their considerable financial apertures. When the U.S. Government passed the American Rescue Plan in 2022, it opened a pathway for these institutions to receive much-needed funding. The Higher Education Emergency Relief Fund (HEERF) allocated over $2.7 billion dollars as a part of the Biden-Harris Administration's dedication to supporting institutions that educate minority communities (The White House, 2022). HEERF requires that at least half of the funds disseminated to these universities be used to provide support to students through direct financial payments. (The White House, 2022).

The State of Georgia received over $260 million dollars in funding for a total of eight (8) HBCUs, which include Morehouse School of Medicine, Albany State University, Clark Atlanta University, Savannah State University, Fort Valley State University, Morehouse College, Spelman College, and Paine College (The White House, 2022). Savannah State University received $41,412,308 or 15.9 % while Fort Valley State received $26,524,053 or 9.81% of the total funds allocated to the State of Georgia. (The White House, 2022). The State of Louisiana had six (6) HBCUs to receive a total of $211 million in funding for the following institutions: Southern University and A & M College, Grambling State University, Southern University at New Orleans, Xavier University of Louisiana, Southern University at Shreveport, and Dillard University (The White House, 2022). According to the White House (2022), Southern University and A& M College received the largest allocation of funds in the State, totaling $64,130,696 while Grambling State University received the second highest with $48,074,370. While these institutions were awarded notable financial resources in 2022, due to the legacy of diminished funding, it did not solve all their fiscal challenges.

Institutional Indicators

The impact that the pandemic had on the higher education landscape cannot be understated; enrollment rates at most institutions still have not returned to pre-pandemic levels. In fact, compared to the year 2019, overall student enrollment declined by over five percent (5.8%) in 2022, which constitutes a reduction of both the undergraduate and graduate student population by 1.1 million students (National Student Clearinghouse Research Center, 2023). It is clear that prospective students have begun to weigh their options after high school and will no longer automatically choose to attend traditional college experiences. In the post-pandemic world, these vacillations can be attributed to increased remote learning options, the burgeoning burden of student debt, and the perceived diminishing returns of a college education (Dickler, 2022). This fundamental shift in students' outlook toward college degrees paints a drab picture for many institutions that need to sufficiently market the college education as desirable to a new generation of students; many of whom have successfully leveraged the capital returns of social media and turned it into a high-earning career. The data

points to a bleak outlook for some institutions, with experts predicting numerous school closures in the near future (Sanchez, 2023).

Fortunately, HBCUs have defied national trends with an uptick in enrollment post-COVID-19. Between the years 2018 and 2021, HBCUs experienced a 30% increase in college applications (Maynard, 2023). Researchers believe this increase occurred due to HBCUs' unique value proposition which entails their inimitable institutional cultures, affordable tuition, and smaller classes that can generally amount to low faculty-to-student ratios (Thompson and Hoy, 2022). This unique academic and socio-cultural higher education experience that promotes a sense of community and belonging is also becoming more attractive to high-achieving students who would typically attend Predominantly White institutions (Maynard, 2023). HBCUs in Georgia have varying levels of enrollment, ranging from Paine College's 253 students (National Center for Education Statistics, 2023) to Albany State College with over 6,000 students in 2021 (National Center for Education Statistics, 2023). Louisiana HBCUs' enrollment rates differ from Grambling University having 5, 270 students, and Southern University and A &M College with 8,317 students (National Center for Education Statistics, 2023). However, HBCUs should not get comfortable based on this data; as federal funding inevitably wanes to pre-pandemic levels, these institutions must make strategic financial investments in technology, student services, and a committed professoriate to sustain the current trend in enrollment.

Governance and Leadership at HBCUs

To understand the context surrounding this study, it is important to comprehend the governing structures and leadership at HBCUs. According to the literature, governance structures are unique, and the selection process of their board members varies from state to state (Freeman, Hilton & Lee, 2016). According to the American Association of Governing Boards "effective governance begins with who is appointed to the governing boards at HBCUs" (Nelms & Schexnider, 2020, p.1). Although research is limited related to governance at HBCUs, it is critical to analyze the decision making at these institutions (Minor, 2004). Subsequently, it is equally as important to understand the governing boards structures of HBCUs in the US. Governing Boards structures within the realm of higher education at HBCUs include the following: 1) statewide; 2) local; and 3) shared (Freeman, Hilton & Lee, 2016). Within this structure there are 26 statewide governing boards at HBCU's, with Southern University and A&M College being the only system-level board in the country that governs multiple campuses (Freeman, Hilton & Lee, 2016). The local governing board structures are comprised of a single institutional board and are often called *"Superboards"* and provide oversight of all aspects of the institutions within a state. The shared governance structure is comprised of a bicameral statewide and local board oversight of the institutions (Freeman, Hilton & Lee, 2016).

Theoretical Framework

It is evident that HBCUs are not immune to the occurrence of emergency events, however, the unprecedented COVID-19 pandemic upended traditional academic operating models and highlighted the need for agile and effective decision-making. Moreover, these institutions have been subjected to concurrent crises and need to be fastidious about ensuring that they harness the strategic value of resilience for the sake of the student populations that they serve. Tony Jacques' Issue and Crisis Relational Model (Relational Model) provides a comprehensive approach to the process of efficaciously managing crises (Jaques, 2010). The

Model contains two (2) Phases, Pre-crisis Management and Crisis Management, along with four (4) key elements: Crisis Preparedness, Crisis Prevention, Crisis Event Management, and Post-crisis Management (Jaques, 2007). When Jaques established the Relational Model, crisis management theory was at a pivotal juncture and needed a fresh perspective on how to approach crises from an integrative, non-linear lens (Jaques, 2007). This model is intuitive, cyclical, and non-sequential; each element is accompanied by several cluster activities that are geared toward ensuring that organizations can effectively manage calamities when they occur.

Although not always feasible, the cluster activities for the Pre-Crisis Management phase serve to provide institutions with concrete steps that should happen before a crisis takes place. Crisis Preparedness encompasses the planning, documentation, resource management, and training that is required before emergencies occur. Crisis Prevention entails conducting early warning scans, identifying, and prioritizing risk management, and creating infrastructures for emergency responses. Most higher education institutions were not adequately prepared for the academic, and operational disruptions that were engendered by the COVID-19 pandemic (Thompson & Hoy, 2023) and were actively in Crisis Event Management during the year 2020. The activities associated with this element include crisis recognition, system activation and response, and crisis management. To be successful during this phase, crisis management must be viewed as a critical institutional function for HBCUs. It entails strategy selection and implementation, damage mitigation, stakeholder management, and timely responses to the media (Jaques, 2007), all of which were critical components during the pandemic.

Post-Crisis management issues can often get overlooked because the seemingly drastic effects of the catastrophe have decelerated. However, this is arguably one of the most important steps of the crisis management process, because failure to effectively complete these activities can result in serious missteps when handling crises in the future. These activities include operational recovery and business resumption, addressing post-crisis issue impacts and evaluation, and modification of processes. Figure 1 depicts the Issue and Crisis Relational Model.

Figure 1. Issue and Crisis Management Relational Model Source: (Jaques, 2007, p.6)

Methodology

The researchers used a qualitative research design for this study to address the research question: Does the lack of crisis management strategies at public state-funded HBCUs impact the decision-making processes of the governing boards and administrative leadership at HBCUs? According to Miles, Huberman, and Saldaña (2014), a qualitative approach allows researchers to obtain rich, thick descriptions and deeper analyses of phenomena because the data can assist researchers to go beyond initial findings and "generate or revise conceptual frameworks" (p. 4). A qualitative content analysis was performed using secondary data. The body of knowledge on content analysis provides varying definitions but agrees that it generally entails "the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns" (Hsieh & Shannon, 2005, p.1278).

There are six (6) key questions that must be answered when conducting content analysis: 1) Which data are analyzed? 2) How are they defined? 3) What is the population from which they are drawn? 4) What is the context relative to which the data are analyzed? 5) What are the boundaries of the analysis? And 6) What is the target of the inferences? (Krippendorff, 2013). The researchers purposely sampled a total of four (4) public state-funded HBCUs located in the United States to determine if the lack of crisis management strategies at public state-funded HBCUs impacts their decision-making processes. Fort Valley State University and Savannah State University were selected in Georgia. Two (2) additional universities in the State of Louisiana, Grambling State University, Southern University and A & M College were utilized for this study. The researchers selected documents relevant to university decision-making for review, including university board meeting minutes, university press releases, strategic plans, hazard mitigation plans, COVID-19 dashboard data, and emergency response website data. To code the data, the researchers used a Computer Assisted Qualitative Data Analysis Software (CAQDAS), ATLAS.ti, which has the functionality to search, code as well as relate data from text, audio, video, and images (Hsieh & Shannon, 2005). ATLAS.ti also has the capacity to amalgamate data into cases, create memos, and assign codes in order the conduct a thematic analysis (Johnson & Thompson, 2021). The coding categories for this study were established based on the cluster activities from Jaques' (2007) Issue and Relational Crisis Management model for post-crisis management: 1) Post-crisis management to include: operational recovery, finances, and business momentum; 2) post-crisis issue impacts, and 3) Evaluation and Modification.

Findings

Post-crisis management: Operational Recovery, Finances & Business Momentum

Findings indicated that 50% of the HBCUs within this study did not encounter operational recovery or financial issues when students, faculty, and staff began returning to their respective institutions after the COVID-19 shutdown. Whereas, other HBCUs did encounter major post-crisis recovery issues and had major financial issues they had to deal with when returning to their normal face-to-face operations. For example, due to the governing board structure and decision-making of the University System of Georgia board members, Fort Valley State University and Savannah State University were able to reopen without many operational and financial issues due to the revenue stream availability to both institutions. They were also able to: 1) increase their classroom capacity by increasing the number of seats in each classroom by 75% for COVID safety protocols purposes; 2) provide full-time faculty

and staff members with new laptops, iPads, and training keep their business operations streamlined and keep positive momentum at their university's; and 3) teach classes utilizing a blended synchronous option available for students (University System of Georgia Board Minutes 2021). Subsequently, Southern University and A & M College, and Grambling University encountered major operational and financial recovery issues. Although these institutions received large amounts of financial assistance through the CARES Act from the Department of Education, they still lack the aforementioned to recover their operations post-COVID. One major post-crisis issue was the lack of adequate classroom space and housing for students to meet school safety protocols when they returned to school.

Post-crisis issue impacts: Reputational impact, media scrutiny, evaluation, and recovery

Other findings suggest that COVID-19 has placed a significant strain on all HBCUs across the country related to their ability to bounce back, recover and remain resilient after the COVID-19 shutdown. Although there was no negative media coverage of HBCUs during the pandemic, currently, two (2) HBCUs within this study are experiencing the long-term reputational impact of COVID-19. These issues include: 1) lack of all the necessary updated technology infrastructure in classrooms; 2) students are still incurring account balances, and 3) in the fall of 2021, these institutions experienced major housing issues for incoming freshman and returning students, which resulted in hundreds of students returning home (Southern University Board of Supervisors Meeting, 2021 & University of Louisiana System Board Meeting, 2021). According to the notice posted on one university's website stated that "campus housing had reached full capacity for the Fall 2022 term, therefore, students needed to make other arrangements" (Southern University and A & M College, 2022). Consequently, hundreds of students were sent back home, which impacted enrollment, retention and graduation rates at these institutions. Additionally, there has been a large turnover in faculty, and several faculty members have retired, which has made it hard for the institution to recover post-COVID (Southern University Board Minutes, 2021). These findings imply that the lack of a post-crisis management plan impacted governing board members' decision-making. Findings also indicated that Savannah State University (SSU) and Fort Valley State University were given money from the US Department of Education to clear all student account balances (The White House, 2022), and as a result of their governing board members' decision-making, all student debts were removed. Due to these factors, 50% of the HBCUs in this study have experienced a slow recovery process, which indicates the necessity for board members and administrative leadership to implement a crisis preparedness and post-crisis management plan.

Discussion

The study findings highlight that HBCU leaders can still learn from their decision-making after the COVID-19 crisis. In order to successfully navigate through future crises and remain resilient, HBCUs must prioritize resources to garner and retain institutional crisis management knowledge aa well as to support and sustain those efforts (Thompson & Hoy, 2023).

- **Research** and prepare for potential crises
- **Adapt**, be flexible to changes, and innovate
- **Communicate** and be transparent with stakeholders
- **Execute** crisis management strategy
- **Retain** new institutional crisis management knowledge
- **Support** and Sustain efforts

Figure 2. RACERS Model (Thompson & Hoy, 2023, p. 265)

The RACERS model contains some of the elements of previous crisis management strategies, is predicated on transformative crisis management approaches, and contextualizes an area of concern for HBCUs. As a result of chronic underfunding, poor infrastructure, and high leadership turnover, HBCUs are predisposed to a loss of institutional knowledge. High leadership turnover is especially a threat to the resilience of these institutions. A key component of the process of planning preparing, anticipating, and responding effectively to crises is the ability to apply knowledge garnered from previous crisis situations to prognosticate outcomes, efficaciously strategize, and navigate around crisis black holes. When HBCUs senior-level administrators and mid-level leaders leave to seek employment at other institutions or retire, critical knowledge, experience, and crisis management expertise abscond with them. Consequently, it is terribly important that these institutions have a crisis management plan that is an integral part of their strategic planning process, Board of Supervisors Training, and leadership training at all levels of the institution. Moreover, each institution must devise a method by which lessons learned, best practices, and strategic partnerships that were previously created as a result of a crisis are documented and held in an institutional repository for future leaders to utilize (Thompson & Hoy, 2023). Equally important to the retention of institutional knowledge is the ability to support and sustain those efforts on a continuous basis. Financial support for technology, training, resources, and strategic partnerships are pivotal for future resilience. These institutions must allocate funds in their budgets each year to ensure that leaders across all levels of the institution are appropriately trained, are cognizant of crisis management strategies, and have access to resources and tools needed to manage crises.

Conclusion

A crisis is a double-edged sword. On one side it can create stress, financial impacts, and reputational damage while on the other side can produce an opportunity to fortify, institutional operations, streamline processes, and improve upon practices that were previously lacking. All in all, a crisis has the potential to be a transformative event. Based on the researcher's findings the lack of crisis preparedness and post-crisis management at public state-funded HBCUs impacted the decision-making processes of the governing board members and administrative leadership at HBCUs. As HBCUs ponder the future, they must continuously look for ways to retain the unique heritage, history, and mission of these institutions, while moving forward with a strategic vision, increased fortitude, and a growth mindset. Therefore, it is vitally important the HBCU governing boards and leadership

mandate crisis preparedness and post-crisis management plans to be included in their Emergency Preparedness plans and strategic plans moving forward. As a result, governing board members and administrative leadership will be able to mitigate problems with their operational recovery, financial costs, faculty and staff momentum reputation, and ability to quickly recover and remain resilient after a crisis occurs at their respective institutions. HBCU leaders should also allocate more financial support in their annual budget for assessments and feedback from the current COVID-19 crisis to implement changes to remain resilient. Now more than ever, HBCUs must recognize the changing times and be willing to adopt modes of instructional delivery, as well as programs and initiatives that create strategic partnerships, to ensure that they will continue to produce scholars who can meet the future workforce needs. These steps will be critical for the future of the institutions they serve in order to truly reimagine resilience.

References

AGB Board of Directors' Statement on the Fiduciary Duties of Governing Board Members, AGB 2015. https://agb.org/knowledge-center/board-fundamentals/fiduciary-duties/

Abdullah, M., Husin, N. A., & Haider, A. (2020). Development of Post-Pandemic Covid19 Higher Education Resilience Framework in Malaysia. Archives of Business Research, 8(5). 201-210. https://www.researchgate.net/profile/NorAzilahHusin/publication/341984938_Development_of_PostPandemic_Covid19_Higher_Education_Resilience_Framework_in_Malaysia/links/5ee0b1fc92851cf1386f5e28/Development-oPost-Pandemic-Covid19-Higher-Education-Resilience-FrameworkinMalaysia.pdf?_sg%5B0%5D=started_experiment_milestone&origin=journalDetail&_rtd=e30%3D

Curley, M. & Jackson, K. (August 4, 2021). *Savannah State cancels debt for students impacted by COVID.* Retrieved February 16, 2023, https://www.wsav.com/news/local-news/savannah-state-cancels-debt-for-students-impacted-by-covid/

Canicosa, J. C. (2021, September 23). *Louisiana colleges, universities disrupted by Hurricane Ida back to teaching.* Louisiana Illuminator. Retrieved February 15, 2023, https://lailluminator.com/2021/09/22/louisiana-colleges-universities-disrupted-by-hurricane-ida-back-to-teaching/

Dickler, J. (2022, October 5). *Universities are going to continue to suffer.' some colleges struggle with enrollment declines, underfunding.* CNBC. https://www.cnbc.com/2022/10/05/colleges-struggle-with-enrollment-declines-underfunding-post-covid.html

Freeman, S., Hilton, A.A. & Lee, J.M. (2016). Governing Boards at HBCUs. ASHE/Denver. http://works.bepress.com/sydney_freeman_jr/40/

Hsieh H-F, Shannon SE. Three Approaches to Qualitative Content Analysis. *Qualitative Health Research*. 2005;15(9):1277-1288. doi:10.1177/1049732305276687

The Hunt Institute. (2022, December 12). *Addressing historic underfunding of HBCUs.* The Hunt Institute. Retrieved February 17, 2023, https://hunt-institute.org/resources/2022/12/addressing-historic-underfunding-of-hbcus/

Jaques, T. (2007). Issue management and crisis management: An integrated, non-linear, relational construct. *Public Relations Review*, *33*(2), 147–157. https://doi.org/10.1016/j.pubrev.2007.02.001

Jaques, T. (2009). Issue management as a post-crisis discipline: Identifying and responding to issue impacts beyond the crisis. *Journal of Public Affairs*, *9*(1), 35–44. https://doi.org/10.1002/pa.310

Jaques, T. (2010). Reshaping Crisis Management: The challenge for organizational design. *Organization Development Journal*, *1*(28), 9–17. https://doi.org/https://www.proquest.com/openview/71d1c4093d9c3c0f306bd16f7b27 54ec/1?pq-origsite=gscholar&cbl=36482

Johnson, M. S., & Thompson, S. (2021). Covid-19 crisis management at Historically Black Colleges and universities (HBCUS): a contemporary approach to governance and leadership. Journal of Underrepresented & Minority Progress, 5(SI), 27–46. https://doi.org/10.32674/jump.v5isi.3049

Knox, L.(2022). *Flu Returns to Campus With a Vengeance*. Inside Higher Ed. https://www.insidehighered.com/news/2022/12/07/flu-season-hits-campuses-early-and-hard

Krippendorff, K. (2013). *Content analysis: An introduction to its methodology*. Los Angeles, CA: SAGE.

Maynard, M. (2023, January 5). *Historically Black Colleges and universities buck trend of falling enrollment: Opinion*. The Tennessean. Retrieved February 9, 2023, https://www.tennessean.com/story/opinion/contributors/2023/01/05/historically-black-colleges-and-universities-defy-falling-enrollment/69775852007/

McCrimmon, K. (2022, November 16). *Fall viruses are hitting with a vengeance. tips for a healthier holiday season.*UCHealth Today. Retrieved February 16, 2023, https://www.uchealth.org/today/fall-viruses-hitting-with-vengeance-tips-for-healthier-2022-holidays/

Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative Data Analysis: A methods sourcebook* (3rd ed.). SAGE.

Minor, J. T. (2004). Introduction: Decision Making in Historically Black Colleges and Universities: Defining the Governance Context. *The Journal of Negro Education*, *73*(1), 40–52. https://doi.org/10.2307/3211258

National Student Clearinghouse Research Center. (2023, February 2). *Current term enrollment estimates*. National Student Clearinghouse Research. https://nscresearchcenter.org/current-term-enrollment-estimates/

Nation Center for Education Statistics. (2023). *Fort Valley State University*. College Navigator. https://nces.ed.gov/collegenavigator/?q=fort+valley&s=GA&ct=1&id=139719

Nation Center for Education Statistics. (2023). *Grambling State University*. College Navigator.https://nces.ed.gov/collegenavigator/?q=grambling&s=LA&ct=1&id=15900 9

Nation Center for Education Statistics. (2023). *Savannah State University*. College Navigator. https://nces.ed.gov/collegenavigator/?q=savannah&s=GA&ct=1&id=140960

Nation Center for Education Statistics. (2023). *Southern University and A & M College*.
College Navigator.
https://nces.ed.gov/collegenavigator/?s=LA&ct=1&pg=2&id=160621

Nation Center for Education Statistics. (2022). Historically Black College or University.
College Navigator.https://nces.ed.gov/collegenavigator/?s=all&sp=4

Nelms, C. & Schexnider, A. J. (2020a). Strengthening governance at Historically Black
Colleges and Universities. Diverse Education.
https://diverseeducation.com/article/172253/

Owens, D. (2022). *HBCU students share angst and resilience at Congressional hearing on
Bomb Threats*. NBCNews.com. https://www.nbcnews.com/news/nbcblk/hbcu-
students-share-angst-resilience-congressional-hearing-bomb-threat-rcna20654

Sanchez, O. (2023, January 13). *With student pool shrinking, some predict a year of college
closings*. The Hechinger Report. Retrieved February 9, 2023,
https://hechingerreport.org/with-student-pool-shrinking-some-predict-a-grim-year-of-
college-closings/

Southwick, S. M., and D. S. Charney. 2018. Resilience. The Science of Mastering Life's
Greatest Challenges. Cambridge, UK: Cambridge University Press.
doi:10.1017/9781108349246

Southern University and A &M College (2022). *Housing Availability*. subr.edu/page/housing-
availability.

Southern University Board of Supervisors Meeting (August, 2021).
https://www.sus.edu/assets/sus/SU_Board/Updated-Final-Posted-August-BOS-
Packet_Redacted.pdf

Southern University System. (2023). *About the Southern University System*.
https://www.sus.edu/subhome/78

Thompson, S., & Hoy, X. (2023). Navigating the Crucible of Crisis: Effective Leadership
Strategies for Higher Education COVID-19 Recovery. In: Sultan, P. (eds) Innovation,
Leadership and Governance in Higher Education. Springer, Singapore.
https://doi.org/10.1007/978-981-19-7299-7_14

Thompson, S. & Hoy, X. (2022). How Leaders are Leveraging Efforts and Initiatives. In
Smith Ross, C. Editor (Ed.), Effects of the Covid-19 Pandemic on HBCUs Academic
and Social Culture. Lewiston, NY: Mellen Press.

University System of Georgia Board Minutes (2021). usg.edu

University of Louisiana System Board Meeting (2021). https://www.ulsystem.edu/board-
members/board-meetings/

U.S. Department of Education. (2022). https://sites.ed.gov/whhbcu/federal-interagency-
working-group/interagency-competitiveness-clusters/campus-safety-resilience-2/

U.S. Department of Education. (2022, March 16). *U.S. Department of Education Announces Action to support HBCU response to bomb threats*. U.S. Department of Education. Retrieved February 15, 2023, https://content.govdelivery.com/accounts/USED/bulletins/30ef5bd

U.S. Department of Homeland Security. (2022, August 30). *Addressing bomb threats at Historically Black Colleges and universities*. Addressing Bomb Threats at Historically Black Colleges and Universities. Retrieved February 9, 2023, https://www.dhs.gov/news/2022/08/30/addressing-bomb-threats-historically-black-colleges-and-universities

The White House. (2022, March 7). *Fact sheet: State-by-state analysis of record $2.7 billion American rescue plan investment in historically Black Colleges and universities*. The White House. https://www.whitehouse.gov/briefing-room/statements-releases/2022/03/07/fact-sheet-state-by-state-analysis-of-record-2-7-billion-american-rescue-plan-investment-in-historically-black-colleges-and-universities/

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Addressing the Shortage of ESL/EFL Teachers Amid the Pandemic: An Investigation Into Teacher Burnout in a Profit-Driven Context

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

The conundrum of ESL/EFL shortage has been exacerbated due to the Covid-19 outbreak as many Vietnamese public schools have undergone an alarming spike in teacher turnover rates. One of the influencing factors of teachers' decision to leave their profession has been reported to be being drained from work. Very little, however, is known about the teachers in the private sector, which is profit-driven. The study addresses this gap in teaching practices in Vietnam, exploring teacher burnout in several language institutes in Ho Chi Minh City, Vietnam. A mixed-method approach adopted from Seidman's Teacher Burnout Scale was employed to measure the burnout score. To gain a more insightful understanding of the determinants, participants, including teachers and academic leaders, were invited to reflect on their experience regarding their school leadership and how it has affected their career paths. The findings reveal that the teachers' age and years in service are not correlated to their burnout scores. Although the mean score is slightly low compared to the total score (M = 53.35/126), mixed results are reflected in the qualitative data from open-ended questions in the survey. During semi-structured interviews, more emerging factors which contribute to teachers' well-being were also discussed. Finally, this study proposes some solutions for profit-driven school leaders to ensure sustainable growth.

Keywords: Teacher Shortage, Teacher Burnout, Profit-Driven Sector

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Introduction

For the past two years, the pandemic has exacerbated the perennial issues in education, particularly the teacher shortage. According to the Vietnamese Ministry of Education and Training's report to the National Assembly in 2022, 16,265 teachers resigned and switched to other jobs (10,407 public school teachers and 5,858 private school teachers), disrupting the provision of high-quality education to all students (Thu Hang, 2022). The main reasons for this alarmingly high turnover rate of teachers are reported to be longstanding negative stressors (Vinh Ha, 2022), including 1) low wages, as the average monthly income of a teacher from public schools is around VND 6 million (approximately equivalent to $250); 2) poor school management; 3) unreasonable assignment of tasks; 4) the lack of democracy affecting the teachers' working spirit and creativity; 5) and poor facilities (Thu Hang, 2022).

While much attention has been drawn to public schools, not many studies investigate the private sector. This is such a gap in the research, as the number of resigned teachers in private schools is significantly lower than that of public ones. Hence, conducting research in profit-driven educational sectors can provide beneficial insights to tackle the chronic teacher shortage.

This study aims to address the issue by examining teacher burnout in the private sector, specifically language centres, in the Vietnamese context and identifying the factors that affect the teachers' decision to leave their job. The research questions are as follows:

- How burned out are teachers working for profit-driven schools amid the pandemic?
- What are other factors affecting the teacher turnover rate in those schools?

Literature review

1. Teacher shortage

1.1 Consequences

The problem of teacher shortage is not novel, with many reports on the possible shortage of primary and secondary teachers being published in the early 1980s, (see Darling-Hammond, 1984; Haggstrom, Darling-Hammond, & Grissmer, 1988; National Commission on Excellence in Education, 1983). Over the past few decades, a series of studies (see Grissmer & Kirby, 1987; Grissmer & Kirby, 1992; Grissmer & Kirby, 1997; Mumane et al., 1988) have been done in an attempt to address the concern over teacher shortages in many countries (Santiago, 2002). This raises the question of why teacher shortages are the main source of concern for many people, both in the academic field and among policymakers.

To explain this, the consequences of this major issue should be focused. As raised by Reilly (2022), students are the ones who suffer the utmost consequences of this shortage, as they may experience classes with a rotation of substitute teachers, resulting in no graded work or supervision. This is further supported by McKenna (2018), who states that the high turnover rate of teachers affects the students' performance by hindering the stability of the school, through which the cooperation between colleagues and the development of institutional knowledge are damaged.

Besides students, a shortage of teachers can cause harm to the teachers themselves as well as the general education system (García & Weiss, 2019), resulting in a reduction of the teachers' effectiveness and a high consumption of public economic resources. Consequently, it is more challenging for teachers and the schools to develop a professional reputation, which in turn worsens the problem. In a report published recently, Schmitt and deCourcy (2022) claim that the COVID-19 pandemic has intensified the long-established problem of teacher shortage, which perplexes people as to how this shortage is caused.

1.2 Causes

Along with mentioning the issue of teacher shortage, Schmitt and DeCourcy (2022) also delineate two prominent causes leading to this phenomenon, namely, the low pay in relation to the teachers' profession as compared to those at the same qualification level, and the progressively stressful working conditions. Regarding the former, many studies have highlighted salary as a significant factor in determining whether or not teachers will leave their jobs (Goodlad, 1984; Ingersoll, 2001; Ingersoll, 2003). In empirical research conducted in Nigeria by Subair & Talabi (2015), 217/275 teachers (78.9%) stated that salary dissatisfaction was the main reason for the teacher shortage. For the latter factor, Schmitt and DeCourcy (2022) maintain that stress is a common factor in the teaching job due to many factors, including the long working hours, large class sizes, and evaluation processes. To add further details, Ingersoll (2001) emphasises that poor working conditions can damage the reputation of the schools as well as the teachers, making recruitment a more challenging task. Together with the outbreak of the pandemic, teachers confront many other stressors relating to health risks, new methods of teaching, and the rapid changes demanded by the job (Schmitt & DeCourcy, 2022). As a result, the combination of both new and old types of stressors has driven the teachers to potentially burnout and quit their jobs, leading to the shortage problem.

To summarize, teacher shortages are a persistent problem that has been exacerbated by the COVID-19 pandemic. Among its main causes, low pay and stress have been acknowledged as the factors having the most significant impacts. Nevertheless, it is also worth mentioning that such results are derived from research and reports of teachers from the public schools, leaving a gap to be bridged for those teaching in the private sector.

2. Teacher burnout

2.1 Definition

Being identified as one of the main causes leading to teacher shortages, it is therefore vital to understand the definition of burnout. The explication of burnout has intrigued academia since the 1970s, with a few articles by Freudenberger (1975) and Maslach (1976) being the first ones to label the phenomenon its initial term (Maslach et al., 2001). Burnout is defined as "a syndrome of emotional exhaustion and cynicism that occurs frequently among individuals who do 'people-work' of some kind" (Maslach & Jackson, 1981, p. 99). It is also clarified as "the end result of prolonged stress experienced on a daily basis" (McCormack & Cotter, 2013, p. 16). As articulated by Brown and Roloff (2011), this emotional exhaustion can adversely affect the teachers' welfare and their commitment to the job. Maslach and Jackson (1981) further emphasise the impacts of burnout on a person's well-being, stating that it is one of the dominant factors causing people to experience low self-esteem, leading to different

types of distress, insomnia, drug and alcohol abuse, as well as problems maintaining relationships with their family and acquaintances.

In identifying the sources of teacher stress, Turk, et al. (1982) point out the seven areas that appear with a consistent pattern through different research, which are: the school environment, student misbehaviours, poor working conditions, personal concerns of the teacher, relationships with parents, time pressures, and inadequacy of training. Furthermore, the role of management, or principals to be specific, is also highlighted by Dworkin et al. (2003) as it can have an influential effect in reducing the burnout feeling among teachers. This is practised through the much-needed recognition from the managers to the ones in task.

2.2 Burnout indicators

Given such aforementioned alarming impacts, educational institutions must find ways to mitigate the problem. This can be done through the assessment of the burnout syndromes, as well as the factors leading to such emotions (Schwab, 1983). As suggested by Maslach, burnout can be assessed in its three dimensions: emotional exhaustion, depersonalization, and reduced personal accomplishment (Koeske & Koeske, 1989).

According to Maslach et al. (1997), the first aspect occurs when "emotional resources are depleted, workers feel they are no longer able to give of themselves at a psychological level", which is characterised by the feelings of frustration, anger, depression, and dissatisfaction, causing teachers to be less resilient towards their emotions (Larrivee, 2012). In terms of depersonalisation, negative and cynical attitudes towards other people are developed, making teachers become more critical and have the tendency to blame those who work with them. For the final factor, it is illustrated through one's self adverse evaluation, or a loss of self-efficacy, resulting in disillusionment and a feeling of dissatisfaction for what they have achieved (Maslach et al., 1997).

As for the stages leading to burnout, Figure 1 below shows its three stages—stress arousal, energy conservation, and exhaustion—together with the symptoms associated with each stage.

Figure 1: Three Stages of Burnout (Adopted from Texas Medical Association, 2010)

As can be seen, there are various symptoms at different stages, ranging from weak to more serious indicators. As a result, if a high burnout score is achieved among teachers, an assessment of the participants' health condition is needed to examine their appropriate level of burnout, through which suitable measures can be suggested.

Research design

This study employs a mixed-method approach that combines qualitative and quantitative data to increase the validity of the findings (Creswell, 1999; Creswell & Creswell, 2018, Schifferdecker and Reed, 2009). Three typical language centres in Ho Chi Minh City were selected to be the subjects of this research to gain an insightful understanding of teachers' vicarious experiences with teaching and their contexts (profit-driven schools) and compare the biographies of the subjects to provide the dynamics affecting the teachers' burnout and their retention (Thomas, 2017).

1. Instruments

1.1 Teacher Burnout Scale

This research adopts the Teacher Burnout Scale devised by Seidman & Zager (1986). The questionnaire (see Appendix a) comprises 21 questions divided into four subcategories:

- Career satisfaction (5 items: 1, 5, 10, 12, 19)
- Perceived administrative support (6 items: 3, 8, 11, 15, 18, 20)
- Coping with job-related stress (6 items: 2, 4, 7, 9, 13, 14)
- Attitudes towards students (4 items: 6, 16, 17, 21)

The scale consists of a six-point Likert's response: 1: strongly disagree; 2: moderately disagree; 3: slightly disagree; 4: slightly agree; 5: moderately agree; and 6: strongly agree.

1.2 Open-ended question

Since the researchers aim to collect a significant number of teachers' free thoughts and feelings, an open-ended question is time-saving and ideal for all participants to freely express their opinions rather than imposing them to select from a predetermined list of answers (Geer, 1988). Specifically, the participants were asked to describe their experience with teaching and working with the centres which could be answered in words or full sentences. There was no word limit for the responses.

1.3 Interviews

Google Meet was used to conduct online interviews, allowing participants to freely express their opinions and feelings (Creswell & Creswell, 2018). Participants got the consent form prior to the meeting. They were all aware of the purpose of the research and that the conversations were recorded. The semi-structured questions are constructed based on the following themes:

- Their experience with the centre operation and support; and how they affect teacher well-being and work commitment
- Their perspectives on the factors that influence teacher turnover rates

For ethical reasons, the participants' names were kept anonymous.

2. Participants

ESL/EFL teachers from three language centres in Ho Chi Minh City, Vietnam were the subjects of this research. All centres are profit-driven and customer-oriented, as the main revenues come from student enrollment, and the quality of the centres is determined by customer satisfaction and the students' improvements in their English proficiency. The names of the three centres are confidential, but their information regarding their number of teachers, teacher turnover rate, and teachers' reasons for resigning is approved to be used in this study. Details are as follows:

- Language Center A has 15 teachers (seven expats and eight Vietnamese).
- Language Center B has 12 teachers (three expats and nine Vietnamese).
- Language centre C has 16 teachers (four expats & twelve Vietnamese).

From January to September, 22 out of 65 full-time teachers resigned from 3 centres, including 18 expat teachers (81.82%) and 4 Vietnamese teachers (18.18%). According to the data from the human resources department, a majority of teachers left due to their relocation and dissatisfaction with the salary. Many teachers were dismissed for misconduct (absence, tardiness, and defamation of the organisation). Others submitted their resignation letters due to personal reasons. Consequently, the three centres had confronted hindrances from their teacher shortage, entailing heavy burdens regarding cost and time on the onboarding phase; and degradation of reputation due to teachers' absenteeism, leading to a great loss of student enrollment and the organisation's revenues.

Initially, invitations were sent out to all 43 teachers who are working for the aforementioned language centres. However, only 31 ESL/EFL teachers, including 5 expats and 26 Vietnamese, agreed to participate in the study (See Figure 2 for their demographics).

Teachers' demographics					
	N	Minimum	Maximum	Mean	Std. Deviation
Age	31	21.00	35.00	28.1935	3.30070
Years of experience	31	2.00	12.00	5.3548	2.69009
Valid N (listwise)	31				

Figure 2: Teachers' Demographics

Ethical consideration

The research proposal was sent via email and accepted by the academic managers, head teachers, and schedulers. Consent forms were sent to all participants (teachers), and they had to grant permission to collect their data before completing the questionnaire. Finally, all information of the participants is confidential.

Data collection

From August 12–September 12, 2022, online surveys and consent forms were distributed to all teachers from the three centres. From September 5 - September 19, 2022, the researchers conducted 30-minute interviews via Google Meet with participants who accepted the invitation to join the meeting in the initial online survey.

Data analysis

For quantitative data retrieved from the teacher burnout scale, a statistical package for the social sciences (SPSS) was used to proceed and analyse the scores. A reliability test (Cronbach's Alpha) was also employed to ensure the data's consistency. The obtained result for the scale is reliable ($\alpha = 0.86$). Before adding all scores of responses and comparing them with the mean score, reverse coding was applied for positive worded items (items: 1, 3, 5, 8, 10, 16, 17, and 19). The high sum score is equivalent to a high burnout state.

For qualitative data from the open-ended question and interviews, the coding method was adopted to examine the teachers' responses.

Findings

1. Teacher burnout score

The mean score for Teacher Burnout was relatively low (M = 53.35/126) compared to the scale's average score (See Figure 3).

Teacher Burnout

	N	Minimum	Maximum	Mean	Std. Deviation
Total Teacher Burnout Score	31	24.00	82.00	53.3548	14.20692
Valid N (listwise)	31				

Figure 3: Teacher Burnout Score

This indicates that the participants did not endure burnout with teaching or at their workplace. However, the qualitative data show that they did experience several negative workplace stresses, which contributed to their decision to leave the organization.

2. Qualitative data

2.1 Open-ended question

Initially, the participants were asked to freely describe their feelings about teaching at their current centres, resulting in mixed responses with a total of 103 words (See Figure 4).

Categories	Number of answers	Sub-categories	Total Count
		Teachers' Repsonses	
Positive	62	work related (relationship)	3
		feeling (well-being)	25
		work related (workload)	8
		career choice	24
		others	2
Negative	31	work related (relationship)	6
		feeling (well-being)	11
		work related (workload)	10
		career choice	3
		others	1
Neutral	3	work related (relationship)	0
		feeling (well-being)	1
		work related (workload)	0
		career choice	1
		others	1
Unidentified	7	work related (relationship)	0
		feeling (well-being)	0
		work related (workload)	0
		career choice	2
		others	5
Total	103		

Figure 4: Teachers' responses to open-ended question

Having been coded, the descriptive words were put into five sub-categories, namely work-related (relationship), feeling (well-being), work-related (workload), career choice, and others. Teachers are noticeably happy with their career choice; therefore, the profession itself is barely a stressor for the participants. Among the categories, feeling (well-being) receives distinctively mixed feedback but the majority of them is positive. In contrast, many negative words are used primarily to describe job-related issues (workload) (See Figure 5).

Figure 5: Teachers' negative description of their experience at work

To gain a more in-depth understanding of the negative experience and how it relates to the decision to resign, five participants (one foreign and four Vietnamese teachers) who revealed their intention to leave the organization in the coming months were invited to participate in semi-structured interviews. They are the ideal candidates as they no longer endure the pressure of the organisation's employees, so their answers are reliable and authentic.

2.2 Job-related problems

Workload

The number of administrative tasks for the teachers before and amid the pandemic was fairly similar, including calling the parents and writing daily reports. Although they understood the reasons for completing such tasks, as they are beneficial for the student's progress and serve as an add-on service from a profit-driven language school, some of them expressed their reluctance to complete such tasks as there was a manifest lack of an elaborate procedure for dealing with unexpected issues and conflicts.

> *Calling the parents is **annoying** for me, especially when they (the parents) did not pick up the phone, but I have to keep calling them.*

In this case, the teacher failed to reach the parents according to the arranged schedule. She had to make another call during her duty hours which encumbers the accomplishment of other priorities such as planning the lessons or grading the student's work. This might lead to the accumulation of incomplete and overdue tasks, gradually becoming a burden for the teachers. Another stressor comes from the academic staff whose responsibility is taking care of the clients (students and parents), and supervising the parent conference.

> *I said my schedule was very tight but the staff said: "oh, this (calling the parents) is very easy, why are you making a fuss".*

From the teacher's sharing, the internal communication regarding teachers' responsibilities was visibly weak due to the absence of empathy and mutual understanding regarding how administrative tasks should be executed. Therefore, many of them used negative words (*"exhausted", "tired", "overwhelming", "lack of energy", "lots of work",* and *"lack of support"*) to describe their workload in the open-ended question.

Conflicts

Conflicts are, indeed, inevitable in any workplace, and specifically, in profit-driven schools, they involve the discrepancy between teacher beliefs and the school's business model.

> *(the centre) They want students to play a lot of games... **I feel like if I were to do that, I would be cheating the students out of their money**. I feel a combination of games and lectures would be better, but some teachers here they just gamify way too much from the beginning of the class to the end.*

Another prominent issue lies in the lack of transparency, which threatens the teachers' security and belief in the organisation where they are working for.

> *I'm very frustrated* about cutting my annual leave and holiday leave without any official email.

The Pandemic has encumbered economic growth, and profit-driven organisations have endured the detrimental effect. One of the consequences is squeezing the benefits, which was not transparently and officially explained by emails, leading to the teacher's hostility. Moreover, this also displays the frustration of the organisation when dealing with its crisis.

> *I had to submit the IELTS certificate to teach the test-prep program, but other teachers didn't have to.*

In this case, the teacher disagreed with the bias existing in the organisation as the requirement was inconsistent and unfair to all teachers, leading to negative attitudes. Once the teachers no longer feel safe and trust their superiors, resigning their job is only a matter of time. This explains why some teachers put "*mundane*", "*maltreated*", and "*chaotic*" in the description box of their experience with teaching at their current workplace.

Teachers' weak commitment to the career

The requirement for recruiting EFL/ESL teachers working for private language centres in the Vietnamese context is less stringent. While it is mandatory for teachers from public schools to submit a bachelor's degree in teaching, candidates with an accredited teaching certification such as TESOL could be qualified to teach at any language centre. Although this might be an optimal solution to reactively ameliorate the issue of teacher shortages, it cannot ensure retaining the number of teachers. During the interview, a teacher with no teaching experience expressed doubts about pursuing a career in education.

> *I started the career with a banking degree, so in this major, **I've always felt like I don't belong**, or I'm falling behind. ……. So that's why I'm not gonna continue teaching in the future*

> *In the future, if I had the choice, I'd rather explore something else that I really love. Teaching is fun, and the time goes fast now compared to the past, but I still can't picture myself as a teacher in the future. **I don't think going to work is like doing what I love if I teach**.*

The teacher still hesitated to commit to working for the school in the future, despite the joy and motivation brought by teaching and the workplace. Her commitment to her career and workplace has been weakened as a result of the shaky teaching foundation. Her explanation might clarify the negative descriptions of work (such as "*bored*", "*impatient*", and "*uninspired*"). Looking from a more general perspective, some teachers enter the educational sector while exploring their professional passions or pursuing other goals. If the teachers have other priorities or fail to make sense of why they are doing what they are doing, they might be prone to giving up teaching. This is more prevalent for expat teachers, as some of them are mobile and willing to relocate after a short period of time, probably for six months or a year. Hence, settling to teach might be insignificant to their career path. Therefore, profit-driven organisations, especially academic managers, should acknowledge this issue and devise plans to cultivate their teachers' passion and commitment to the profession if they wish to retain their teachers.

Teachers' weak commitment to the profit-driven context

On the opposite end of the spectrum from teachers whose jobs were uncertain was a group of teachers who were committed to teaching and their professional development.

> ***I have a very solid plan about what I want to be in the future****. I want to develop academically, that means I want to study higher, and then I want to try to find opportunities to teach in other countries so that I can experience different environments, learn about teaching methods from different places….So that's where I'm heading,* **develop academically, teach in universities, or academic establishments or institutions***.*

According to the teacher in the interview, working for the language centre was just a stepping stone for her to gain experience and generate additional income. Thus, without any strategies to construct and consolidate employee commitment in profit-driven schools, their teachers might be prone to resign from their job.

Discussion

The social-economic burden of the pandemic is alarming, leading to an enormous wave of teacher resignations from both the public and private educational sectors. Among the reasons, salary dissatisfaction is reported to be the main reason for teacher shortages, which has been addressed as a conundrum in the literature (see Goodlad, 1984; Ingersoll, 2001; Schmitt & DeCourcy, 2022). In a report from the Vietnamese national press, teachers' salaries in private schools are approximately twice as much as those in public schools (Tue Hai, 2010). This explains why teachers from public schools chose to leave or pursue their careers in the private sector.

The three centres in this study confronted a high teacher migration rather than attrition, despite their welcoming recruitment policy, which is lowering the standard to fill vacant teaching positions. This solution, in fact, has been critiqued as being impractical to ameliorate the teacher shortage as it is teacher retention that the schools should maintain (Ingersoll & Smith, 2003). Similar to what has been discussed in the literature review and recent national reports, the financial matter is the notable cause of the high teacher turnover rate. This is, nevertheless, due to the competitive salaries and benefits among different centres in the region, not because of poor payment. Although raising the salary is the manifest solution, it is considered extravagant (Ingersoll & Smith, 2003) and has been encumbered by the pandemic as a severe recession is forecasted to take place soon due to trading disruption over the last two years (see Echarte Fernández et al., 2022; Hunt et al., 2022; Jomo & Chowdhury, 2020). Having said that, salary is still the cornerstone for attracting high-quality teaching staff. It also serves as a strategy to promote the teachers' commitment to the organisation, helping to maintain the current employees. Once the teachers are liberated from their financial burden, they can devote themselves to developing their professional competence, promoting the organisation's reputation for teaching quality. As a result, student enrollment can also increase, meaning greater revenues.

Moreover, teachers' well-being and experience are also determining factors. From the quantitative data measuring teacher burnout scores, teachers from those centres did not endure burnout, as the mean scores are significantly lower than the average score from the original scale. Yet the open-ended question and interviews disclose a further in-depth

understanding of teacher resignation if their concerns are not financially related. Specifically, they have expressed enduring several negative stressors related to working conditions and commitments, undermining their well-being, passion, and motivation for teaching. To alleviate the teachers' stress or burnout, an in-depth understanding of the social environment is crucial (Maslach and Leiter, 2016) to accommodate a positive school climate referred to as "the quality and character of school life" (National School Climate Centre, 2022), encompassing "norms, values, interpersonal relationships, and structures of school that affect people's sense of social, emotional, and physical safety" (Cohen et al., 2009, p. 182). Focusing on cultivating the internal environment, indeed, can be a sustainable solution for tackling the teacher shortage, if raising teachers' salaries entails financial burdens on educational sectors, especially for public schools. Not only can a secure, democratic, and healthy workplace promote strong commitment, but the school's values and reputation can also be enhanced, attracting more student enrollment as a result. From this study, transparency in communication and academic support are the utmost concerns, which should be the starting point for policymakers and school leaders to embark on their reformation plans and procedures to construct a better school climate.

Limitations and further directions

This study only investigated three language centres while the contexts for other private sectors such as international schools can also yield a more holistic perspective regarding the teacher shortage from profit-driven educational organisations. Comparative studies across different schools, business models, and teaching platforms, therefore, might be further directions for future studies. Moreover, due to the restricted network of the researchers, the participants in this research are limited. Hence, participants' demographics for later investigation can be more diverse, such as STEM teachers or English for Specific Purposes teachers. Finally, since teacher migration is the major issue in the three centres, more experimental studies in various contexts are needed to focus on school policies and organisational management to enhance school climate and work commitment.

References

Brown, L. A., & Roloff, M. E. (2011). Extra-role time, Burnout, and commitment. Business Communication Quarterly, 74(4), 450-474. doi:10.1177/1080569911424202

Creswell, J. D., & Creswell, J. W. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. SAGE Publications.

Creswell, J. W. (1999). Mixed-method research: Introduction and application. In G. J. Cizek (Ed.), *Handbook of Educational Policy* (pp. 455-472). Academic Press. http://cachescan.bcub.ro/e-book/V/580599_6.pdf

Darling-Hammond, L. (1984). *Beyond the Commission Reports. The Coming Crisis in Teaching*. The Rand Corporation. https://files.eric.ed.gov/fulltext/ED248245.pdf

David, G., & Kirby, S. N. (1997). Teacher turnover and teacher quality. *Teachers college record*, *99*(1), 45-56. https://doi.org/10.1177/0161468197099001

Dworkin, A., Saha, L. J, & Hill, A. N. (2003). Teacher Burnout and Perceptions of a Democratic School Environment. *International Education Journal*, *4*(2). 108-120. http://ijdri.com/iej/2003/2003July.pdf#page=42

Echarte Fernández, M. Á., Náñez Alonso, S. L., Reier Forradellas, R., & Jorge-Vázquez, J. (2022). From the Great Recession to the COVID-19 Pandemic: The Risk of Expansionary Monetary Policies. *Risk*, *10*(2), 23. https://doi.org/10.3390/risks10020023

Freudenberger, H. J. (1975). The staff burn-out syndrome in alternative institutions. *Psychotherapy: Theory, Research & Practice*, *12*(1), 73-82. https://doi.org/10.1037/h0086411

García, E., & Weiss, E. (2019). *The teacher shortage is real, large and growing, and worse than we thought*. Economic Policy Institute. https://epi.org/163651

Geer, J. G. (1988). What do open-ended questions measure? *Public Opinion Quarterly*, *52*(3), 365-367. http://www.jstor.org/stable/2749078

Goodlad, J. (1984). *A place called school: Prospects for the future*. McGraw-Hill.

Grissmer, D. W., & Kirby, S. N. (1987). *Teacher Attrition: The Uphill Climb to Staff the Nation's Schools*. The Rand Corporation.

Grissmer, D. W., & Kirby, S. N. (1992). *Patterns of attrition among Indiana teachers*. The Rand Corporation. https://www.rand.org/content/dam/rand/pubs/reports/2007/R4076.pdf

Haggstrom, G. W., Darling-Hammond, L., & Grissmer, D. W. (1988). Assessing Teacher Supply and Demand, The Rand Corporation. https://files.eric.ed.gov/fulltext/ED299224.pdf

Heyns, B. (1988). Educational defectors: A first look at teacher attrition in the NLS-72. Educational Researcher, 17(3), 24-32. https://doi.org/10.3102/0013189X017003024

Hunt, L. C., Zhang, A., & Zhang, S. (2022). Recession and Recovery of the Pandemic. *Working Papers in Economics & Finance. University of Portsmouth, Portsmouth Business School, Economics and Finance Subject Group.*, (No. 2022-05). https://repec.port.ac.uk/EconFinance/PBSEconFin_2022_05.pdf

Ingersoll, R. M. (2001). Teacher turnover and teacher shortages: An organizational analysis. *American Educational Research Journal*, *38*(3), 499-534. doi:10.3102/00028312038003499

Ingersoll, R. M. (2003). *Is There Really a Teacher Shortage?*. The Consortium for Policy Research in Education. https://repository.upenn.edu/gse_pubs/133

Ingersoll, R. M., & Smith, T. M. (2003). The wrong solution to the teacher shortage. *Educational leadership*, *60*(8), 30-33. https://repository.upenn.edu/gse_pubs/126

Jomo, K. S., & Chowdhury, A. (2020). COVID-19 pandemic recession and recovery. *Development*, *63*, 226-237. https://doi.org/10.1057/s41301-020-00262-0

Koeske, G. F., & Koeske, R. D. (1989). Construct validity of the Maslach Burnout Inventory: A critical review and Reconceptualization. *The Journal of Applied Behavioral Science*, *25*(2), 131-144. doi:10.1177/0021886389252004

Larrivee, B. (2012). *Cultivating teacher renewal: Guarding against stress and burnout*. Rowman & Littlefield Education.

Maslach, C. (1976). Burned-out. *Human behavior*, *5*(9), 16-22. https://www.emdr.org.il/wp-content/uploads/2021/08/BurnedOut_CM_HumanBehavior1976.pdf

Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Organizational Behavior, 2*(2), 99-113. doi:10.1002/job.4030020205

Maslach, C., Jackson, S. E., & Leiter, M. P. (1997). *Maslach Burnout Inventory*. Scarecrow Education.

Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology, 52*(1), 397-422. doi:10.1146/annurev.psych.52.1.397

McCormack, N., & Cotter, C. (2013). *Managing Burnout in the Workplace: A Guide for Information Professionals*. Elsevier.

McKenna, B. (2018). *U.S. Teacher Shortages—Causes and Impacts*. Learning Policy Institute. https://learningpolicyinstitute.org/sites/default/files/body/Teacher_Shortages_Causes_Impacts_2018_MEMO.pdf

Murnane, R. J., Singer, J. D., & Willett, J. B. (1988). Career Paths of Teachers. Implications for teacher supply and methodological lessons for research. *Educational researcher*, *17*(6), 22-30. https://gseacademic.harvard.edu/~willetjo/pdf%20files/Murnane_Singer_Willett_ER88.pdf

National Commission on Excellence in Education. (1983). A nation at risk: The imperative for educational reform. *The Elementary School Journal*, *84*(2), 113-130. http://www.jstor.org/stable/1001303

Reilly, K. (2022, October 7). *'There's No Point in Going if I Have No Teachers.' How the Educator Shortage Is Affecting One New Jersey School District*. Time. Retrieved January 12, 2023, from https://time.com/6220538/teacher-shortage-unequal-schools/

Santiago, P. (2002). Teacher Demand and Supply: Improving Teaching Quality and Addressing Teacher Shortages. *OECD Education Working Papers*, No.1, OECD Publishing, Paris. https://doi.org/10.1787/232506301033

Schifferdecker, K. E., & Reed, V. A. (2009). Using mixed methods research in medical education: basic guidelines for researchers. *Medical education*, *43*(7), 637–644. https://doi.org/10.1111/j.1365-2923.2009.03386.x

Schmitt, J., & DeCourcy, K. (2022). *The pandemic has exacerbated a long-standing national shortage of teachers*. Economic Policy Institute. https://epi.org/254745

Schwab, R. L. (1983). Teacher Burnout: Moving beyond "psychobabble". *Theory Into Practice*, *22*(1), 21-26. doi:10.1080/00405848309543033

Seidman, S. A., & Zager, J. (1986). The Teacher Burnout Scale. *Educational research quarterly*.

Subair, S. T., & Talabi, R. B. (2015). Teacher shortage in Nigerian schools: Causes, effects and administrators coping strategies. *Asia Pacific Journal of Education, Arts and Sciences*, *2*(4), 31-37. https://d1wqtxts1xzle7.cloudfront.net/51613299/APJEAS-2015-2.4.1.05-libre.pdf?1486111266=&response-content-disposition=inline%3B+filename%3DTeacher_Shortage_in_Nigerian_Schools_Cau.pdf&Expires=1675878164&Signature=gv21YuvAY~XFUjSqmqtGbVeTfcgNvm9Vf8KHSfMDCW0Ti2fgKsuapvZvqyDELH2kf43JD8M-wgHiNMiCyAReexY93YmQ9YMRzcK1BPuSdOnnJ5F52PmFitAvTPyzjgX7hD~-5PzZVwHg1Hk6ZIxnucGy1JYBPoNorJTIHXEaekwvhFYvFQ514-yV1V2yRBvAwmMH4D~gLzQwKKYFcXfxpz8TdVs-KdiwzQ09eN9m1F9ms-1lHZjDF9RnXQ~tYVdhZVv1aekzTMCD7097VqjBXSWWzVeBj-qz4jGHlKiQTJgKJ1SV98Kh4UGrPzh33Lw3JKeFqGQNTHjWxz7p2IfpIw__&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA

Texas Medical Association. (2010). Three Stages of Burnout. https://socialwork.buffalo.edu/content/dam/socialwork/home/self-care-kit/readings/three-stages-of-burnout.pdf

Thomas, G. (2017). *How to Do Your Research Project: A Guide for Students*. SAGE Publications.

Thu Hang. (2022, November 5). *Teachers resign because of modest salaries: Education Ministry*. VietNamNet. Retrieved December 16, 2022, from https://vietnamnet.vn/en/teachers-resign-because-of-modest-salaries-education-ministry-2077241.html

Tue Hai. (2010, May 26). *Trường công và trường tư - Lương giáo viên nơi nào nhiều hơn?* BÁO SÀI GÒN GIẢI PHÓNG. Retrieved August 15, 2022, from https://www.sggp.org.vn/truong-cong-va-truong-tu-luong-giao-vien-noi-nao-nhieu-hon-post230625.html

Turk, D. C., Meeks, S., & Turk, L. M. (1982). Factors contributing to teacher stress: Implications for research, prevention, and remediation. *Behavioral Counseling Quarterly*, *2*, 1-26.

Vinh Ha. (2022, August 12). *Năm học mới 2022-2023: Nóng bỏng chuyện thiếu giáo viên*. Báo Tuổi Trẻ. Retrieved August 15, 2022, from https://tuoitre.vn/nam-hoc-moi-2022-2023-nong-bong-chuyen-thieu-giao-vien-20220812124036452.htm

What is School Climate and Why is it Important? (n.d.). National School Climate Center. Retrieved August 28, 2022, from https://schoolclimate.org/school-climate/

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Multilingual Learners' Resilience of Navigating the Culture Shock of Online English Instruction

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Abstract

This study examines how international students faced the double culture shocks of learning within a new culture as well as learning in an on-line environment (Sadykova & Meskill, 2019). Additionally, multilingual learners often face linguistic and cultural challenges in their efforts to participate online (Harrison et al, 2020). This study examined how the students described the various challenges they faced as evidenced through their written journal assignments both at the beginning and the end of the semester after they had become accustomed to online instruction. The research questions for this study were as follows: What challenges did the students encounter when they migrated to on-line English learning? What strategies did the students find to be most helpful to adjusting to learning English through an on-line platform? Findings revealed that the students reported various experiences from the euphoria of learning at home, their frustration with technology issues, interaction challenges, and instructional distractions. The presentation will describe the personal strategies that the students developed to support reach equilibrium in their own learning. After exploring the themes of the findings, the presentation will empower participants by offering practical suggestions for supporting students in online English instruction to address the concerns revealed in the study's data.

Keywords: Online Instruction, Acculturation, Resilience, Multilingual Learners

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Introduction

Multilingual learners (ML) students face many challenges as they adjust to learning in a new environment. These challenges were compounded by the sudden move to online learning in March 2020. This study examines student texts written from March-December 2020 which answer questions about how students coped with the challenges of acculturating to a new learning environment online in addition to adapting to the US university academic expectations. Students described the challenges they faced in this new educational context before discussing the resources and strategies they used to persevere in making progress toward their goals. Based on the students' responses, suggestions for supporting ML learners' acculturation to online learning are provided.

The possible culture shocks felt by international students in the US include cultural, and linguistic challenges. Students must adjust to a new way of learning and being while relying on their different past experiences (Bai & Wang, 2022). Some of the cultural struggles that international students encounter can include differences in relationship norms, occupational routines, or social expectations (Antoniadou & Quinlan, 2020). From a linguistic perspective, study abroad students may face difficulties in communicating with people from other cultures (Cao et al, 2021), or forming personal relationships for social support (Lowinger et al, 2014).

For students in March 2020, the challenges that accompany face-to-face instruction were at least doubled, if not exponentially increased, when they added another new environment and culture of online learning to those of the US and their past learning cultures (Sadykova & Meskill, 2019). These challenges can be considered part of the process of academic acculturation, a process in which students grapple with the differences and distance between their past experiences and their current circumstances (Jiang et al., 2010). The number of differences and distance between the competing cultures can all impact the level of difficulty for MLs navigating the process of academic acculturation (Bastien et al., 2018; Cao et al. 2021).

Academic Acculturation

Academic acculturation difficulties for MLs include linguistic and learning challenges. Linguistic challenges students may face include difficulty understanding spoken and written assignment expectations, difficulty understanding language used in class and its rapidity as well as concerns with confidence in participating in class (Bai & Wang, 2022; Bastien et al., 2018; Cao et al., 2021; and Lee 2020). One major obstacle for international students has been the amount of academic reading that has been required to complete their coursework (Cao et al., 2021). Furthermore, students are expected to read extensively and then critique the academic texts as a basis for writing to demonstrate content area mastery (Wang & Bai, 2021). MLs learning challenges may include a mismatch between their past experiences and the current expectations of the new learning environment in addition to unfamiliarity with engagement strategies in class and the need for balancing one's own learning and living experiences (Bai & Wang, 2022; Cao et al. 2021).

Online Learning

Online learning acculturation for MLs overlaps with the challenges of academic acculturation in general and presents new challenges as well that are not present in face-to-face learning environments. Some of these challenges are linguistic issues of not having the language to

fully participate to facing a change in language use from spoken language to primarily written forms of communication in online learning environment (Lee, 2020; Sailsman, 2020). Other research indicates that MLs have challenges finding opportunities to interact online (Bailey & Lee, 2020) and becoming autonomous learners (Bich & Lian, 2022). Additionally, learning challenges for MLs studying online in March 2020 directly corresponded to the change in interaction and mode of class meetings (Harrison et al., 2018; Marshall & Kostka 2020).

Research Questions

Considering the multiple layers of possible circumstances impacting ML students in March 2020, the authors of this report asked the following questions: What challenges did the students encounter when they migrated to on-line English learning? What strategies did the students find to be most helpful to adjusting to learning English through an on-line platform?

Data Collection

To answer those questions the authors examined written texts produced by undergraduate students were enrolled in courses in an academic English language program at a four-year university. The students' English proficiency levels ranged from intermediate Intensive English Program to advanced students in a Pathway program. Their courses included advanced writing, high intermediate integrated skills, and intermediate reading/writing.

The writing samples were all submitted as part of assignments in courses in an IEP or Pathway English for Speakers of Other Languages courses from Spring 2020-Spring 2021 as that program was entirely online during that time, returning to campus in Fall of 2021. The assignments to which students responded varied over time, with the initial texts directly asking students to work in a small group to answer questions about their recent/current transition to online instruction. For these samples, entire classes were included. Some of the later texts were reflective essays one to three semesters after March 2020's digital migration that required students to demonstrate a cause/effect pattern. For those samples, participants could choose to address the issue of online learning, and students in those classes who did not address the topic were not included. Once identifying information was removed, the samples were coded for recurring themes (Nowell et al., 2017), which reflected different challenges faced by the students in their transition from on campus to online courses. In addition, the sample texts were coded for positive, negative, and neutral overall attitude toward online learning.

Students' Challenges

The three most common themes in the data were challenges with technology, learning environment, and interaction. Students' concerns with technology range from unfamiliarity with online platforms and online learning skills to connectivity issues and poor equipment. On student noted, "I am a person that get used to taking notes on paper notebook rather than laptop." While another complained, "I am a low-tech person and never have an online class before, so I really got messed up with the new toolbar." For another student, a "technology issue also happened on me which caused I can hardly hear and understand what the teacher was saying and teaching." While all the students were enrolled in the same synchronous course, the challenges varied across participants.

Distractions were the most often mentioned challenge in terms of online learning environments, with students juggling laptops in spaces with many tempting devices at hand (Li, 2022). One of the students explained, "Sometimes, it's hard for me to pay attention to the study, it's easy attracted by mobile phone or game on laptop…I know what I hope to gain." The motivation to remain focused on the course content was a challenge as the students adjusted to their new environment. For some, simply being online was a distraction because of all the demands for attention in the learning management system. Therefore, the various tasks required for online instruction could distract the student from the content that was being studied if the students did not receive appropriate guidance from the instructor (Bich & Lian, 2021). Beyond the technological distractions, students also lamented that the physical study environment was not conducive to learning. One student commented, "cause I am in my bedroom and there are too many stuff that attracts me more...we are losing the study atmosphere." In addition, interaction concerns included both learning and linguistic challenges. A student describes the circumstance this way, "online study sometimes is hard for us to ask question." This difficulty relates to both the participation expectations of interaction in US classrooms and the unique challenges of participating online in English.

Students' Strategies

For each type of challenge, students provided descriptions of the strategies they used to persist in their programs. For technology issues students relied on online resources, which compensated for network issues and for linguistic challenges like rate of speech in academic lectures. As one student stated, "I can watch the teaching video in any time." The students demonstrated resilience when faced with a distracting new learning environment by identifying the challenges and planning to overcome them. One student noted the 'need to learn about how to resist temptation." Also, students adjusted to new their new, online circumstances by using new methods and new technologies to mimic classroom interaction. Such a deliberate creation of online spaces for communication among class members enabled students to connect to their peers in order to facilitate content mastery (Sailsman, 2020). According to a student, "study groups can be arranged online, making lessons easier." While not all students would agree about the ease of online learning, this learner found a new way to meet interaction challenges that often were reported as lacking from online language learning environments (Harrison et al., 2018).

Students' Resilience

In some ways, the sudden transition to online learning may have allowed students to see their academic acculturation process from a new perspective. In March, students were suddenly asked to engage in yet more new ways in addition to the behaviors such as note taking on paper in a prescribed manner and classroom interaction techniques like raising hands and waiting to talk to an instructor in person after class. One student in March commented that their "friend was worried about taking notes, she wasn't good at taking notes on the laptop, so do I, but I think we can find a way to figure it out." Many students did develop new strategies for incorporating new technologies while others simply continued to use paper and pen, but at home and in their own styles. For most of the students, their programs of study began in January 2020, so their experiences by December demonstrated persistence as few new students joined the courses that year. Despite remaining in the program, many students returned to their home countries with their differing time zones. Addressing a possibly twelve-hour time difference between local time and synchronous class time, a student in May described the situation "at the beginning of the remote teaching because my daily schedule is

extremely messy at that time. But I reset it as soon as I can, so that, I can attend all the rest of the class." Continuing to respond to the challenges of their new learning environment, students demonstrated resilience by developing strategies so that they could navigate between two places at once. Further, students' evolving attitudes toward online learning over the course of the three semesters also reflect the students' resilience (Bai & Wang, 2022). In the last semester of the study data, a student admits that "For me, I was doing not well at the beginning of the remote class because it is totally new stuff for me, so I need to spend some time getting used to it and now I'm doing much better than before." This December comment reflects the overall trend of the students' attitudes from initially pleased with the opportunity to continue their academic programs online in March to more dissatisfaction in the May set and finally acceptance in the last group of texts. Therefore, students progressed through the acculturation process until they were able to develop a sense of equilibrium in their new learning context.

Conclusion

Given the challenges experienced by the students in the study in acculturating to the online learning environment, there are several suggestions for mitigating the obstacles by creating digital classroom environments that support the students' unique needs. For example, early and ongoing incorporation of digital interactions, resources, and platforms as part of a face-to-face course can prepare students for the sudden migration that this cohort experienced. Though the online only circumstances of the 2020 COVID-19 landscape have evolved, many educational outlets are now using e-learning days and online class meetings to cope with smaller scale events like weather-related school closures. For many students and educators, the need to prepare for a move online is still evident.

In addition, the concerns expressed by the students' written statements indicate that more explicit instruction in online interaction is necessary. Again, early and ongoing incorporation of a blended classroom model may mitigate the discomfort students face if forced online. Similarly, explicit acknowledgement of the challenges of academic and technological acculturation processes for international students as articulated in the literature can allow students to situate themselves in the variety of responses to the challenges and develop strategies to overcome them.

Suggestions for Instructors to Help MLs Acculturate to Online Instruction

- Include clear, detailed assignment descriptions with rubrics and instructions for using the LMS.
- Provide redundant resources so students can access them asynchronously as well.
- Plan for meaningful interaction and community building during synchronous online instruction.
- Maintain consistent teacher presence throughout the course.
- Incorporate other devices so they are tools for learning, not temptations.

References

Antoniadou, M., & Quinlan, K. M. (2020). Thriving on challenges: How immigrant academics regulate emotional experiences during acculturation. *Studies in Higher Education, 45*(1), 71-85. https://doi.org/10.1080/03075079.2018.1512567

Bai, L., & Wang, Y. X. (2022, April 4). Combating language and academic culture shocks—International students' agency in mobilizing their cultural capital. *Journal of Diversity in Higher Education.* http://dx.doi.org/10.1037/dhe0000409

Bailey, D. R., & Lee, A. R. (2020). Learning from experience in the midst of covid-19: Benefits, challenges, and strategies in online teaching. *Computer-Assisted Language Learning Electronic Journal, 21*(2), 178-198.

Bastien, G., Seifen-Adkins, T., & Johnson, L. R. (2018). Striving for success: Academic adjustment of international students in the US. *Journal of International Students, 8*(2), 1198-1219.

Bich, T. N. C., & Lian, A. (2021, December). Exploring challenges of major English students towards learning English speaking skills online during Covid 19 pandemic and some suggested solutions. In *18th International Conference of the Asia Association of Computer-Assisted Language Learning (AsiaCALL–2-2021)* (pp. 135-144). Atlantis Press.

Cao, C., Zhu, C., & Meng, Q. (2021). Chinese international students' coping strategies, social Support resources in response to academic stressors: Does heritage culture or host context matter?. *Current Psychology, 40*(1), 242-252. https://doi.org/10.1007/s12144-018-9929-0

Harrison, R. A., Harrison, A., Robinson, C., & Rawlings, B. (2018). The experience of international postgraduate students on a distance-learning programme. *Distance Education, 39*(4), 480-494. https://doi.org/10.1080/01587919.2018.1520038

Jiang, X., Di Napoli, R., Borg, M., Maunder, R., Fry, H., & Walsh, E. (2010). Becoming and being an academic: the perspectives of Chinese staff in two research-intensive UK universities. *Studies in Higher Education, 35*(2), 155-170. https://doi.org/10.1080/03075070902995213

Lee, H. (2020). The current state and perceptions of a cross-cultural distance learning program for English in Korea. *Journal of PanPacific Association of Applied Linguistics, 24*(2), 1-22.

Li, D. (2022). The shift to online classes during the COVID-19 pandemic: Benefits, challenges, and required improvements from the students' perspective. *Electronic Journal of e-Learning, 20*(1), pp1-18. https://doi.org/10.34190/ejel.20.1.2106

Marshall, H. W., & Kostka, I. (2020). Fostering teaching presence through the synchronous online flipped learning approach. *TESL-EJ, 24*(2), n2.

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods, 16*(1), https://doi.org/10.1177/1609406917733847

Sadykova, G., & Meskill, C. (2019). Interculturality in online learning: Instructor and student accommodations. *Online Learning, 23*(1), 5-21. http://www.doi.org:10.24059/olj.v23i1.1418

Sailsman, S. (2020). ESL students learning online A review of literature. *Quarterly Review of Distance Education, 21*(1), 45-52.

Wang, Y. X., & Bai, L. (2021). Academic acculturation in 2+ 2 joint programmes: Students' perspectives. *Higher Education Research & Development, 40*(4), 852-867. https://doi.org/10.1080/07294360.2020.1775556

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Transforming the Culture of Assessment to an Online Model:
"There is More Than Meets the Eye"

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

The unprecedented COVID-19 pandemic required higher education institutions to transform their academic and technological infrastructures with the goal of continuing to provide their students with high-quality academic services in an environment conducive to learning. One such institution is the Southern University Law Center (SULC), which needed to subvert the trap of institutional inertia, manage crises, and exhibit its adaptability, resilience, and dedication to continuously improve its program of legal education during the COVID-19 pandemic. Using a retrospective analytical approach, the presenters examined the processes, challenges, and successes of transforming a traditional, student-centered, in-person formative assessment process for over 900 students into a novel online method. Disruptions of in-person learning during the pandemic required SULC, a graduate-level professional school, to implement new assessment technologies and different pedagogical modalities through a Learning Management System (LMS). These changes were implemented while balancing myriad challenges of increasing student accommodations, expanding our curricular offerings, and training faculty, staff, and students to use online learning platforms and techniques. Presenters will provide strategies and resources to help professional schools and other higher education institutions utilize innovative assessment practices to collect and analyze data in assessment processes and improve student learning. The presentation aims to facilitate the exchange of ideas and explore more effective assessment practices and methods for the ongoing evaluation of an institution's educational programs, augment student learning outcomes, and discuss ways to successfully engage students in virtual learning environments.

Keywords: Assessments, COVID-19, Legal Education, HBCU

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Introduction

The success of any program of education is dependent upon the academic performance and success of its students. Accordingly, an institution of higher education must be adaptable and appropriately prepared to grow with the climate and culture in which it is situated. In March 2020, Southern University Law Center (SULC), found herself forced to change the mode of delivery of its program of education from almost 100 percent in-person to distance education and remote learning. Mission & Values. Due to the COVID-19 global pandemic, Louisiana issued "stay at home" orders for its institutions of higher education. These orders transitioned us to remote learning. This article highlights one aspect of SULC's program of legal education, course level assessments of institutional learning outcomes. Specifically, this article discusses the original assessment protocols that were in place prior to March 2020 and explains the changes that were made in order to continue, with almost no interruption. SULC used technology and a learning management system already in place to continue its process of assessing student learning in a remote environment. Finally, this article discusses the impact of converting the assessment protocols to an online process and highlights lessons learned through the experience of transforming to an online model of assessments.

Study Background

In 1947, under the system of separate but equal, Southern University Law Center (SULC) was established by the Louisiana State Board of Education as a law school for African Americans at Southern University (Self-Study, p. 1). SULC's historic mission was one of opportunity and access to those whom the law excluded from a law school already in existence. While SULC is still a school of opportunity, the mission has broadened to provide opportunity and access to a diverse group of students from "underrepresented racial, ethnic, and socio-economic groups to obtain a high-quality legal education" (SULC, 2022). Although part of the Southern University System, SULC is separately accredited by the Southern Association of Colleges and Schools Council on Colleges (SACSCOC). Furthermore, SULC is also accredited by the American Bar Association (ABA). Both SACSCOC and the ABA require SULC to demonstrate that it identifies, evaluates, and publishes goals and outcomes for student achievement (SACSCOC, 2020; ABA 2015). In accordance with SACSCOC and ABA Standards, SULC established Institutional Student Learning Outcomes and implemented a formal process to measure and improve student learning utilizing both formative and summative assessment methods in its law school curriculum (ABA, 2015).

Prior to 2015, skills courses, such as Legal Analysis & Writing and Legal Research, utilized formative and summative assessment tools. However, most of a student's grade was based on the student's performance on a final examination at the end of the semester though some professors used mid-semester quizzes and examinations to provide early feedback to students. In 2014, SULC developed an Institutional Effectiveness Manual that provided a detailed and comprehensive guide for SULC's process to facilitate a "Law Center-wide comprehensive assessment, planning and evaluation" that supports well-informed decision-making and uses results for improvement (SULC, 2014). This Manual outlines the processes for institution-wide analysis and gathers input from both academic and administrative units. With respect to the academic unit, SULC adopted an assessment plan based on "Nine Principles of Good Practice for Assessing Student Learning" (SULC, 2018; Hutchings et al., 2012). Using these Principles as a guidepost for comprehensive change, SULC, through its Institutional Effectiveness Committee, established an Institutional Assessment Cycle for all units and sub-units, including the Academic Unit of SULC (SULC, 2018).

In the fall of 2014, SULC modified its assessment protocols to use formative and summative assessments for designated courses as an internal measure of its adherence to institutional learning outcomes. SULC's assessment of its Juris Doctor Course Assessment Learning Outcomes involves processes that enhance student learning by systematically measuring students' academic performance against learning objectives and using the information as a basis for planning and decision-making.

SULC assesses its Juris Doctor Program using a multi-measures approach. The SULC Assessment Cycle supports the evaluation of student learning in two important areas.

1. Legal Doctrine - student learning outcomes focus on the doctrinal content of the core competencies measured on a Bar Examination; and
2. Legal Writing and Analysis- student learning outcomes focus on legal writing and analysis necessary to prepare students to pass a Bar Examination and practice law.

Beginning in the Fall of 2014, students were assessed in at least two (2) required courses during any regular academic semester (SULC, 2014, p. 43). The decision to assess student performance at every stage in the law school matriculation was motivated by the goal of ensuring successful performance on the Bar Examination. The assessments determine student performance in four essential areas necessary for successful performance on the Bar Examination, which are: 1) issue spotting; 2) analysis; 3) quality of writing; and 4) doctrinal knowledge.

The rubric used to evaluate student performance in these areas focuses on four levels of performance: Excellence (E), Accomplished (A), Developing (D), and Beginning (B). The targeted performance level was 50% of students assessed needed to perform at the Excellent (E) and Accomplished (A) levels on Formative (F) and Summative assessments (S). The data showed that the performance level of 50% of students performing at the excellent and accomplished level on each assessment variable for formative and summative assessments was met at each review cycle. Even though it has met its 50% performance benchmark at each review cycle, SULC is committed to raising this performance benchmark by implementing changes to improve the performance of students scoring at the "developing" and "beginning" stages. The following examples are illustrations of some changes SULC has made to seek improvement based upon its analysis of the assessment results.

In the fall of 2015, the faculty voted to set a 50% performance benchmark for assessments in the "Excellent" and "Accomplished" categories (SULC Faculty Meeting Minutes, November 18, 2015). During the 2016-2017 year, the faculty elected to include student learning outcomes for every course offered during each academic semester. In addition to the student learning outcomes, faculty members were encouraged to meet with other professors to develop a common hypothetical to administer to their students for the formative assessment. During the early part of the fall 2016, the administration encouraged professors to have conferences with students regarding their assessment results and to refer those low performing first- and second-year students to Academic Support who assessed in either "Beginning" or "Developing" categories.

In 2016, SULC implemented the previously approved courses, Lawyering Process I & Lawyering Process II, to help develop entering law students' analytical, writing, and critical thinking skills (SULC Faculty Meeting Minutes, August 24, 2016). The course was the product of several intense discussions in the Quality Enhancement Plan (QEP) Committee

meetings, and the newly implemented course was created to address skills deficiencies that could impact students' long-term success.

In 2018, SULC decided to implement a uniform system regarding how it administers its formative and summative assessments (SULC Faculty Meeting Minutes, September 18, 2018). Formative Assessments would all be administered mid-semester and on a specific date while under the supervision of the Institutional Accountability & Accreditation Unit. Initially, the new Formative Assessment Day was on a Saturday. However, the Saturday date for assessments proved to be unmanageable due to numerous scheduling conflicts; therefore, Formative Assessment Day was moved to a Wednesday.

For the Formative Assessment Day, students took the assessment in classrooms at the Law Center. Proctors distributed hard copies of the hypotheticals to the students who composed essay responses and uploaded them to LiveText®. In past years, hypotheticals were saved in LiveText and students were required to retrieve the hypothetical from the LiveText® website. However, several issues surfaced during this process such as: students having problems with their laptops, bad internet connection during the exam period, and students having difficulty recalling their passwords. These and other issues led the administration to modify the assessment process.

As it relates to the summative assessment question administered during the final examination, students were given approximately 30 minutes (later increased to 45 minutes) to read, identify the issues, and answer the posted questions. The students completed their answers in the Exam 4 software, and submitted their assessment answers, together with the other final examination answers. The entire examination was administered by proctors during a four-hour timeframe in various classrooms throughout the Law Center.

COVID-19's Impact on the Implementation of Online Assessments

Implementation of Virtual Program

On March 11, 2020, SULC just completed its in-person Spring Formative Assessment Day. We successfully managed to get all 650 students into each of their assigned classrooms to take their 45-minute formative assessment for all twelve assessment courses being administered that semester. The next day, John Bel Edwards, the governor of the State of Louisiana, announced on the local news that the first case of COVID-19 had been diagnosed in Louisiana and he issued an Executive Order, forcing all institutions to shut down indefinitely due to the rapid spread of the highly infectious COVID-19 disease (Proclamation Number 25 JBE, 2020). The Chancellor called an immediate special faculty meeting to announce that SULC would discontinue all in-person classes for one week while the faculty receive training on how to conduct remote classes using the Zoom platform. Before the meeting ended, a letter was generated and circulated to both SACSCOC and to the ABA, seeking permission to conduct virtual classes for all students until the end of the 2020 calendar year.

SULC quickly realized the enormous burden of training a faculty that had little to no experience with conducting virtual classes for legal education. While Zoom was a common feature in most corporate boardrooms, it was extremely new for an Historically Black College and University (HBCU) like SULC which caters to less affluent students than the other three legal institutions in the State of Louisiana. During this week of training, faculty, staff, and

students grappled with the consequences of dealing with life, family, and work during a global pandemic. Some students spiraled into depression because of the loss of connection with family and friends. SULC's aging faculty and staff members struggled with deciding whether to retire or risk exposing themselves or their loved ones to the coronavirus by continuing with their chosen profession. With the Chancellor's leadership, the SULC family decided to plow forward for the benefit of our students and our beloved institution.

With the spring 2020 formative assessments behind us, SULC turned its focus to the final examination cycle. SULC administrators selected a software company to allow students to take final exams remotely, and it appointed several staff members to assist faculty with uploading their final examinations into the software. Due to the heightened awareness of the moment, SULC encouraged its faculty to be as gracious as possible with grading final exams considering the uncertainty of the pandemic and the depressing effect it was having on everyone in the country.

Three months into the global shutdown, SULC participated in more than 30 meetings with McKinsey & Company, along with ABA-sponsored seminars, and other self-help conferences, hoping to learn better strategies to assist with navigating the pandemic while trying to continue in the higher education environment. One of the strategies SULC adopted was the implementation of a uniform system for managing its required courses. First, SULC requested all professors teaching the same course to have a list of topics that each professor must cover during the 14-week semester and to cover these topics in sequential order. Secondly, SULC appointed a "lead" professor for each required course, to mentor new and junior professors teaching these courses. Finally, SULC mandated all professors teaching required courses to use the same textbook and invited these professors to also consider using a uniform final examination.

The uniform system was constructed on the premise that each student must receive the necessary instruction to complete the course and to also be prepared for their upcoming bar examination. In addition, SULC used the uniform system to simplify the course so that a fellow professor should the need arise could temporarily take over and continue with the course in the event the assigned professor contracted COVID-19 or was otherwise unable to complete the semester. Thus, faculty began the Fall 2020 semester with a new uniform agenda.

SULC continued having its assessment professors collaborate and develop an assessment question every semester. Each assessment question was designed to test the students' understanding of a topic that should have been adequately covered during the first two months of the course. The fact pattern and question were expected to be no more than one letter-sized page in length and contained one question sufficient for a student to completely answer within the allotted time. Like our original in-person process, all assessments were conducted on one day with no other classes held on that day. During our in-person assessments, we expected certain complications from students such as traffic delays, parking issues, and other personal family interruptions. Once the pandemic happened, our usual assessment disruptions were mitigated because everything shifted to a contactless process.

Without our own learning management system, SULC elected to utilize a system that its students and faculty had already become familiar with the Westlaw Educational Network (TWEN). SULC's Institutional Accountability & Accreditation Unit developed a process whereby assessment questions were pre-loaded onto the TWEN course page for each

assessment professor. The student would obtain the question from the respective TWEN page for their professor and course, and then draft their response within 45 minutes. The student would then deposit their essays into their professor's respective assignment drop box. The process appeared flawless, but, somehow, students and faculty found a way to make the process more complicated than it should have been. Thankfully, student participation in course-level assessments increased because of the online format and students felt safe completing their assessments from home without having to expose themselves to potentially infected classmates.

Unfortunately, the increase in student participation did not mean faculty members met their respective deadlines for grading and uploading the results. During the Fall 2020 semester, less than 90% of assessments were graded and professor feedback for some students was minimal. Student anxiety grew. Without a timely graded assessment, some students were left to wonder how they would fare on the final examination for that course. Faculty peer pressure was applied, but faculty participation increased only slightly.

While manipulating our assessment process, SULC was also in the middle of planning and hosting a virtual committee review from SACSCOC relative to our ten-year accreditation cycle. The visiting SACS Committee commended SULC for its efforts in maintaining its assessment process during the pandemic but later introduced the idea of using third-party graders to mitigate our assessment woes. After several conferences with the Chancellor, the SULC faculty chose to use a grading system in which twenty third-party graders were selected to assess student performance on the formative assessments and to upload results into the LiveText website.

Using third-party graders increased the number of timely graded assessments. The new process was welcomed by faculty members because outside graders relieved them of this responsibility. The influx of third-party graders answered our need for more feedback for our students. Yet, we came to learn that these assessment graders although licensed attorneys, were not seasoned professors. Some of the feedback from these graders was either ambiguous or incomplete. Some students were confused as to how they should interpret the scoring and many of them disputed their performance results with their professors. Feedback was confusing because students were restricted from contacting the assessment graders because we needed to preserve student anonymity and guard the assessment's objectivity.

In the 2022-2023 Academic Year, SULC entered its second year of using assessment graders for the formative assessment process. With hiring new graders and training all graders, SULC improved this aspect of our assessment process. Students now receive objective and anonymous feedback from individuals who are familiar with the subject matter and the institution. More importantly, SULC's new process mimics the procedure that the State of Louisiana uses to administer its bar examination to law graduates.

Statistics/ LMS system

During the Fall of 2020, SULC implemented a virtual formative assessment process to accommodate 1,385 assessments in different parts of the country, with different testing times and different assessment courses, on the same day. The process included importing student rosters, sending calendar reminders to students, setting up assignment availability, uploading instructions, uploading assessment questions for each course, and exporting student answers when completed.

SULC uses the TWEN course management tool to administer the formative assessment, and the LiveText® Learning Management System to record, grade, and analyze student submissions. The summative assessment was administered during final exams via ExamSoft™ and graded in LiveText®. Administering an online assessment correctly involves a significant investment in both technology and instructor training (Ward, 2019).

In the Fall of 2020, the TWEN course page was used to create 61 online sections of assessment courses. Student rosters were imported into the online courses so that the assessment courses would automatically populate on the student dashboards in TWEN on assessment day. After the assessments were completed, student submissions were exported from TWEN; and uploaded and graded in LiveText®.

Assessment Results, comparisons from previous years

At the start of the 2019-20 academic year, SULC faculty began evaluating its 50% benchmark for purposes of determining whether the performance benchmark of 50% should be raised. Faculty also began reviewing and studying all facets of its assessment process to improve the reliability of the assessment data. At the start of the 2022-23 academic year, the faculty revisited the 50% benchmark and increased the student performance benchmark for assessments in the "Excellent" and "Accomplished" categories to 75%.

From the Fall of 2019 to the Spring of 2022, the overall student performance results for the formative and summative assessments exceeded the benchmark of 50% (See Table1.) Students participated in the first online assessment testing environment in the Fall of 2020. From the Fall of 2020 to the Spring of 2021, student performance results on the summative assessment decreased in Issue Spotting, Analysis, and Doctrinal Knowledge (See Figure 1). The results indicated that students were adjusting to the online testing environment.

From the Fall of 2021 to the Spring of 2022, student scores on the summative assessment in Issue Spotting and Quality of Writing increased; however, scores in Analysis and Doctrinal Knowledge decreased (See Figure 1). The Spring of 2022 marked two years of the formative and summative online assessment process. As shown in Table 1, during the Spring of 2022, the impact of feedback from the formative assessment greatly improved student performance in Analysis from an overall score of 51.3% on the formative assessment to an overall score of 80.75% on the summative assessment. SULC professors continued to review the formative assessment feedback with students each semester. Individualized feedback promoted students' acquisition of the skills that professors generally intended to teach and test such as communicating clearly in writing, recognizing important legal issues, synthesizing applicable legal precedent, and developing persuasive policy arguments (Schwarcz & Farganis, 2017).

Years	Issue Spotting Formative	Issue Spotting Summative	Analysis Formative	Analysis Summative	Quality of Writing Formative	Quality of Writing Summative	Doctrinal Knowledge Formative	Doctrinal Knowledge Summative
Fall 2019	69.40%	76.57%	61.93%	70.73%	75.44%	79.22%	61.33%	73.43%
Spring 2020	75.99%	87.17%	61.26%	80.71%	77.23%	86.43%	67.91%	86.17%
Fall 2020	79.67%	90.51%	69.58%	80.11%	83.88%	86.68%	77.29%	86.11%
Spring 2021	81.95%	88.98%	66.10%	78.04%	78.65%	87.66%	72.54%	82.22%
Fall 2021	77.55%	86.45%	60.67%	82.02%	74.43%	85.45%	67.58%	86.08%
Spring 2022	71.15%	89.34%	51.27%	80.75%	70.10%	89.44%	60.53%	84.76%

Table 1: Formative and Summative Assessment Results for
Fall 2019 through Spring 2022 by ISLO

Figure 1: Summative Assessment Results by Institutional Student Learning Outcome

Reduction in Assessment courses

The number of sections for the assessed courses in the Fall of 2020 more than doubled the number from the Fall of 2019 due to increased enrollment. Twenty-nine (29) sections were assessed in the Fall of 2019 and sixty-one (61) sections were assessed in the Fall of 2020 (See Table 2). In the Fall of 2021, the number of assessed courses was reduced from twelve to seven, resulting in fewer course sections. The reduction in the number of courses assessed increased efficiency and collaboration among faculty members.

Semester	Assessment courses (no. of sections)
Fall 2019	29
Fall 2020	61
Fall 2021	30
Fall 2022	22

Table 2: Number of assessment courses

Percent Change in the participation of students

SULC experienced an increase in enrollment, resulting in course sections increasing to accommodate higher enrollment. According to Law School Admission Council (LSAC) data, as of June 10, the number of law school applicants this cycle is up about 17% from the previous year, and up about 15% from the year before (Kuris, 2021). During the Fall of 2020, SULC also witnessed a positive upward trend in the number of students who took part in the formative assessment. The student participation rate for the formative assessment grew from 83% in the Fall of 2019 to 94% in the Fall of 2020 when virtual assessments were implemented (See Table 3).

Semester	Formative Assessment Participation Rates
Fall 2019	83%
Spring 2020	91%
Fall 2020	94%
Spring 2021	97%
Fall 2021	98%
Spring 2022	95%
Fall 2022	98%

Table 3: Formative Assessment Participation Rate

Student Accommodations / Conflicts

During what appeared to be myriad successes with higher student participation rates, the virtual student accommodation process posed problems. The LiveText learning management system did not allow timers to be set up on assignments or allow for extended time on assignments for students requiring accommodation. SULC utilized the TWEN course management tool to address student conflicts and to enter student accommodations. TWEN was used to create courses for students with conflicts, set up timers on assignments, and adjust the amount of time required for testing students with accommodations (See Figures 5 and 6).

Figure 2: Formative and Summative assessment results by ISLO
by the 2021-22 Academic year

Figure 3: Formative and Summative assessment results by ISLO
by the 2019 -20 Academic year

Impact during accreditation/ Continuous Improvement

There is indeed more than meets the eye when implementing changes at an organization. Creating and establishing a new process at any institution is seldom a simple task and is often marred by counterproductive elements of institutional inertia (Rosenbaum, 2021) and organizational culture (Bryson, 2008). The body of literature highlights the fact that organizational culture and managing organizational change are inextricably linked, often locked in an invisible battle to be a dominating force of the institution. When the culture of an institution is not pliable or responsive to both internal and external factors, change is often difficult to inculcate. Fortunately, SULC's leadership successfully used the presence of a global pandemic and the impetus of looming accreditation deadlines to catalyze necessary change at the institution. Table 1 describes the changes that were made to modify SULC's assessment process:

Figure 4: New SULC Formative Assessment Process

Lessons Learned

Overall, one of the most successful features of our institution's assessment change included SULC administrators remaining flexible to modifications to the established plans while continuously improving components of assessment operations. Several challenges were not accurately anticipated before implementation during this transition. Specifically, to establish the online assessment process, SULC faculty agreed to use both a common textbook and uniform syllabi for all courses. However, crucial components were initially overlooked that proved to be problematic: the depth and sequencing of course coverage. As a result of one inconsistency, the institution adjusted to ensure that students in every section were receiving comparable instruction about the topic that would be tested on the assessment.

One of the biggest hurdles was trying to garner faculty buy-in about the changing assessment process. Administrators often find themselves conciliating faculty and students when a major

change occurs, and this process was no different. Overall, institutions should expect resistance whenever implementing changes and must practice consistent, continuous engagement with all the stakeholder groups. SULC leadership utilized Special Faculty Meetings to discuss the assessment process changes and gather feedback and address the concerns of faculty. The Institutional Accountability and Accreditation (IAA) staff provided relevant information (statistics, software features, etc.) to affected groups well in advance of the change to facilitate the process. Due to the elongated timeline and planning, the IAA Unit was able to celebrate small victories as the process unfolded, which helped to augment morale, sustain progressive momentum, and keep the team on task.

Conclusion

The SULC, an institution that was initially created for an African American man to obtain a legal education, has expanded to a comprehensive professional institution with a diverse faculty and staff who educate a diverse and growing student population. SULC has positioned itself for continuous improvement of its assessment processes to ensure the success of each of its students. Some of the strategies implemented to remain competitive are offered below as recommendations that can be replicated by other institutions of higher education.

Create/Use an Institutional Effectiveness Resource

As institutions navigate the transformation of their assessment practices, it is important to have resources and policies that can guide leadership through the desired change. For our institution, SULC relied heavily on its Institutional Effectiveness Manual. This was an invaluable resource for the IAA team who recognized the importance of updating the document to capture the new assessment process. To save administrators time and to assist with planning, an institutional effectiveness resource should be created. If such a resource already exists, it would benefit institutional leaders to ensure that it is regularly updated with innovative best practices.

Implement an Effective Communication Plan

As institutions learn from the COVID-19 pandemic, it is important to establish or strengthen policies and procedures for effective communication. The enormity of the COVID-19 pandemic forced all SULC's constituents to communicate in various new ways to maintain accountability of its assessment processes. SULC learned how to take all its daily on-campus operations for assessment and transform it into virtual implementation and delivery. The success of this process required a great deal of time and effort, far beyond the 40-hour work week.

At the onset of the pandemic, most operations were in a state of flux as SULC sought to provide at least the same level of excellence for its assessment processes. Effective communication proved to be crucial, more than ever before. Everyone had to be made aware of new assessment processes and changes in existing ones. The number of meetings steadily increased and the number of e-mail messages more than doubled, many of which required several follow-up phone calls. SULC also implemented a new phone system to ensure that each employee had a direct extension with the ability to forward calls to a specified phone number.

Although effective communication is a common term, it should not be viewed as such. Effective communication is important, and institutions should not assume that it will happen without being intentional. An effective communication plan should be a part of the institutional strategic plan, and it should be developed and implemented with input from constituents. Tasks as simple as checking e-mail several times per day with an appropriate timeframe for responding may be thought of as mundane but have proven to be very beneficial as institutions seek continuous improvement in this new COVID-19 reality.

Leverage and Invest in Technology

Investing in technology is necessary. This investment is not limited to hardware and software but more importantly, investing in technologically savvy human capital. It is vital for institutions of higher education to employ highly competent information technology (IT) staff who are knowledgeable, skilled, and possess good interpersonal skills for IT support.

The immediate transition of the assessment process to a virtual model mandated the need for faculty, staff, and students to be trained on platforms such as Zoom, LiveText, and TWEN. The qualified and dedicated SULC IT Staff, under the auspices of IA&A, conducted a needs assessment shortly after the onset of the pandemic and in preparation for virtual accreditation visits. The results revealed a great need for updated hardware and software, along with the requisite training. SULC made the investment, and it would behoove institutions of higher education to have an IT Plan as a part of its strategic plan and to allocate a percentage of its annual budget for technology upgrades and training.

The background, best practices, lessons learned, and recommendations contained herein provided valuable guidance on how SULC transformed its culture of assessment into an online model. Yet, there is still more than meets the eye. For additional information, please visit the website of the SULC Office of Institutional Accountability and Accreditation (Southern University Law Center, 2022).

Acknowledgments

References

American Bar Association (ABA). (2015). Managing Director's Guidance Memo Standards 301, 302, 314 and 315. Section of Legal Education and Admissions to the Bar. https://www.americanbar.org/content/dam/aba/administrative/legal_education_and_ad missions_to_the_bar/governancedocuments/2015_learning_outcomes_guidance.pdf

American Bar Association Standards (2014-2015) https://www.americanbar.org/content/dam/aba/publications/misc/legal_education/Stan dards/2014_2015_aba_standards_and_rules_of_procedure_for_approval_of_law_scho ols_bookmarked.pdf

Bryson, J (2008). Dominant, emergent, and residual culture: the dynamics of organizational change. *Journal of Organizational Change Management*, 21(6) pp. 743–757. https://doi.org/10.1108/09534810810915754

Hutchings, P., Ewell, P., & Banta, T. (2012). AAHE Principles of Good Practice: Aging Nicely. *University of Illinois and Indiana University, National Institute for Learning Outcomes Assessment (NILOA)*. https://www.learningoutcomesassessment.org/wp-content/uploads/2019/08/Viewpoint-Hutchings-EwellBanta.pdf

Kuris G. (2021, June14). *The Impact of the Coronavirus on Legal Education*. US News & World Report. Retrieved January 25, 2023, from https://www.usnews.com/education/blogs/law-admissions-lowdown/articles/the-impact-of-the-coronavirus-on-legal-education

Rosenbaum, E. (2021). Mental models and institutional inertia. *Journal of Institutional Economics*, *18*(3), 1–18. https://doi.org/10.1017/s174413742100059x

Schwartcz, D & Farganis, D. (2017) The Impact of Individualized Feedback on Law Student Performance. *Journal of Legal Education,* 67(1) p.171 https://scholarship.law.umn.edu/cgi/viewcontent.cgi?article=1656&context=faculty_a rticles

Southern Association of Colleges and Schools Commission on Colleges. (2020). *Resource Manual for the Principles of Accreditation: Foundations for Quality Enhancement* (Third). https://sacscoc.org/app/uploads/2019/08/2018-POA-Resource-Manual.pdf

Southern University Law Center. (2022). Mission & Values. https://www.sulc.edu/page/mission-values

Southern University Law Center. (November 18, 2015). *Faculty Meeting Minutes.*

Southern University Law Center. (August 24, 2016). *Faculty Meeting Minutes.*

Southern University Law Center. (September 18, 2018). *Faculty Meeting Minutes.*

Southern University Law Center. (2014). *Institutional Effectiveness Manual*.

Southern University Law Center. (2018). *Institutional Effectiveness Manual*. https://www.sulc.edu/assets/sulc/Policies/SULC.InstitutionalEffectivenessManual.February2022.pdf

Southern University Law Center. (2015). SULC Self Study, Historical Mission of Law Center.

Southern University Law Center. (2022). Office of Institutional Accountability and Accreditation. https://www.sulc.edu/page/institutional-accountability-and-accreditation.

State of Louisiana, Executive Department, Proclamation Number 25 JBE 2020. (March 11, 2020). https://gov.louisiana.gov/assets/Proclamations/2020/JBE-33-2020.pdf.

Ward, S. F. (2019, February 6). *If taught well, online law school courses can pass the test, experts say*. ABA Journal. https://www.abajournal.com/news/article/are-online-law-school-courses-good-that-depends-experts-say

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English Instruction Practice for Students of an Early Childhood Education Course: Aiming to Develop Students' Metalinguistic Ability

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

This study examined the English teaching method's effect on improving metalinguistic ability. Metalinguistic ability refers to the ability to perceive language analytically and to take it as an object of thought. In this study, the author compared the class comment papers of students who took classes designed to improve their metalinguistic abilities (experimental group) with those of students who took conventional classes (control group). The students in both groups majored in early childhood education. The comments were classified into four levels from 0 to 3 in terms of metalinguistic ability level. A χ-square test revealed that the number of comments at metalinguistic ability level 0 was significantly smaller in the experimental group than in the control group, while the number of comments at metalinguistic ability level 1 was significantly higher in the experimental group than in the control group. There were no significant differences in the number of comments at metalinguistic ability levels 2 and 3, but the percentage of the total number of comments at both levels was higher in the experimental group than in the control group. The results showed the present teaching method contributes to the improvement of metalinguistic ability. In particular, it is implied that the situation in which the students had to write some kind of comments in addition to questions gave them an opportunity to think more analytically about the content of the class, which supported the development of metalinguistic ability.

Keywords: Metalinguistic Ability, English Education, Qualitative Analysis

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Introduction

Previous studies have shown that metalinguistic ability predicts higher literacy in the first language (Robinson, 2005; Zipke, 2007) and higher performance in the second or a foreign language (Igarashi, 2015; Lasagabaster, 2001; Serrano, 2011). In general, the metalinguistic ability is defined as "the ability to think about and reflect upon the nature and functions of language" (Pratt & Grieve, 1984). What follows is an example of a dialog that gives us a picture of a child's metalinguistic ability, which has been reported in previous literature (Karmiloff-Smith, Grant, Sims, Jones, Cuckle, 1996). This is a dialog between a mother and her 4-year-old child who is acquiring English as his first language.

> Child: *What's that?*
> Mother: *It's a typewriter.*
> Child: *(frowning) No, you're the typewriter, that's a typewrite.*
>
> (Karmiloff-Smith et al., 1996)

This dialog implies his attempt to correct the mother's words, in which we can see an example of a child becoming aware of the meaning of the word suffix -er. In this way, metalinguistic abilities are naturally developed to some extent. We all are equally capable of acquiring a native language as long as we are not abused or handicapped. On the other hand, metalinguistic abilities vary widely from person to person. This has been shown in the author's previous research (e.g., Igarashi, 2016, 2021) and other previous studies (e.g., Caravolas, Hulme, & Snowling, 2001; Falk, Lindqvist, & Bardel, 2015). An educational intervention to develop metalinguistic ability is important in order to reduce individual differences as much as possible.

If metalinguistic ability contributes to literacy and foreign language learning, wouldn't it be better to develop this ability before children enter school if possible? There have been several projects for developing the metalinguistic ability of children (e.g., Igarashi, 2016, 2022). However, there are very few previous works on the metalinguistic development of teachers who support children. While it is important to support the development of metalinguistic ability in early childhood, wouldn't it be also important to develop the metalinguistic ability of the teachers who support children?

Hence, in this study, the author attempted to develop an English teaching method aimed at enhancing pre-service teachers' metalinguistic ability and to examine its effectiveness from a qualitative approach. The author has done "quantitative" studies (Igarashi, 2016, 2022) before, on projects targeting elementary and junior high school students, so this time the author tried taking a new perspective, a "qualitative" approach.

Method

Participants were 20 Japanese college students taking a preschool teacher training course, who were students studying to become kindergarten teachers or nursery school teachers. They were informed in class or by email that their comments and test results will be used in research and that their comments will be published anonymously in a paper. Consent was obtained from each participant. The participants were divided into experimental and control groups and attended English classes for one semester. The experimental group (nine students) attended the intervention class, while the control group (11 students) attended the conventional class. Specifically, the experimental group was given a lecture on language

ambiguity. Then, they were asked to submit brief comment papers for preparation and reflection for each class, and they were instructed to write down what they noticed and thought about as well as their questions. In the control group, the teacher (the present author) instructed them to write any questions they had.

Before the intervention, students took a meta-linguistic ability test to check if there were differences in their original metalinguistic ability between the two groups. The comments submitted by the students were analyzed, which were freely-described comments. The comments were classified into four levels from 0 to 3 in terms of metalinguistic ability level. The author then compared the percentage of comments at each metalinguistic ability level between the groups.

The metalinguistic ability test consists of two parts. The first part is an ambiguity detection part (six items). In this part, a single sentence is presented, which can be interpreted in two different ways. The students were asked to write each of the two meanings. In the intervention class, we discussed the ambiguity of language, because the ambiguity task has been often adopted as a measure of metalinguistic ability in previous studies (Foss, Bever, & Silver, 1968; Hoppe & Kess, 1980; Ojima, Nagai, Taya, Otsu, & Watanabe, 2012), and it is also an interesting language task for learners. The second part is a grammatical relation perception part (six items). The grammatical relation perception task is to find a word in the target sentence that has the same grammatical role as the words in parentheses in the key sentence. The current test was designed on the basis of scales in previous studies (e.g., Carroll & Sappon, 1959; Igarashi, 2021). Test answers and comment papers were collected by Google Forms.

Results

Regarding the pre-test scores of metalinguistic ability, a *t*-test result showed no significant differences between the groups (see Figure 1 & Table 1). A total of 99 comments were obtained for the experimental group and 89 for the control group. The comments were classified by the author and her research assistant. Generally speaking, the metalinguistic ability is gradual and it is difficult to clearly distinguish between levels. However, on the basis of the previous work (Otsu, 2021), the comments were expediently divided into 4 levels. Comments that gave no sign that metalinguistic ability had been exercised were classified as Level 0. Comments that have implied noticing or feeling something about language were classified as Level 1. Comments showing awareness of or reflection on language were classified as Level 2. Comments involving manipulation or control of linguistic expressions were classified as Level 3.

Figure 1: Comparison of the pre-test scores between the experimental group
and the control group.

Group	N	Mean	SD	SE	*t*	df	*p*
Control	11	3.273	2.687	0.810	0.817	17.745	.425
Experimental	9	2.333	2.449	0.816			

Table 1: *t*-test results

The results of the classification are presented in Table 2. The inter-rater reliability of the levels was high enough (Cohen's *k* = .832). Examples of the students' comments are given below. The original comments were written in Japanese. The following examples are English translations of the original comments.

Example of Comments (English Translation)
[Level 0] *Overall, I can't understand.*
[Level 1] *Where does the word "Simon" in "Simon says[1]" come from?*
[Level 2] *I'm wondering what is the difference between "little" and "slightly".*
[Level 3] *I think "unicorn" is better matched to the spelling of "unicone" in semantics. When I looked it up, I found that "corn" comes from "comu" (Latin) meaning "horn".*

	Control	Experimental
Total	89	99
Level 0	△49	▼26
Level 1	▼21	△45
Level 2	14	18
Level 3	5	10

Table 2: Crosstabulation of comment classification results

The results of the χ-square test showed that the number of comments with level 0 (no metalinguistic ability level) was significantly lower in the experimental group than in the control group, and the number of comments with level 1 (slightly higher metalinguistic ability level) was significantly higher in the experimental group than in the control group ($\chi2(3) = 17.465$, p = .001, Cramer's V = .305). On the other hand, there was no significant difference in the number of Levels 2 and 3 comments. But, as for Levels 2 & 3 comments, the experimental group had a higher percentage of the total number of comments than the control group.

Discussion and Conclusion

The increase in the number of comments at Level 1 shows the effectiveness of the present teaching method. We have two implications here. One is that linguistic lessons dealing with ambiguity may have contributed to the students' improvement of metalinguistic ability. This is consistent with the results of previous studies (e.g., Igarashi, 2016, 2022). The second one is that the situation in which the students had to write not only questions but also what they

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[1] "Simon Says" is a game played by children in English-speaking countries. One person takes the role of Simon and gives commands to the rest of the people, such as "Simon says, raise your right hand" or "Simon says, jump up". If one says or does something different from the command, he/she will be disqualified from the game. The textbook used in the class attended by the present participants introduced "Simon says.

noticed and thought about gives them opportunities to think more analytically about the content of the textbook and the classes.

In addition, several attempts to improve the quality of learners' questions and comments have been made in the field of educational psychology. The possible relationship between question quality and metalinguistic ability is intriguing. But this topic is beyond the scope of this study and will be therefore discussed in another paper.

Considering the discussion above, we would like to conclude with the following two points. Firstly, metalinguistic ability can be enhanced by changing the instructions regarding comments on the lessons, in addition to teaching special academic content. Secondly, unlike the previous studies, in which the intervention method was to improve students' metalinguistic skills through intensive special classes, this study successfully improved students' meta-linguistic ability by presenting linguistic topics occasionally in regular English classes and by devising instructions for comment papers. This is a distinctive achievement of this study.

Acknowledgments

Note: This paper is a revised and expanded version of a paper presented at the 33rd Annual Meeting for the Japan Society of Developmental Psychology (2022: Online).

References

Carroll, J. B., & Sapon, S. M. (1959). *Modern language aptitude test: MLAT.* New York: Psychological Corporation.

Caravolas, M., Hulme, C., & Snowling, M. J. (2001). The foundations of spelling ability: Evidence from a 3-year longitudinal study. *Journal of Memory and Language*, *45*(4), 751-774.

Falk, Y., Lindqvist, C., & Bardel, C. (2015). The role of L1 explicit metalinguistic knowledge in L3 oral production at the initial state. *Bilingualism: Language and Cognition*, 18(2), 227-235.

Foss, D. J., Bever, T. G., & Silver, M. (1968). The comprehension and verification of ambiguous sentences. *Perception and Psychophysics,* 4(5), 304-306.

Hoppe, R. A., & Kess, J. F. (1980). Differential detection of ambiguity in Japanese. *Journal of Psycholinguistic Research,* 9(3), 303-318.

Igarashi, M. (2015). L1 metalinguistic ability and foreign language learning: the case of Japanese secondary school students. *ACP Official Conference Proceedings 2015*, 571-584.

Igarashi, M. (2016). Linguistics instruction for Japanese junior high school students. In P. Clements, A. Krause, & H. Brown (Eds.), *Focus on the learner* (pp. 58 - 65). JALT.

Igarashi, M. (2021). Development of a scale to measure syntactic awareness in Japanese language. *The Journal of the Graduate School of Toyo Eiwa University*, 17, 21-33.

Igarashi, M. (2022, December). *Bun no kumitate to aimaisei ni chakumokusita jugyou jissen no koukakenshou: jidou no metagengonouryoku koujou wo mezashite [The effectiveness of teaching practice focusing on sentence construction and ambiguity: aiming to improve school children's metalinguistic ability].* Paper presented at the 46th Annual Convention in Tochigi via Online.

Karmiloff-Smith, A., Grant, J., Sims, L., Jones, M.-C., & Cuckle, P. (1996). Rethinking metalinguistic awareness: representing and accessing knowledge about what counts as a word. *Cognition,* 58, 197-219.

Lasagabaster, D. (2001). The effect of knowledge about the L1 on foreign language skills and grammar. *International Journal of Bilingual Education and Bilingualism,* 4(5), 310-332.

Ojima, S., Nagai, A., Taya, F., Otsu, Y., & Watanabe, S. (2012). Proficient foreign-language users show faster symbol processing. *CARLS Series of Advanced Study of Logic and Sensibility,* 5, 163- 180.

Otsu. Y. (2021, October). Kotoba eno kizuki to gengokyouiku [Metalinguistic awareness and language education]. In Y. Otsu (Chair), *Kyoshi no Tame no Kotoba Seminar [Language Seminar for Teachers].* Seminar hosted by Tokyo Gengo Laboratory, Online.

Pratt, C., & Grieve, R. (1984). The development of metalinguistic awareness: An introduction. In W.E. Tunmer, C.Pratt, & M.L. Herriman (Eds.), *Metalinguistic awareness in children: Theory, research and implications* (pp.2-11). New York: Springer-Verlag.

Robinson, M. (2005). Metalanguage in L1 English-speaking 12-year-olds: which aspects of writing do they talk about? *Language Awareness,* 14(1), 39-55.

Serrano, R. (2011). From metalinguistic instruction to metalinguistic knowledge, and from metalinguistic knowledge to performance in error correction and oral production tasks. *Language Awareness,* 20(1), 1-16.

Zipke, M. (2007). The role of metalinguistic awareness in the reading comprehension of sixth and seventh graders. *Reading Psychology,* 28(4), 375-396.

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Development of Analytical Thinking Using Flipped Classroom Approach for Big Data Analytics Courses

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract
This research clarified the development of analytical thinking skills through 10 hands-on lab sessions conducted among undergraduates at Universiti Teknologi PETRONAS (UTP). This systematic review study examined 30 publications from 2017 to 2022 that were discovered through a comprehensive systematic mapping process for a more in-depth analysis. Previous studies indicate that most instructors and students believe the flipped classroom approach improved analytical thinking among undergraduates. Therefore, in order to determine the effectiveness of the flipped classroom approach for the development of analytical thinking, 134 UTP undergraduates enrolled in Big Data Analytics (BDA) course are considered as the participants in this study. One complete module with detailed teaching and learning activities (TLA) was developed for an immersive learning experience, and students were provided with pre-class instruction. The performance of the flipped classroom approach was evaluated using immersive learning experiences and a student satisfaction survey. The results show that the flipped classroom approach is successful in developing students' analytical thinking skills among the participants of this study. The research has been reviewed and approved by the university through the Scholarship of the Teaching of Learning (SoTL).

Keywords: Flipped Classroom, Analytical Thinking Development, Teaching Methodology

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Introduction

Analytical thinking is an important component of visual thinking as it enables us to solve problems quickly and efficiently. It provides a person with the ability to analyze, examine, and interpret a topic to create complex ideas and solutions (Amer, 2005; Aziz, Akhir, & Ali, 2020; Nuroso, Siswanto, & Huda, 2018; Spaska, Savishchenko, Komar, & Maidanyk, 2021; Sulejmani & Xhaferi, 2020). Practical or experiential learning can enhance students' analytical thinking and critical thinking capability (Miharja, Hindun, & Fauzi, 2019). This can be achieved by engaging students to be positively involved during the learning process in a classroom. Providing students with contemplative activities that require knowledge processing allows them to use their brains to think (Spaska et al., 2021). Our brain will actively think to formulate thoughts, solve questions, reason, and make decisions (Amaliah, 2020). Our critical and analytical thinking capabilities distinguish humans from other species.

This study focused on exploring the existing literature through a systematic review process while providing evidence on the performance of the flipped classroom approach to enhance analytical thinking among undergraduates. This study considers two sources, which are the students' immersive learning experience and a student satisfaction survey as proof to measure the performance of the flipped classroom approach.

Systematic Planning

Our systematic study follows Khan's five-phase model (Khan, Kunz, Kleijnen, & Antes, 2003) as guidelines to conduct the study process. The model helps in selecting the most relevant studies, as systematic reviews and meta-analyses have intensified in recent years. Several studies were referred to as example for creating a high-quality systematic studies (Hussain, Salleh, Talpur, & Talpur, 2018; Talpur et al., 2022). This study seeks to evaluate secondary data by obtaining, synthesizing, and evaluating existing information on a topic logically, clearly, and analytically. Thus, this systematic study uses a precise technique to find, select, assess, analyze, synthesize, present, and discuss the findings, following the process presented in Figure 1.

Figure 1: The five-phase model for a systematic study

The following subsections explained the steps conducted in complying with the systematic study guideline shown earlier.

A. Framing the research questions

This study begins with research questions (RQ) formulation, which helps to guide the direction of this study. This study embarks on the following research questions:

RQ1: What is big data analytics (BDA)?
Motivation: To understand the definition of BDA.

RQ2: What is the relation between BDA and analytics?
Motivation: To explain the relations between BDA and analytics.

RQ3: What is a flipped classroom?
Motivation: To define the concept of the flipped classroom.

RQ4: Why flipped classroom is considered innovative teaching?
Motivation: To explain the reason that makes flipped classrooms innovative.

RQ5: Which components of the flipped classroom help in the development of analytical thinking among undergraduates?
Motivation: To study the components in the flipped classroom that influence the development of undergraduates' analytical thinking.

B. Identifying relevant publications

This systematic study was conducted based on literature searches on two main sources: ScienceDirect, and ACM DL. The search process began by utilizing authors' keywords found in relevant studies to find related articles published in the recent six years (2017–2022) on the selected databases. Next, the search results from each database were examined and the search parameters were refined to obtain results that contain articles that are closely related to this study. As a result, the keywords "big data analytics" and "flipped classroom" were selected for retrieving the relevant studies. The search was last performed on 31 May 2022 and covers only studies authored in the English language and published within the last six years (2017–2022). The full search syntaxes used to retrieve the results are given in Table 1.

Keyword	Database (Last Retrieved)	Full Query Syntax
Big data analytics + Flipped classroom	ScienceDirect (31 May 2022)	General query: big data analytics Title, abstract, keywords; AND "flipped classroom" Year published: 2017 – 2022
	ACM DL (31 May 2022)	Title:(Big data analytics) AND Fulltext: (Big data analytics) AND Fulltext: (flipped classroom) Filter by: Publication Date: (01/01/2017 TO 31/05/2022), ACM Content: DL, NOT VirtualContent: true

Table 1: Full keyword search strategy

The keywords "big data analytics" and "flipped classroom" helped us retrieve 3,909 studies: 386 from ScienceDirect and 3,523 from ACM DL. Next, the studies are filtered following the inclusion and exclusion criteria as given in Table 2.

Inclusion Criteria	Exclusion Criteria
• Published between 2017-2021 • Article available in full text • Written in the English language • Published in the selected databases • Related to the RQs	• Published before 2017 or after 2021 • Article unavailable in full text • Not written in the English language • Not published in the selected databases • Not related to the RQs • Duplicate studies

Table 2: Inclusion and exclusion criteria

As a result, 1,097 studies are excluded and the remaining 1,812 studies that pass the inclusion criteria are compiled in a spreadsheet file. The downloaded list contains information about the article name, authors, keywords, DOI, and abstract. From the compiled list, we carefully deduplicate the studies based on the study name column, thus, leaving 1,537 unique studies.

Following that, a four-person review team assesses the relevance of the studies retrieved by carefully reading the titles, keywords, and abstracts of these papers. Thus, 1,326 studies are excluded as they are unrelated to our study, while only 211 studies pass the screening. The systematic mapping process used to find relevant studies is depicted in Figure 2.

Figure 2: Systematic mapping process

C. Assessing study quality

Once the screening process is complete, the 211 studies passed screening were evaluated for their quality and eligibility before inclusion into this systematic study. Only studies with a minimum score of 2.5 are considered to ensure that only high-quality studies are used as references. The quality of the studies was determined using the criteria listed in Table 3.

Criteria	Score	Description
Does the study discuss the relationship between flipped learning and students' analytical thinking?	1	Yes, the study clearly discussed the subject.
	0.5	The study briefly discussed the subject.
	0	No, the study does not touch the subject.
Does the study implement a clear methodology?	1	Yes, the methodology used is clear.
	0.5	The methodology is presented, but insufficient.
	0	No, the study does not have a clear methodology.
Does the study include sufficient citations and refer to reliable sources?	1	Yes, it includes sufficient and reliable sources.
	0.5	Citation is available, but insufficient.
	0	Citation is insufficient and/or not reliable.

Table 3: Scoring criteria for the study quality assessment

Consequently, 30 studies were selected after reviewing the research articles using the scoring criteria. Following this, our study conducted a thorough analysis to examine the 30 selected studies published between 2017–2022, including full-text articles from online sources.

D. Summarizing the evidence

All 30 studies were downloaded and saved in EndNote software, which will be used to help us answer our RQs. Following that, we looked at the selected studies published between 2017–2022, as well as full-text articles from online sources.

E. Interpreting the findings

Interpretation of the findings is provided in the next section (Research Question Discussion).

Research Question Discussion

The RQs introduced in the Systematic Planning section are explained in this section.

A. Big Data Analytics (BDA)

The phrase big data generally refers to the volume of data that is too large for most software tools to gather, curate, manage, and process in a timely manner . The characteristics of big data are known as the big data three V's which stands for the volume (quantity of data), velocity (speed of which data is being generated), and variety (various range of data types and sources) (Aziz, Abdullah, Osman, Musa, & Akhir, 2023; Aziz, Abdullah, & Zaidi, 2020; Ranjan & Foropon, 2021). The adoption of current emerging technologies such as cloud computing and the Internet of Things (IoT) has led to a better value for adopting big data solutions for customers and businesses (Ranjan & Foropon, 2021). In addition, long-term investments in areas such as health, administration, agriculture, defense, and education have catalyzed the deployment of large-scale big data systems in several countries. Big data systems can handle and manage data that is too large for standard software and data analysis tools. Therefore, BDA is described as a new technology generation of technologies and architectures designed to collect, discover, or analyze huge amounts of data coming from various sources and generated at a very high rate (Rossi & Hirama, 2022).

B. The relation between BDA and analytical thinking

Currently, big data course in Malaysian higher education are in their infancy, and the student learning process is frequently criticized for failing to prepare students for the necessary industrial skills and moral standards demanded by employers (Aziz, Akhir, et al., 2020). Therefore, analytical thinking skills that include gathering and analyzing data (Khan et al., 2003), transforming data into a meaningful format, and providing insight into action are required in the big data era (Aziz, Akhir, et al., 2020; Rossi & Hirama, 2022). Furthermore, these skills can ensure that business decision-makers have valuable information and knowledge for making sound decisions. Analytical thinking skills can also change the way we learn in various ways. For example, the use of learning analytics allows educators to take a different approach to e-learning, encourages student and teacher engagement, and enables individuals to achieve their learner's goals (Aziz, Akhir, et al., 2020).

Analytical thinking is a mental process that involves breaking down conceptual knowledge or extensive evidence into essential factors or fundamental concepts to make better decisions (Miharja et al., 2019). According to Khan et al. (2003), analytical thinking is the ability to evaluate and conduct research, which is one of the most critical bits of intelligence for innovation. It is also known as the ability to evaluate an individual's thoughts (Montaku,

2011), assess strengths and shortcomings (Permana, Hindun, Rofi'ah, & Azizah, 2019), and give recommendations to improve analytical thinking abilities (Azid & Md-Ali, 2020). These qualities include the ability to use rational ideas to solve complex problems. In essence, analytical thinking attempts to analyze information by breaking it down into sequential and step-by-step solutions (Amer, 2005; Aziz, Akhir, et al., 2020; Nuroso et al., 2018; Spaska et al., 2021; Sulejmani & Xhaferi, 2020). Thus, the characteristics of analytical thinking include (1) the ability to distinguish a question from one another and understand its components; (2) the ability to understand procedures or techniques to solve a problem; (3) the evaluation of two or more details; or (4) the ability to compare and contrast features of an object.

C. Flipped classroom

The flipped classroom (also known as the inverted classroom) is a recent educational trend that focuses on assisting students in reaching a higher level in the taxonomy domain (Ulaş, 2021). Flipped learning is different from the traditional teaching and learning strategy since it "flipped" the old technique. In a flipped classroom, students are given materials to read, study, and review on their own time while out of class. Lower-level learning tasks (e.g., understanding concepts) are completed independently outside of the classroom. It aims to train students to be self-directed learners who seek out new information without the assistance of instructors.

Since the materials are covered during the student's own time outside the classroom, flipped learning allows students to devote more time in the classroom to explore higher-level learning activities (e.g., group discussions). Flipped learning emphasize higher-level learning over lectures and lower-level thinking activities. Hands-on lab activities and fundamental learning support allow for more in-class time to be spent on higher levels of learning, from application to assessment. Therefore, the flipped classroom approach has gained huge interest, allowing students to participate actively in learning either through physical classroom (offline learning) or remote study (online learning) (Heiss & Oxley, 2021).

The research on flipped classrooms was based on Bloom's updated taxonomy of cognitive domain theory. This taxonomy categorizes learning into six stages, which are organized from the most basic to the most complex mastery level. Students in flipped classrooms will progress from the lowest mastery level of remembering to the highest mastery level of creating. The students' analytical thinking abilities are measured based on the revised version of the six levels of learning of Bloom's taxonomy, visualized in Figure 3.

Figure 3: Bloom's updated taxonomy in the flipped classroom (Anderson & Sosniak, 1994)

The six levels of learning are remembering, understanding, applying, analyzing, evaluating, and creating. Table 4 explains each level in greater detail.

Scale	Level of Learning	Abilities
1	Remembering: Can the students recall or remember the information?	Students can identify, duplicate, name, remember, and replicate information.
2	Understanding: Can the student explain ideas or concepts?	Students can define, characterize, explain, recognize, find, report, interpret, paraphrase and pick.
3	Applying: Can the students use the information in a new way?	Students can pick, display, play, use, explain, interpret, function, plan, draw, solve, use, and write.
4	Analyzing: Can the students distinguish the different parts?	Students can assess, analyze, contrast, criticize, differentiate, distinguish, analyze, evaluate, ask, and examine.
5	Evaluating: Can the students justify a stand or decision?	Students can analyze, argue, justify, evaluate, pick, endorse, support, and evaluate.
6	Creating: Can the students create a new product or point of view?	Students can assemble, construct, plan, create, formulate, and compose.

Table 4: Level of learning in Bloom's updated taxonomy

D. The differences between the traditional classroom and flipped classroom

The main distinction between traditional and flipped classrooms is the learning experiences. In a traditional classroom, students will only have the opportunity to learn and be taught once the lecture or class begins. The students have no idea which topics will be covered before the class begins. The physical class session only provides a learning experience based on an instructor's explanation, whiteboard content, and in-class material. Question and answer (Q&A) sessions are also restricted to the classroom and self-study/independent learning, which is typically based on the homework assigned.

Alternatively, the flipped classroom differs from the traditional classroom in that it provides more immersive and interactive learning experiences during lectures. Flipped classrooms are typically held digitally before class so that students can access the recording online (Fisher, LaFerriere, & Rixon, 2020). The traditional classroom employs a lecture-based model in which students listen to lectures and apply their knowledge by completing homework on their own. Table 5 summarized the differences between traditional and flipped classroom tools.

Level of Learning	Traditional Classroom Tools	Flipped Classroom Tools
Remembering	Physical class	Lecture, hands-on lab activities
Understanding	Q&A session	Collaboration, reflection, and peer-to-peer discussion
Analyzing	Homework	Individual and group activities during 10 hands-on lab sessions
Applying, Evaluating, Creating	Homework	Independent self-learning, projects, presentations, and instructor-evaluation

Table 5: Traditional versus flipped classroom tools

E. Flipped classroom components that assist in analytical thinking development

The flipped classroom combines independent study and immersive learning experiences, which can help undergraduates develop analytical thinking skills. This approach typically requires providing students with pre-class instruction for independent study, where the students are introduced to the material in various media formats, including video and text (Ulaş, 2021). Students can watch videos and study whenever they are available (Heiss & Oxley, 2021; Ulaş, 2021). Furthermore, students who are taught in this way are encouraged to think both inside and outside of the classroom. At the same time, students are given more time to learn creatively, and technology is used to encourage students to learn about topics before classes (Mohamed & Lamia, 2018; Zou, 2020). Students were able to review course material at home first and train themselves to participate in related class exercises, pose questions, and collaborate with peers in problem-solving. Students' problem-solving ability, teamwork abilities, conflict management abilities, time management, and team building can be improved in flipped classroom learning (Mohamed & Lamia, 2018; Zou, 2020). The most important aspect of the flipped classroom is facilitating more advanced learning during in-class hours so that students can engage in more meaningful ways through self-research, debates, learning advanced concepts by example, and collaborative projects.

The immersive learning phase engages students in a variety of interactive events such as Q&A, advanced topic descriptions, and discussions (Elmaadaway, 2018). Immersive learning experiences at school require students to take more responsibility for their learning and require more complex thinking and reasoning abilities (Long, Cummins, & Waugh, 2017). Engaging students in classroom activities transforms them from passive to active students in the classroom (Kim, Park, Jang, & Nam, 2017). Educators can deliver pre-recorded lectures to their students (Heiss & Oxley, 2021; Ulaş, 2021; Zuber, 2016), allowing them to spend more time preparing learning materials for hands-on activities in the classroom and assessing students' emotions (Prohoroff, 2016). An advanced classroom environment allows students and teachers to discuss scenarios that are typically not feasible in a traditional classroom.

Several studies (Chusni, Saputro, & Rahardjo, 2020; Prihandini; Sulejmani & Xhaferi, 2020; Wulandari & Puspadewi, 2020) have shown that analysis can help develop critical elements in students' learning processes. Furthermore, the flipped classroom paradigm was discovered to be implemented in various educational fields to increase engagement and personalized communication between students and teachers (Uzunboylu & Karagozlu, 2015).

Methodology

In this study, two sources were used to evaluate the effectiveness of the flipped classroom approach for the development of analytical thinking among undergraduates enrolled in BDA courses. The first is through immersive learning experiences and the second is through a student satisfaction survey. The research has been reviewed and approved by Universiti Teknologi PETRONAS through the Scholarship of the Teaching of Learning (SoTL). One complete module with detailed teaching and learning activities (TLA) was developed for an immersive learning experience, and students were provided with pre-class instruction.

A. Respondents

This study considers undergraduates enrolled in BDA courses at Universiti Teknologi PETRONAS (UTP) as the respondents. The study was conducted over four semesters to

ensure that the approaches and lesson plans are beneficial to the development of analytical thinking skills in undergraduate students. All students were informed that their performance would be monitored and used as data for this research study. Figure 4 visualizes the gender distribution of 134 participants aged 21 to 23 years: 80 (59.7%) are male students, while 54 (40.3%) are female students.

Figure 4: Distribution of participants' gender

B. Source 1: Immersive Learning Experience

The immersive learning experience consists of ten hands-on lab sessions with a detailed rubric assessment that each student must complete. Students will be given tasks and lesson objectives by a lab instructor. Throughout the lab sessions, the instructor will reinforce the partnership between practice and assessment of these skills and behaviors to improve participants' analytical thinking skills and decision-making. Once the hands-on lab sessions are complete, students are required to complete one group project and present the outcome to the lab instructor. This goal is to assess students' analytical thinking after they have completed immersive learning.

All tasks assigned to students were related to solving the identified business case scenario, which encouraged students' critical reasoning abilities and analytical potential. The grades are as follows: A (80–100%), B (60–79%), C (40–59%), D (20–39%), and E (0–19%). Students who score 80% or higher demonstrate strong analytical thinking and problem-solving abilities. Students with scores ranging from 60–79% represent a moderate level of analytical thinking skills. Students with scores ranging from 0–59% are considered weak since they struggle to finish the project and have poor analytical thinking skills.

Group	Participants	Male	Female
1	70	48	22
2	14	7	7
3	30	13	17
4	20	12	8

Table 6: Distribution of participants' gender based on groups

Table 6 shows that the 134 participants were divided into four small groups for the immersive learning experience (hands-on lab sessions) and were assessed using a detailed rubric. Table 7 presents the hands-on lab activities and active learning (AL) designed to develop analytical thinking skills among students through the BDA course.

Lab Activities	Skills Advanced
Lab 1: Descriptive Analytics using Excel Dashboard Activity: Making sense of data and prepare insight to action AL: Individual self-study	• Data preparation skills (data cleansing, data understanding, and data quality assessment) • Data visualization skills by creating interactive dashboard designs
Lab 2: Problem Solving for descriptive analytics Activity: Conduct business analytics on financial case study AL: Think pair and short-case scenario	• Business understanding • Data understanding • Provide insight to action recommendation • Create dynamic dashboard and analytical report
Lab 3: Descriptive Analytics using Big Data Analytics Dashboard Activity: Making sense of data and prepare insight to action AL: Short-case study and brainstorming	• Data preparation skills for massive data • Data cleansing, data understanding, and data quality assessment • Data modeling and visualization • Provide insight into action recommendations • Create dynamic dashboard and analytical report
Lab 4: Problem-solving Big Data Analytics (superstore case study) Activity: Short-case study AL: Think pair and short-case scenario Remarks: Descriptive analytics	• Data understanding • Analyze and integrate information from outsources to solve a real problem • Provide insight into action recommendations • Create dynamic dashboard and analytical report
Lab 5: Data Modelling and Data Visualization using Python for predictive analytics AL: Think pair and share	• Data modeling and data visualization • Determine the relationship between the data • Identify systematic visualization of the data • Provide insight into action recommendations • Create dynamic dashboard and analytical report
Lab 6: Machine Learning for predictive analytics AL: Group discussion	• Use programming and logical skills • Provide insight into action recommendations
Lab 7: Time Series Forecasting for Predictive Analytics AL: Group discussion	• Define a suitable chart for time series analysis • Provide insight into action recommendations • Create dynamic dashboard and analytical report
Lab 8: Sports Analytics using Moneyball Case Study	• Analyze and identify a suitable solution to the real problem and justify the decision • Create dynamic dashboard and analytical report
Lab 9: Health Analytics using Cancer Data Case Study	
Lab 10: Business Analytics using Sales and Marketing Case Study	

Table 7: Summary of the 10 hands-on lab sessions

C. Source 2: Student Satisfaction Survey

A satisfaction survey was distributed to each participating student at the end of each lab session to assess student satisfaction with the flipped teaching approach used in the hands-on lab session. The results of the satisfaction survey are provided in the next section. The students rated their satisfaction with the flipped learning teaching in three categories:

1. Very satisfied: Students are very satisfied with the teaching method and believe it is very effective in improving their analytical thinking skills.
2. Satisfied: Students are satisfied with the teaching method and believe it is moderately effective in developing analytical thinking skills.
3. Not satisfied: Students are unsatisfied with the teaching method and believe it is ineffective for improving their analytical thinking skills.

Results and Discussion

The findings of this study are divided into two subsections. The first subsection described the outcomes of an immersive learning experience by using descriptive statistics to clarify simple data features for data analysis based on a dataset of student performance. Meanwhile, the second subsection described the results of the student satisfaction survey.

A. Results of the Immersive Learning Experience

This study measures the ability of students' analytical thinking based on the participants' test performance, ability to solve the lab assignments, and the quality of their group project presentations. Table 8 shows the maximum marks a student can receive for each evaluation.

Evaluation	Full Mark
Test	10 points
Lab activity	20%
Project	100%

Table 8: Maximum scoring for each evaluation criteria

Descriptive statistics and basic graphical analytics were used to extrapolate the marks obtained by the participants as they provide clear overviews and metrics of the study, which form the foundation of nearly all quantitative data analysis. To describe the result in greater detail, several important measurements are used, including the maximum value, mean, minimum value, range, standard deviation, and variance.

Evaluation	Group 1 (N=70)	Group 2 (N=14)	Group 3 (N=30)	Group 4 (N=20)
Test Full mark: 10	Mean(μ) = 7.13 Min = 3 Max = 10 SD (σ) = 1.454	Mean(μ) = 8.57 Min = 7 Max = 10 SD (σ) = 1.016	Mean(μ) = 8 Min = 5 Max = 10 SD (σ) = 1.531	Mean(μ) = 7.5 Min = 5 Max = 9 SD (σ) = 1.235
Lab activity Full mark: 20%	Mean(μ) = 15.17 Min = 8.7 Max = 19.1 SD (σ) = 2.533	Mean(μ) = 15.14 Min = 13 Max = 17 SD (σ) = 1.657	Mean(μ) = 16.83 Min = 0 Max = 20 SD (σ) = 3.688	Mean(μ) = 17.8 Min = 17 Max = 19 SD (σ) = 0.761
Project Full mark: 100%	Mean(μ) = 75.84 Min = 43.5 Max = 95.5 SD (σ) = 12.664	Mean(μ) = 80.86 Min = 65 Max = 95 SD (σ) = 10.394	Mean(μ) = 84.17 Min = 0 Max = 100 SD (σ) = 18.340	Mean(μ) = 89 Min = 85 Max = 95 SD (σ) = 3.840

Table 9: Descriptive statistics for the evaluation of analytical thinking skills

The descriptive statistics for evaluating undergraduates' analytical thinking skills were validated using three different strategies: test, hands-on lab activity, and project (Table 9). The results obtained demonstrated the effectiveness of the teaching method, as students were able to score the test based on what they had learned during the immersive learning session.

A-1. Test marks

Table 9 presented the mean test score for the four groups assigned ranging from 7.13 to 8.57. Based on the test result, students in Group 2 achieved the highest mean score, while students in Group 1 achieved the lowest mean score. The average test result is above 7.0, indicating that most students were able to use analytical thinking skills to answer their tests. The results also show that the standard deviation for all groups ranges from 1.016 to 1.531, which is considered low and consistent. A low standard deviation value indicates a low dispersion range among all marks with the mean, indicating high precision. This demonstrates that the flipped learning approach can produce consistent and predictable results over the course of four semesters, making it suitable for improving undergraduates' analytical thinking skills.

A-2. Lab activity marks

The hands-on lab activity is part of the immersive learning experience and is intended to assess the student's analytical thinking skills. All four student groups have nearly the same mean score based on their performance. The highest average laboratory mark obtained is 17.8, while the lowest average laboratory mark obtained is 15.14. According to these findings, most students have an average level of analytical thinking skills. The group project results revealed statistically significant differences in mean values between Group 2 and the other groups, with a 15.02 difference from Group 1, a 6.69 difference from Group 3, and a 1.56 difference from Group 4. Group 1 had the lowest mean value of test results despite having the largest sample size compared to the other groups.

A-3. Project marks

Table 9 and Figure 5 show that of 134 students, 79 of them scored grade A, 48 students got B grade, 6 students got C grade, none getting D grade and only 1 student got E grade. The student who scores E grade was found to have an absenteeism issue. This shows that the immersive learning experience of the 10 hands-on lab sessions has equipped the students with

excellent analytical thinking skills for learning the BDA course. Consequently, the implemented innovative teaching approach helped in developing the analytical thinking skills of undergraduates. Goals, outline plans, and best approaches for making sense of data and transforming it into a meaningful format can be used to foster analytical thinking abilities. Therefore, the flipped classroom approach is suitable for the BDA course since it exposes students to creative TLA and immersive learning experiences, both of which are great for fostering critical thinking skills.

Grade	Group 1 (n=70)	Group 2 (n=14)	Group 3 (n=30)	Group 4 (n=20)
A (80–100%)	Male = 17 Female = 12	Male = 2 Female = 3	Male = 11 Female = 14	Male = 12 Female = 8
B (60–79%)	Male = 26 Female = 9	Male = 5 Female = 4	Male = 1 Female = 3	Male = 0 Female = 0
C (40–59%)	Male = 5 Female = 1	Male = 0 Female = 0	Male = 0 Female = 0	Male = 0 Female = 0
D (20–39%)	Male = 0 Female = 0	Male = 0 Female = 0	Male = 0 Female = 0	Male = 0 Female = 0
E (0–19%)	Male = 0 Female = 0	Male = 0 Female = 0	Male = 1 Female = 0	Male = 0 Female = 0

Table 10: Students' project grades based on flipped classroom approach by groups

Table 10 shows marks for student projects using the flipped classroom approach based on group, along with detailed gender distribution scores. The results show that most students in each group scored grades A and B. Six students in Group 1 received grade C, while one student in Group 3 received grade E (due to absence).

Grade	Male	Female	Total
A (80–100%)	42	37	79
B (60–79%)	32	16	48
C (40–59%)	5	1	6
D (20–39%)	0	0	0
E (0–19%)	1	0	1
Total	80	54	134

Table 11: Summary of students' project grades

Table 11 summarizes the students' analytical thinking performance based on group project marks. Most male students receive A and B grades, with one male student receiving an E due to absenteeism. Meanwhile, most female students received A and B grades. Overall, all students can utilize group project tasks because the majority have high and above-average analytical thinking scales when assessed based on their group project marks. Figure 5 depicts the outcome of students' analytical thinking skills based on group project presentations.

Figure 5: Project presentation grade distribution

B. Results of the Student Satisfaction Survey

Following that, we analyzed students surveys using three-points Likert scales to measure their satisfaction with the flipped classroom approach. According to the survey results, most students were pleased with the flipped classroom course plan (Figure 6).

	1	2	3	4	5	6	7	8	9	10	11	12
Not Satisfied (%)	5	5	0	0	0	5	0	0	0	0	0	0
Satisfied (%)	10	10	17	6	0	24	73	50	60	55	33	60
Very Satisfied (%)	85	85	83	94	100	71	27	50	40	45	67	40

Figure 6: Satisfaction survey result

Conclusion

In this pilot study, the participating students were guided to solve complex business problems using analytical thinking skills through 10 hands-on lab sessions. Analytical thinking abilities are required and in high demand, particularly when solving BDA tasks. Participating students have demonstrated their ability to compare different sources of information, transform data into a meaningful format, use their analytical thinking skills to break down complex problems into manageable components, and propose an appropriate solution to the problem.

The final project presentation has shown that students were able to interpret data and perform descriptive analytics and forecasting using the provided HR dataset. Furthermore, students were able to identify hiring strategy issues and hidden patterns in the dataset, generate insight into action, and propose a reliable solution to the new hiring strategy, resulting in quality decision-making for business analytics. According to the results of the experiment, flipped classroom approach is successful in developing students' analytical thinking skills. The evaluation enabled researchers to:

- construct meaning through identified relevant TLA
- students and instructors have a more fulfilling and successful TLA experiences
- determine the best solution and provide quality decision-making

Acknowledgments

References

Amaliah, A. (2020). Implementation of Edpuzzle to Improve Students' Analytical Thinking Skill in Narrative Text. *Prosodi, 14*(1), 35-44.

Amer, A. (2005). *Analytical thinking*: Pathways to Higher Education.

Anderson, L. W., & Sosniak, L. A. (1994). *Bloom's taxonomy*: Univ. Chicago Press Chicago, IL, USA.

Azid, N., & Md-Ali, R. (2020). The effect of the successful intelligence interactive module on Universiti Utara Malaysia students' analytical, creative and practical thinking skills. *South African Journal of Education, 40*(3).

Aziz, N., Abdullah, M. H. A., Osman, N. A., Musa, M. N., & Akhir, E. A. P. (2023). *Predictive Analytics for Oil and Gas Asset Maintenance Using XGBoost Algorithm.* Paper presented at the International Conference on Emerging Technologies and Intelligent Systems.

Aziz, N., Abdullah, M. H. A., & Zaidi, A. N. (2020, 8-9 Oct. 2020). *Predictive Analytics for Crude Oil Price Using RNN-LSTM Neural Network.* Paper presented at the 2020 International Conference on Computational Intelligence (ICCI).

Aziz, N., Akhir, E. A. P., & Ali, N. F. (2020). Innovative Teaching for Hands On Learning: Big Data Analytics Courses for UTP Undergraduates. In *Teaching and Learning Innovation Festival (TLIF) Proceedings 2020*.

Chusni, M., Saputro, S., & Rahardjo, S. (2020). *The Conceptual Framework of Designing a Discovery Learning Modification Model to Empower Students' Essential Thinking Skills.* Paper presented at the Journal of Physics: Conference Series.

Elmaadaway, M. A. N. (2018). The effects of a flipped classroom approach on class engagement and skill performance in a blackboard course. *British Journal of Educational Technology, 49*(3), 479-491.

Fisher, R., LaFerriere, R., & Rixon, A. (2020). Flipped learning: An effective pedagogy with an Achilles' heel. *Innovations in Education and Teaching International, 57*(5), 543-554.

Heiss, E. M., & Oxley, S. P. (2021). Implementing a flipped classroom approach in remote instruction. In: Springer.

Hussain, K., Salleh, M. N. M., Talpur, S., & Talpur, N. (2018). Big Data and Machine Learning in Construction: A Review. *International Journal of Soft Computing and Metaheuristics*.

Khan, K. S., Kunz, R., Kleijnen, J., & Antes, G. (2003). Five steps to conducting a systematic review. *Journal of the royal society of medicine, 96*(3), 118-121.

Kim, J. e., Park, H., Jang, M., & Nam, H. (2017). Exploring flipped classroom effects on second language learners' cognitive processing. *Foreign Language Annals, 50*(2), 260-284.

Long, T., Cummins, J., & Waugh, M. (2017). Use of the flipped classroom instructional model in higher education: instructors' perspectives. *Journal of computing in higher education, 29*(2), 179-200.

Miharja, F. J., Hindun, I., & Fauzi, A. (2019). Critical thinking, metacognitive skills, and cognitive learning outcomes: a correlation study in genetic studies. *Biosfer: Jurnal Pendidikan Biologi, 12*(2), 135-143.

Mohamed, H., & Lamia, M. (2018). Implementing flipped classroom that used an intelligent tutoring system into learning process. *Computers & Education, 124*, 62-76.

Montaku, S. (2011). *Results of analytical thinking skills training through students in system analysis and design course.* Paper presented at the Proceedings of the IETEC'11 Conference.

Nuroso, H., Siswanto, J., & Huda, C. (2018). Developing a learning model to promote the skills of analytical thinking. *Journal of Education and Learning (EduLearn), 12*(4), 775-780.

Permana, T. I., Hindun, I., Rofi'ah, N. L., & Azizah, A. S. N. (2019). Critical thinking skills: The academic ability, mastering concepts, and analytical skill of undergraduate students. *JPBI (Jurnal Pendidikan Biologi Indonesia), 5*(1), 1-8.

Prihandini, D. R. Efektivitas Model Pembelajaran Inkuiri Disertai Concept Mapping Terhadap Kesadaran Metakognitif Dan Penguasaan Konsep Biologi Siswa Kelas Xi Man 1 Jembe.

Prohoroff, A. S. (2016). How to Effectively "Flip" Your Classroom: Issues in Distributed Learning and Best Practices.

Ranjan, J., & Foropon, C. (2021). Big data analytics in building the competitive intelligence of organizations. *International Journal of Information Management, 56*, 102231.

Rossi, R., & Hirama, K. (2022). Towards a Conceptual Approach of Analytical Engineering for Big Data. *arXiv preprint arXiv:2201.05754*.

Spaska, A. M., Savishchenko, V. M., Komar, O. A., & Maidanyk, O. V. (2021). Enhancing Analytical Thinking in Tertiary Students Using Debates. *European Journal of Educational Research, 10*(2), 879-889.

Sulejmani, A., & Xhaferi, B. (2020). Techniques Which Promote Critical Thinking in ELT– A Study Conducted in High Schools of Skopje. *PALIMPSEST/ПАЛИМПСЕСТ, 5*(9), 253-263.

Talpur, N., Abdulkadir, S. J., Alhussian, H., Hasan, M. H., Aziz, N., & Bamhdi, A. (2022). Deep Neuro-Fuzzy System application trends, challenges, and future perspectives: a systematic survey. *Artificial Intelligence Review*. doi:10.1007/s10462-022-10188-3

Ulaş, İ. (2021). Online course satisfaction in a holistic flipped classroom approach. *Journal of Educational Technology and Online Learning, 4*(3), 432-447.

Uzunboylu, H., & Karagozlu, D. (2015). Flipped classroom: A review of recent literature. *World Journal on Educational Technology: Current Issues*, 142-147.

Wulandari, I. G. A. P. A., & Puspadewi, K. R. (2020). Efektivitas Perangkat Pembelajaran Matematika Dengan Modified Guided Discovery Learning Untuk Mengembangkan Kemampuan Analisis Siswa SMK. *Jurnal Pendidikan Matematika Undiksha, 11*(2).

Zou, D. (2020). Gamified flipped EFL classroom for primary education: Student and teacher perceptions. *Journal of Computers in Education, 7*(2), 213-228.

Zuber, W. J. (2016). The flipped classroom, a review of the literature. *Industrial and Commercial Training*.

Visual Representation-Based Creative Problem-Solving

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

Engineering students need to develop creative thinking skills to confront contemporary problems. While many creative problem-solving (CPS) strategies are developed, a convergence strategy to come to the single solution still remains a priority. This is partly due to the lack of creative educational tools that can be readily adapted to various educational settings. Visual literacy was suggested as an augmented way of promoting creativity through creative thinking and deep reflection on what students experience when they draw or view images. However, visual literacy was not fully implemented into engineering education yet. To this end, visual presentation-based CPS strategies are designed in a way that promotes student engagement and creativity in an image-rich environment. Particularly, visual representation using rough drawings is designed to include five essential stages, namely fact-finding, problem-finding, idea-finding, solution-finding and acceptance-finding. A series of CPS exercises in engineering problems start with critical reflection in which students identify the engineering problem (fact-finding); reflect on what they have already learned, and then undertake active inquiry and deep research on subject matter (problem-finding); brainstorming (idea-finding) that propels imaginative and divergent thinking from different perspectives; visualization and creation of unorthodox creative solutions (solution-finding); and contextualization linking between creative ideas and the underlying principle of the subject (acceptance-finding). The initial outcomes are positive and highlight visual representation as a new and authentic experience and creative and thought-provoking processes that allow students to better understand the subject, rather than memorize the equations and key characteristics.

Keywords: Creative Problem-Solving, Visual Representation, Engineering Learning, Critical Reflection

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Introduction

Contemporary problems are not explicitly defined and have multiple possible causes that are unlikely to be solved by traditional means. To efficiently solve such problems, engineering students need to develop creative thinking skills where creative problem-solving (Wilde, 1993; Kazerounian, 2007; Stouffer, 2004; Charyton, 2021) should be prioritized in engineering curricula. Recognizing this contemporary demand, the accreditation board for engineering and technology (ABET) 2020-2021 criteria emphasized engineering curriculum by identifying creative problem-solving skills as an essential component for improving the future of engineering and engineering education. In response to these trends, engineering courses are being designed to incorporate more innovative, creative problem-solving skills. To improve and expand creative problem-solving opportunities during four-year college education, various pilot studies have been conducted to reform the learning environment within regular courses to affect the students' creative problem-solving skills (Wilde, 1993). However, the question remains as to how students can be creatively motivated, practice, and exercise out-of-the-box thinking within regular courses. Many ideas and strategies for creative problem-solving (CPS) have been developed since Osborn (1963) integrated creative skills into solving problems. However, literature reviews (Zheng, 2013; Oson, 2018) indicate that more systematic research needs to support students' generic skills and knowledge construction through CPS.

Creative problem-solving (CPS) is a cognitive process in finding ideas and alternatives to overcome any barriers in original ways when an existing process fails. Particularly, CPS involves balanced thinking processes between convergent (generating one correct solution to posed problems) and divergent thinking (generating multiple solutions to posed problems). Current engineering education settings still prioritize convergent strategies where students use linear thinking, rules, and structured processes to come to the one "right" solution. While, in many cases, this strategy is necessary, real life is complex and imprecise enough that it is unrealistic to think that problems have only one solution. Given that divergent (or creative) thinking is a high priority for our future engineers, today's engineering students should be well trained to come up with ideas culturally and tackle problems in creative ways. In this regard, the critical challenge lies in how to effectively infuse CPS into the engineering classrooms without compromising the existing standards and how to overcome barriers that impede the integration of CPS into engineering education.

Visual representation for creative problem-solving strategy

Typical CPS model involves five stages (Zheng, 2013), namely 1) fact-finding, 2) problem-finding, 3) idea-finding, 4) solution-finding and 5) acceptance-finding. At the phase of "fact/problem finding", students will identify problem or challenge and start to collect information and develop a clear understand of it. The "idea finding" phase is to generate ideas to answer the challenging questions. The "solution/acceptance finding" phase shifts from ideas to solutions in which convergent thinking can be used to narrow ideas down to the most suitable solution. A unique feature of the CPS strategy is to first involve a divergent thinking phase in which one generates lots of ideas and then moves on to a convergent thinking phase in which only the most promising ideas are selected for further exploration. However, engineering students are not well trained to perform a series of creative problem-solving for engineering problems in regular classroom settings. In this context, visual literacy into CPS model can be integrated to facilitate CPS exercises by making the seamless transition from divergent thinking phase to convergent thinking phase.

Note that visual literacy can promote students' synectic exercises as part of spatial reasoning and manipulation experience. Pun (2007) described that "problem-solving in art involves divergent thinking and multidisciplinary knowledge which in turn nurture creativity". Furthermore, visual literacy involves awareness of and reflection on what students experience when they draw or view images, videos and other forms of multimedia.

As a creative synectic exercise we propose 'visual representation' (Baaki, 2019; Huybrechts, 2012) that takes many different forms like sketches, models, prototypes, outlines, concept maps, tables, wireframes, etc. In this project, visual representation is defined as the rough or mockup drawings to visually communicate and articulate design ideas. Currently, visual representation is used as a valued practice for capturing or translating desired information into visual forms in a speedy but creative way. That said, many visual representations can be initiated to interpret needs and problems and visually present their conceptualization with hand-drawn representations or graphic tools. At a first step, visual representation can simply display 'the idea' and more ideas can then be refined and iterated. Also, multiple representations can be performed to reach a single idea. Unsuitable ideas can simply be crossed out and newer iterations can be drawn alongside the discarded drawings. In this way, the practice of visual representations will stimulate creative thinking skills by paving new ways for idea generation in an individual generation-reflection-interpretation cycle. In the engineering classrooms, students can easily apply visual representation to face many engineering problems which allow students for grasping the underlying principles of the problems, reflecting and interpreting them from their own experiences and perspectives, and then transforming them into practical solutions.

Example of student visual representation

Initial implementation of visual representation has been applied to microelectronic course for electrical and computer engineering students. Students learn the principle of pn diodes that are used for numerous modern electronic devices such as light emitting diodes (LEDs), rectifiers, others. The principle of pn didoes contains numerous abstract formulas and principles. Visual representation was pilot-tested for students to master the underlying principle of pn diode physics. One of example of visual representation of pn diode is shown in Figure 1.

Figure 1: Visual representation illustrating pn diode.

Student essay for visual representation: "This visual representation describes a diode in relation to a pn-junction. When the positive end of the terminal, cathode, is connected to the p-type junction and when the negative end of the terminal, anode, is connected to the n-type junction it creates a forward bias within the circuit. A forward bias within the circuit means that there is little resistance within the circuit which creates current. When the cathode and the anode switch junctions to where the anode is connected to the p-type and the cathode is connected to the n-type, it creates a reverse bias. A reverse bias creates a lot of resistance in the circuit to where there is little or no current flow. Within my drawing we have two main characters: the cat named "Cathode" and the bunny named "Anode." Cathode and Anode are participating in a two-man bike race. Each set of pedals represents the n-type or the p-type junction. In the start of the race, Cathode is connected to the p-type junction and Anode is connected to the n-type junction. This creates the forward bias from the first paragraph, and they start to win the race because of the flow of current. They are going so fast Anode wants to try to steer so he jumps up front, reversing the connection. Now Anode is connected to the p-type junction and Cathode is connected to the n-type junction. This creates no current and a resistance barrier that the characters end up crashing into. This illustration is my attempt at a creative way to show a pn-junction."

Figure 2 shows another example showing the principle of metal oxide field effect transistors (MOSFET) that is composed of source, gate and drain. MOSFET is widely used for many modern devices such as switch mode power supplies, drivers and so on. The understanding of operational principle lies in a qualitative understanding of how MOSFET operates. In this case, visual representation method has been applied where students visualize the principle of MOSFET, shown in Figure 2. Student clearly show the role of source, gate and drain where the MOSFET current flow is clearly visualized.

Figure 2: Visual representation illustrating the working principle of metal-oxide field effect transistor (MOSFET).

Student surveys from pilot study

The overwhelming majority of the comments received highlighted visual representation as a new and authentic experience in engineering education. As seen in students' visual

representation, we have observed students' CPS in translating abstract concepts into tangible ideas. Below are comments from students.

> It gives us the opportunity to do something other than just solving circuits. It also encourages us to do more research on the subject and learn more about the process itself rather than just memorizing the equations that are given. It also lets us do something creative rather than just solving problems. I would like to be able to do the visual representation and essays again in the future, if given the opportunity.

> I think that the visual representation essay project that was presented today in class was very creative and thought provoking. This activity was a good way to visualize metal oxide semiconductor field effect transistor (MOSFET) after studying its characteristics and operation. I believe that such projects help students to better understand the material and memorize the key characteristics and models of a given device. It was a very beneficial experience.

> I found the visual representation to be fun and a good way to better understand how MOSFET's work. It was a nice change to be able to apply some artistic creativity to engineering concepts, something that we rarely get the chance to do. I feel that the engineering program sometimes overlooks creativity as one of the pillars of engineering. Personally, I found that I got the most out of this project from creating my own visual presentation essay, not necessarily from seeing everyone else's. In order to simplify the concept of a MOSFET so that I could create a visualization, I actually had to do a bit of research and I felt that I had a much better understanding of how a MOSFET works after I completed my visual representation essay. I really liked this assignment and I think it's something that you should continue with in future classes.

> I loved how creative other students were and I am probably going to be doing this on my own for other classes. You truly understand a topic when you can explain it and I like to refer back to my notes whenever I can so this will definitely help with studying in the future.

Conclusions

Visual representation method has been implemented to engineering microelectronic course where lectures were firstly delivered to students and then students were tasked to work on the engineering problems with visual representations. In this case, many different visual representation formats can be used including rough sketches, pictures and other media formats. The initial implementation of visual representation to engineering course showed the students' positive responses toward visual representation where students enjoy an involvement of creating visual representation and consider it a creative way to develop creative thinking skills. In addition, students are willing to apply such visual representation method to other courses. Further evaluation including students' creative problem-solving skillsets – fluency (number of ideas), flexibility (different types of ideas), and originality, application to various hands-on laboratory projects; and students' perception, academic and personal achievement, retention, barriers and enablers through creative problem-solving will be pursued.

Acknowledgements

References

Baaki, J. and Luo, T. (2019). Instructional designers guided by external representations in a design process. *International Journal of Technology and Design Education, 29, 513-541*.

Charyton, C., Jagacinski, R. J., Merrill, J. A., Clifton, W., & DeDios, S. (2011). Assessing creativity specific to engineering with the revised creative engineering design assessment. *Journal of Engineering Education*, *100, 778-799*.

Kazerounian, K., & Foley, S. (2007). Barriers to creativity in engineering education: A study of instructors and student perceptions. *Journal of Mechanical Design, 129, 761–768*.

Osborn, A. F. (1963). Applied Imagination: Principles and Procedures of Creative Problem Solving (3rd Revised ed.). New York: Scribners.

Oson, R. Building a Physical Model to Teach Creative Problem-solving Skills in Online and Live Courses. (2018). *2018 ASEE Annual Conference & Exposition, Paper ID #21814*.

Pun, S. K. (2007). Visual Literacy for Engineering Undergraduates. *International journal of education and information technologies. 1, 9-15.*

Stouffer, W. B., Russel, J., & Oliva, M. G. (2004). Making the strange familiar: Creativity and the future of engineering education. *Proceedings of the 2004 ASEE Annual Conference and Exposition*, Salt Lake City, UT.

Wilde, D. J. (1993). Changes among ASEE creativity workshop participants. *Journal of Engineering Education, 82, 167–170.*

Zheng, W., Wang, L., and Jiangjun, Y. (2013). Correlation Analysis of Scaffolding Creative Problem Solving Through Question Prompts with Process and Outcomes of Project-Based Service Learning. *120th ASEE Annual Conference & Exposition, paper ID #6169.*

The Beginning of the End: How the Supreme Court is Poised to Whittle Away of the Right to Privacy

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

The United States Supreme Court (hereinafter "Court"), illegitimate in both composition and decision-making, needs to be "checked" by the other branches of government, pursuant to our federal system of Separation of Powers among the three branches of government. Both the executive and legislative branches of the federal government have powers to "check" the judicial branch and should exercise these powers before the Court's majority undoes decades of jurisprudence that secured and expanded the rights of women, minorities, and the underprivileged and underrepresented. The Court, in *Dobbs v. Jackson Women's Health Organization*, has demonstrated its willingness to disrespect and disregard longstanding well-established precedent and the doctrine of *stare decisis*. This overturning of precedent will continue and will result in a drastic dismantling of the rights, liberties, and privileges of millions of Americans. This article posits that the executive branch should "pack the Court" or the Congress should enact laws that provide federal protection for the Right to Abortion and, thereby, demonstrate that the other branches of government will exercise the powers given to them by the Constitution as a check on abuses of power by other co-equal branches of government. If this decision is allowed to stand unchecked, other similar decisions will follow dismantling other privacy rights, such as gay marriage and many other substantive rights now protected by the Due Process Clause of the Fourteenth Amendment. As a result, the poor, women, children, LGBTQ+, and other similarly situated demographics will be adversely impacted for decades to come.

Keywords: Supreme Court, Right to Privacy, Right to Abortion

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Introduction

On June 23, 2022, according to a GALLUP poll from June 1-20, the United States Supreme Court (Court) had reached an historic low in the eyes of the public with an approval rating of 25% (Jones, 2022). This number was down from an already low rating a year ago of 36%. Yet, based on recent decisions, most notably the Court's decision in *Dobbs v. Jackson Women's Health Organization*, which was decided on June 24, 2022, this Court is committed to undoing well-established precedent, albeit contrary to the will of the majority of the population (Pew Report, 2022). And, this Court, which many now label as "illegitimate" due to the controversial appointments made during the Trump presidency, will not stop with the woman's right to privacy in choosing to terminate a pregnancy. Thus, it is imperative that the other branches of the federal government—Congress and the President—exercise their powers conferred in the United States Constitution as a "check" on the judicial branch of government.

In this article, I will outline how the Supreme Court's decision to overturn longstanding precedent amounts to a lack of respect for the doctrine of *stare decisis* which, if left unchecked, will continue to disrupt the justice system and compromise the democracy. I discuss reasons specifically articulated by at least one (1) of the justices on the Court indicating the *Dobbs* decision is the beginning of the dismantling of the "Right of Privacy" and, possibly other important Constitutional protections, by the current Supreme Court. I proffer recommendations as to why and how the Executive and Legislative branches, both co-equal to the Supreme Court, should utilize powers granted in the Constitution to "check" the overreach by the Supreme Court, thereby reaffirming the Separation of Powers structure of the federal government. As part of this discussion, I posit how institutions of higher education can play an integral role in galvanizing the citizens of the United States to pressure their elected officials, for example, members of Congress and state legislatures, to make decisions and vote based on the will of the people instead of along political party lines. Educating undergraduate students majoring in social policy and public policy through more experiential learning internships, externships, and clinical education will equip young graduates to be job ready for careers in advocacy. While they often gain refined skills in Master and Doctorate level programs, Bachelor level graduates need these same skills now more than ever as they are on the front lines in the fight to protect the individual liberties and freedoms of the under-represented and un-represented persons in American society today.

The Right of Privacy and the Protections it Affords All Americans

No language in the United States Constitution specifically establishes a "Right of Privacy." However, the Right of Privacy is a well-settled protected federal right established by United States Supreme Court precedent. Specifically, in 1965, in *Griswold v. Connecticut*, the United States Supreme Court recognized as a "legitimate" right, the right of privacy (Griswold, 1965). The case involved two Connecticut statutes that criminalized contraceptives—General Statutes of Connecticut 53-32 criminalized the use of any drug or instrument to prevent conception and General Statutes of Connecticut 54-196 criminalized assisting, abetting, counselling, causing, hiring, or commanding the use of contraceptives to prevent pregnancy (Griswold, 1965, p. 480). In determining the statutes were unconstitutional, the Court opined that the "specific guarantees of in the Bill of Rights have penumbras, formed by emanations from those guarantees that help give them life and substance. Various guarantees create zones of privacy" (Griswold, 1965, p. 484). The *Griswold* decision's recognition of the "Right of Privacy" as constitutionally protected has

since transformed and, for the most part, expanded substantive due process protections under the Fourteenth Amendment with respect to what has been termed as some of the most private decisions related to self-actualization and autonomy including the right to marry irrespective of race—*Loving v. Virginia* (1967)—or gender—*Obergefell v. Hodges* (2015), the right to engage in private consensual sexual conduct—*Lawrence v. Texas* (2003), the right to refuse medical treatment—*Cruzan v. Director, Missouri Department of Health* (1990), and, until recently, the right to terminate a pregnancy—*Roe v. Wade* (1973) (Stewart, 2017).

The *Dobbs* Decision and its potential Long-term Impact on the Right to Privacy

Dobbs involved a Mississippi statute, Miss. Code. Ann. § 41-41-191 (2018), which bans abortions, except in a medical emergency or in the case of severe fetal abnormality, after fifteen (15) weeks of the pregnancy (Dobbs, 2022, p. 2243). Jackson Women's Health Organization (the "Clinic"), an abortion clinic located in Jackson, Mississippi, filed a federal lawsuit on the day the statute was enacted, challenging the statute as a violation of the constitutional right to abortion (Dobbs, 2022, p. 2244). The District Court granted summary judgment in favor of the Clinic and enjoined enforcement of the statute because "viability marks the earliest point at which the State's interest in fetal life is constitutionally adequate to justify a legislative ban on nontherapeutic abortions and that 15 weeks' gestational age is prior to viability" (Dobbs, 2022, p. 2244). The Court of Appeals for the Fifth Circuit affirmed the District Court's decision (Dobbs, 2022, p. 2244). The Supreme Court granted certiorari to resolve the issue of whether all pre-viability prohibitions to elective abortions are unconstitutional (Dobbs, 2022, p. 2244).

Despite the fact that it was unnecessary for the Court to overrule *Roe* and *Casey* to decide the issue before the Court, the majority in *Dobbs* overruled these cases and concluded that the right to abortion is not deeply rooted in our nation's history and tradition, and, thus, not protected by the United States Constitution (Dobbs, 2022, pp. 2242, 2311 (Roberts, C.J., concurring). The majority completely disregarded the nearly 50 years during which the right to abortion, established in *Roe* and *Casey*, has been protected and the numerous cases in which the Court has followed *Roe* and *Casey* as precedent. And, more importantly, the majority ignored the fact that the right to terminate a pregnancy, which is one of the most private of personal decisions, involves and is encompassed in those rights of personal privacy in those zones of privacy that exist in the Constitution although not specifically enumerated (Roe, 1973, p. 153). The "Right of Privacy" although not enumerated is acknowledged in the Ninth Amendment to the United States Constitution. The "Right of Privacy" arises from the "specific guarantees in the Bill of Rights [which has] penumbras, formed by emanations from those guarantees that help give them life and substance" (Griswold, 1965, p. 484).

The *Dobbs* decision amounts to an abdication of the Court's responsibility to respect and preserve well-established and longstanding precedent. "*Stare decisis* contributes to the integrity of our constitutional system of government by ensuring that the decisions are founded in the law rather than in the proclivities of individuals" (Dobbs, 2022, p. 2333 (Breyer, J., dissenting). Under the doctrine of stare decisis, the Court has a duty to follow precedent and should not overrule a decision, without appropriate justification (Dobbs, 2022, p. 2334). It is not enough reason to say "that the precedent was wrongly decided" to justify overturning it (Dobbs, 2022, p. 2334--quoting *Halliburton Co. v. Erica P. John Fund, Inc.*, 573 U.S. 258, 266). As explained by the dissenting justices, before overruling longstanding precedent, the Court should consider traditional *stare decisis* factors. One or more of the *stare decisis* factors should be present in order to justify overruling a decision. Specifically, there

should be either: "1) a change in legal doctrine that undermined or made obsolete the earlier decision; 2) a factual change that had the same effect; or 3) an absence of reliance because the earlier decision [is] less than a decade old" (Dobbs, 2022, p. 2334).

None of the factors that warrant overturning precedent were present to justify overruling *Roe* and *Casey*. As to the first and second factors—with respect to a change in law or a change in fact that undermined or made obsolete the decision—no such change in law or fact has occurred (Dobbs, 2022, p. 2337-38). The majority essentially acknowledges that there has been no change in law or fact; instead, according to the majority, *Roe* was "egregiously wrong" and cannot stand (Dobbs, 2022, p. 2265). However, as explained by the dissenting justices, both *Roe* and *Casey* are longstanding precedent and nothing has changed either factually or legally to justify a radical reshaping of the law (Dobbs, 2022, p. 2338). In fact, subsequent decisions have reinforced the core holdings of *Roe* and *Casey* that individuals have a constitutional right to "make [their] own choices about intimate relationships, the family, and contraception" (Dobbs, 2022, p. 2338). *Roe* and *Casey*, along with other important substantive due process cases such as *Griswold v. Connecticut* and *Loving v. Virginia*, form the legal foundation for other decisions that protect privacy rights such as the protection for same-sex intimate relationships (Lawrence, 2003) and the protection for same-sex marriage (Obergefell, 2015). Make no mistake, the removal of federal constitutional protections from the right to abortion puts these other privacy rights in jeopardy as well.

As to the third factor, which requires that there has been an absence of reliance on the earlier decision because the decision is less than a decade old, this factor certainly was not present to justify overturning a long-standing fifty-year-old decision that is well-established precedent which has been relied upon and followed for decades. "By overruling *Roe*, *Casey*, and more than 20 cases reaffirming or applying the constitutional right to abortion, the majority abandoned *stare decisis*, a principle central to the rule of law" (Dobbs, 2022, p. 2333).

Although the *Dobbs* majority asserted that five (5) factors weighed in favor of overruling *Roe* and *Casey*, the real motivating factor for the decision was the belief by the majority that *Roe* was wrongly decided (Dobbs, 2022, p. 2265). However, the arguments advanced by the majority as to how and why *Roe* was wrong do not ring true. And, if these assertions are allowed to stand as the law of the land, other rights, liberties, and protections are now in jeopardy of being overturned by the Court. There is no guarantee that the dismantling of the right of privacy will end with a woman's right to choose to terminate a pregnancy. In fact, there is reason to believe that other rights are in jeopardy that the majority does not believe to be deeply rooted in our nation's history and tradition. Specifically, the right to marry that was established in *Loving v. Virginia* and, extended to same-sex couples in *Obergefell v. Hodges* do not meet the majority's "deeply rooted" definition (Dobbs, 2022, p. 2331-33).

The *Dobbs* decision is not just about the right of a woman to choose to terminate a pregnancy. The Right to Privacy is at risk now more than ever (Dobbs, 2022, p. 2331-34). Supporters and defenders of the Right to Privacy need to carefully consider the meaning of the words of Justice Clarence Thomas, in his separate concurring opinion in *Dobbs*, to be a promise and a foreshadowing of what is to come:

> As I have previously explained, "substantive due process" is an oxymoron that "lack[s] any basis in the Constitution." *Johnson*, 576 U.S. at 607–608, 135 S. Ct. 2551 (opinion of THOMAS, J.); see also, *e.g., Vaello Madero*, 596 U.S., at ——, 142 S. Ct., at 1545 (THOMAS, J., concurring) ("[T]ext and history provide little support for

modern substantive due process doctrine"). "The notion that a constitutional provision that guarantees only 'process' before a person is deprived of life, liberty, or property could define the substance of those rights strains credulity for even the most casual user of words." *McDonald v. Chicago*, 561 U.S. 742, 811, 130 S. Ct. 3020, 177 L.Ed.2d 894 (2010) (THOMAS, J., concurring in part and concurring in judgment); see also *United States v. Carlton*, 512 U.S. 26, 40, 114 S. Ct. 2018, 129 L.Ed.2d 22 (1994) (Scalia, J., concurring in judgment). The resolution of this case is thus straightforward. Because the Due Process Clause does not secure *any* substantive rights, it does not secure a right to abortion (Dobbs, 2022, p. 2301).

Of particular significance is the foreshadowing of what is to come by the dissenting justices in *Dobbs*. As the dissent points out, the rights that were protected by *Roe* and *Casey* were born out of decades of other decisions that established and settled protections involving bodily integrity, familial relationships, contraception, and procreation (Dobbs, 2022, p. 2326-30). As explained by the dissenting justices, if a right that was recognized as protected fifty years ago, is the case with the right of a woman to choose, these other rights, like abortion are not mentioned in the Constitution and, likewise, do not seem to meet the definition of "deeply rooted in history" either (Dobbs, 2022 p. 2332-34).

Consequences of Dobbs: Impoverished, Unrepresented and Unserved Communities Suffer

Ultimately, the *Dobbs* decision, and future decisions that will likely flow from it, will undue the progress that has been made in this country to protect the rights and liberties of people of color, women, and the impoverished (Center for Reproductive Rights, 2021). The *Dobbs* decision had an immediate impact on the health and well-being of women. Immediately after the decision, so-called trigger laws of a number of states limited or banned abortions (Kitchener, 2022). A number of states, anticipating a conservative swing in the Court's decisions due to the recent appointments by President Trump, enacted "trigger laws" that either banned abortions altogether or drastically reduced their legality in all but extremely extraordinary and exceptional circumstances (Center for Reproductive Rights, 2019). For example, after Roe became the law of the land, Arkansas, Kentucky, Louisiana, Mississippi, Missouri, North Dakota, South Dakota, and Tennessee passed laws that would immediately ban abortions in these states should Roe ever be overturned (Center for Reproductive Rights, 2019, p. 4). Moreover, a number of states already had laws that banned abortion but were unenforceable because of *Roe* (Center for Reproductive Rights, 2019). Thus, with the overturning of Roe, states like Alabama, Arizona, Arkansas, Delaware, Michigan, Mississippi, New Mexico, Oklahoma, West Virginia, and Wisconsin can now seek to enforce their state laws that ban abortion (Center for Reproductive Rights, 2019). And, as expected, the states with pre-Roe abortion bans and "trigger bans" immediately began efforts to enforce the laws that led to the closing of a host of clinics that performed abortions and provided other reproductive and healthcare services for women (Landry, 2022). For example, in Louisiana, the state Attorney General, Jeff Landry, tweeted social media after the Dobbs decision was released: "Because of #SCOTUS ruling in #Dobbs, Louisiana's trigger law banning #abortion is now in effect. #lagov." Following this tweet, various organizations filed lawsuits and sought to enjoin the statewide enforcement of recently codified Louisiana statutes that criminalize abortions. However, due to confusion about the law and its application, even after injunctions staying enforcement, healthcare providers ceased performing abortions for fear of prosecution (Cline, 2022). Healthcare professionals, in many cases, are now unable to properly treat patients presenting with serious health concerns such

as ectopic pregnancies or pregnancy loss for fear of prosecution (Kitchener, 2022). Furthermore, Louisiana clinics that provided abortions and other important health-related services were forced to close (The "Can I Get" Project, 2022). Similarly, in Mississippi, the home state of Jackson Women's Health Organization, which was the only clinic in the state of Mississippi that provided abortions was forced to close (The "Can I Get" Project, 2022).

In addition, women's healthcare, and healthcare in general, is being impacted in a number of unanticipated and unexpected ways and is adversely interfering with the most private and sacred relationship between doctor and patient (Mengesha, 2022). For example, "obstetrics and gynecology training programs are responsible for ensuring that all graduates meet the Accreditation Council for Graduate Medical Education requirement to include integrated abortion training as a routine experience[.] As more states ban and restrict abortion following the decision of *Dobbs v. Jackson Women's Health Organization*, many students and residents will be at risk of insufficient training to safely provide critical reproductive health" (Mengesha, 2022).

Healthcare providers find themselves struggling with how to counsel and treat patients in matters that involve important healthcare decisions related to the use of various contraceptives and life-saving measures that might inadvertently have the side effect of terminating pregnancies and thereafter be construed as "aiding and abetting" abortion (Mengesha, 2022). Furthermore, a number of clinics that provide healthcare to women, including other forms of birth control and health screenings, are now forced to close their doors, leaving their patients, who are primarily low-income or poor, immigrants, and racial and ethnic minorities, without any options for healthcare and treatment (Alfonseca, 2022; Mengesha, 2022).

Checks and Balances – The Co-Equal Branches of Federal Government need to Act

It is evident that the overturning of *Roe* and *Casey* is the direct result of the appointment of justices to the Court that have placed their own personal beliefs and views, as well as advancing their party's conservative agenda over preserving the validity and integrity of the Court's decisions and decision-making process. It is unseemly that six people have the power to make laws that are contrary to the will of the majority of the people. Yet, that is exactly what happened in *Dobbs* and will continue to happen if action is not taken to "check" the Supreme Court and "balance" the powers of this branch of the federal government.[1]

Our federal government is structured such that abuses of power by one branch do not go unchecked. Specifically, the system of "checks and balances" that is built into the United States Constitution, which establishes three co-equal branches in the federal government needs to be exercised. For the sake of the democracy, it is imperative that the other branches of the federal government exercise the powers specifically granted to them in the United States Constitution to demonstrate that one branch of government cannot and will not undo the rights and protections that have been secured and established for all citizens of this country, particularly women, minorities, the LGBTQ+, and other underrepresented groups in the United States. The federal government is structured so that no one branch of government is more powerful than the other. This structure includes a number of checks and balances that each branch has on the powers of the other branches in order to ensure that no one branch abuses its powers or attempts to establish a monarchy or autocracy. The President of the United States has the power to appoint judges, with the confirmation of Congress, and increases the number of justices that comprise the Supreme Court. Congress, which is the legislative branch of the federal government, has the power to enact new laws that would codify the right to abortion, thereby reinstating federal protection for the right.

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[1] Although beyond the scope of this article, one of the campaign promises of Donald J. Trump was that he would appoint Supreme Court Justices that would overturn the federal government's protection for the right to abortion. Thus, upon his election and confirmation as the Forty-fifth President, it was no surprise when a number of states began enacting so-called trigger laws that significantly restricted and banned the right within the respective states. These are referred to as "trigger laws" because they contain language making them effective immediately or soon thereafter a decision by the Supreme Court removing this right from federal constitutional protection, thereby making protection, if any, of the right of a woman to terminate a pregnancy dependent upon state law.

During the Trump's one-term presidency, the Supreme Court became a very different Court because of a drastic change in composition due to appointments by Trump. When Trump took office in 2017, he immediately nominated Neil Gorsuch to fill the position previously occupied by Antonin Scalia. Although Scalia died unexpectedly during the Obama administration and President Obama nominated Merrick Garland, the Republican-controlled Senate refused to confirm Garland claiming that because it was Obama's last year in office the seat should be filled by the next President. Again, in 2018, upon the retirement of Anthony Kennedy, Trump nominated, and the Senate confirmed Brett Kavanaugh, thereby establishing the begin of a conservative-leaning majority. Although, because of a consistent respect for the doctrine of stare decisis and precedent, Roberts was not a predictable conservative in that in a key abortion law case, Roberts, while for different reasons, upheld abortion rights alongside the liberal-leaning justices (Russo, 2020). However, a conservative super-majority was established in 2020 when, after the death of Ruth Bader Ginsburg, Trump nominated and the Senate appointment Amy Coney Barrett to the Supreme Court. Even though 2020 was Trump's last year in office, the Republican-controlled Senate clearly backtracked from the position it held during Obama's last year in office with respect to the President's authority to appoint a Supreme Court justice (The White House, 2022).

Checks and Balances – The President

The President should act by packing the Court. The United States Supreme Court currently consists of nine justices appointed by a United States President and confirmed by the United States Senate pursuant to the United States Constitution (U.S. Const. Art. II, Section II). However, the Constitution does not designate the number of justices that are to comprise the Court and, the number of justices on the Supreme Court has changed over time (Carbonara, 2022). The initial Court was comprised of one chief justice and five associate justices. The number of justices comprising the Court changed a number of times; ultimately, landing on nine, which was set in 1869 (U.S. Supreme Court, n.d.). However, nothing prevents this number from being changed today in order to re-establish public confidence and trust in the Court's decision-making (Carbonara, 2022).

Upon his election to the office of President, Joseph Biden had the support of many members of Congress to "pack the court" and both houses of Congress were controlled by Democrats, signaling the real possibility, and even probability of success with getting Congressional approval to increase the number of justices on the Court. However, President Biden did not support such a change (Harris, 2022). Furthermore, now that Republicans have gained a majority of seats in the House of Representatives during the 2022 mid-term elections, it is not likely that even if Biden were to now seek to modify the number of justices that he would be able to secure Congressional approval (Carbonara, 2022).

Checks and Balances – Congress

Recently, Congress codified federal protection for the Right to Marry (Respect for Marriage Act 2022). As stated earlier in this article the United States Supreme Court established federal protection for the Right to Marry in *Loving v. Virginia*, and extended the Right to Marry to same-sex couples in *Obergefell v. Hodges*. However, in light of Justice Clarence Thomas' concurrence in *Dobbs*, calling on the Supreme Court to revisit the Right of Privacy protections established by the Supreme Court as fundamental rights in prior decisions, Congress took the preventative measure of exercising its constitutionally granted legislative power to enact a law to protect the Right to Marry. The Respect for Marriage Act, which repeals the Defense of Marriage Act previously declared unconstitutional, in *United States v. Windsor* because it only acknowledged as legitimate, unions between a man and woman, repeals and replaces provisions that do not require states to recognize same-sex marriages from other states. The Act now requires each state to give Full Faith and Credit with respect to marriages from out-of-state on the basis of sex, race, ethnicity, and national origin. On November 29, 2022, the Senate approved the Act as well. And on December 13, 2022, President Biden signed the Respect for Marriage Act into law (Respect for Marriage Act 2022).

Similarly, Congress needs to pass federal legislation to reinstate federal protection for the right to an abortion. As discussed in more detail above, several states have laws that now either ban or significantly limit a woman's right to an abortion. These laws have already had a devastating impact on the lives of thousands of women, their families, healthcare providers, and the medical profession. Absent some action by Congress, the adverse impact on women, particularly women of color and poor women, will continue to increase. Since the mid-term elections of 2022, the House of Representatives is now under Republican leadership. Thus, even with a Democratic-controlled Senate, getting legislation passed to provide federal protection for the right to an abortion will be challenging. However, institutions of higher

education have an opportunity to educate undergraduate students in shaping a narrative that drives voters to contact their elected officials to advocate for the passage of these laws.

Conclusion

However, there are no guarantees that a law passed by Congress will survive judicial review by the Supreme Court. Specifically, the Supreme Court, as the branch of government given the power to interpret cases arising under the Constitution, is the final arbiter of whether a law is consistent with the Constitution (U.S. Const. Art. III, Section 2). Thus, it is imperative that institutions galvanize grass roots campaigns to have the majority of Americans, who still value their right of privacy in making private decisions, to contact their elected government officials to advocate that these officials safeguard such privacy interests in Washington and in their various state legislatures.

Now that abortion rights are controlled by the state governments, and other privacy rights are potentially in peril, institutions of higher education in their Public Policy and Social Science Departments should implement a curriculum that teaches doctrine as well as provides simulated training and clinical training for students seeking careers in advocacy for legislation, voter registration, and election campaigns, and for judicial appointments. Students, concerned about protecting the rights of women, people of color, LGBTQ+, and other members of our community who are underrepresented by people in positions of political power and influence, need to be taught how to impact the legislative process by lobbying legislators, shaping narratives that influence public opinion, increasing participation in the electoral process by persons within these demographics, and galvanizing these persons to actively register to vote, vote, and run for political office.

Students also need to be educated about the United States Federal Court System, the United States Supreme Court in particular, and the direct impact of decisions made by these judges and justices on their everyday lives. While many Americans, even college students, and college-educated Americans have a general understanding of the power and influence held by elected officials, far too many do not understand the federal judicial system. Of particular importance is the fact that these judges and justices are appointed for life by elected officials, nominated by the President, and confirmed by the Senate. Thus, students need to know that their votes impact not only their lives, but the lives of generations to come.

Acknowledgements

References

Alfonseca, K. (2022), *Why Abortion Restrictions Disproportionately Impact People of Color*, ABC News, https://abcnews.go.com/Health/abortion-restrictions-disproportionately-impact-people-color/story?id=84467809

The "Can I Get" Project, https://www.canigetanabortioninlouisiana.com/about-this-website.html

Carbonara, G. (2022), Can Democrats Expand the Supreme Court and How Likely Is It? https://www.newsweek.com/can-democrats-expand-supreme-court-how-likely-it-1720256

Center for Reproductive Rights, *The Disproportionate Harm of Abortion Bans: Spotlight on* Dobbs v. Jackson Women's Health Organization (2021).

Center for Reproductive Rights, *What if Roe Fell* (2019), https://reproductiverights.org/wp-content/uploads/2021/12/USP-2019-WIRF-Report-Web_updated.pdf (Last visited January 30, 2023).

Cline, S., *Louisiana Abortion Ban Again Blocked by Judge* (AP News July 21, 2022).

Cruzan v. Director, Missouri Department of Health, 497 U.S. 261, 110 S. Ct. 2841 (1990).

Dobbs v. Jackson Women's Health Organization, 142 S. Ct. 2228 (2022).

Griswold v. Connecticut, 381 U.S. 479, 485, 85 S. Ct. 1678, 1682 (1965).

Harris, M., (2022), *How the President Could Counter a Rogue Supreme Court*, Slate https://slate.com/news-and-politics/2022/07/supreme-court-biden-pack-reform-conservatives-commission.html (Last visited February 1, 2023).

Jones, J., (2022), *Confidence in U.S. Supreme Court Sinks to Historic Low,* Gallup News https://news.gallup.com/poll/394103/confidence-supreme-court-sinks-historic-low.aspx (Last visited February 5, 2023).

June Medical Services L.L.C. v. Russo, 140 S. Ct. 2103 (2020).

Kitchener, C., Schaul, K., Kirkpatrick, N. & Tierney, L., Abortion is Now Banned or Under Threat in These States, The Washington Post (June 24, 2022).

Landry, J, Attorney General, State of Louisiana, *Letter to Louisiana State Medical Society* (June 29, 2022).

Lawrence v. Texas, 539 U.S. 558, 123 S. Ct. 2472 (2003).

Loving v. Virginia, 388 U.S. 1, 87 S. Ct. 1817 (1967).

Mengesha, B., Zite, N., Steinauer, J., *Implications of the Dobbs Decision for Medical Education: Inadequate Training and Moral Distress*, 328 JAMA 1697 (November 1, 2022).

Obergefell v. Hodges, 576 U.S. 644, 135 S. Ct. 2584 (2015).

Pew Research Center Report, *Majority of Public Disapproves of Supreme Court's Decision to Overturn* Roe v. Wade, (July 6, 2022), https://www.pewresearch.org/politics/2022/07/06/majority-of-public-disapproves-of-supreme-courts-decision-to-overturn-roe-v-wade/

Planned Parenthood v. Casey, 505 U.S. 833, 112 S. Ct. 2791 (1992).

Respect for Marriage Act, Pub. L. No. 117-228, 136 Stat. 4178 (2022). https://www.congress.gov/bill/117th-congress/house-bill/8404/text

Roe v. Wade, 410 U.S. 113, 93 S. Ct. 705 (1973).

Stewart, C.E., *How an Uncommonly Silly Law Led to a Host of Very Consequential Supreme Court Decisions*, 89 (October) NY St. B. J. 39 (2017).

Supreme Court of the United States (n.d.). Retrieved January 30, 2023 https://www.supremecourt.gov/about/institution.aspx.

U. S. Const. amend. IX.

The White House, *Remarks by President Biden on the Supreme Court Decision to Overturn* Roev. Wade (June 24, 2022), https://www.whitehouse.gov/briefing-room/speeches-remarks/2022/06/24/remarks-by-president-biden-on-the-supreme-court-decision-to-overturn-roe-v-wade/

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Identification of Character Values of Public and Private Junior High School Students in Rantau Selatan District

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

Character crisis in children is still an unresolved problem. Cases of drugs, bullying, sexual violence, and crime against children are often found in Labuhanbatu district. Although the government has issued a Government Regulation on Strengthening Character Education (PPK), the National Mental Revolution Movement (GNRM) program, and the implementation of Curriculum 13 in schools, the results have not yet shown the desired target. The root of the problem is actually not forming a good character so that the values of character and national insight in children are very low. Therefore, the purpose of this study was to identify what character values have been attached to students so that later they can be used as references for further research. This research was conducted in public and private junior high schools in Rantau Selatan District. The research method used is quantitative and the population is junior high school students in South Rantau District spread over 8 schools. The sample in this study was only seventh grade junior high school students to make it easier for researchers to carry out further research. The instrument and data collection technique used is a character test which will be distributed to class VII students to find out 18 character values in students.

Keywords: Character Value, Junior High School

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Introduction

Character is a person's identity and character that is built through internalizing many virtues that are believed and used as a foundation for how they think, behave, and act (Astamal et al., 2021). Repetitive actions that are preceded by awareness and comprehension will shape a person's character. Moreover, one's interactions with others contribute to the development of the community and national character. Although it is possible to build or construct characters, the process is lengthy.

Frequently, a child's behavior resembles that of his or her parents. For this reason, character can be defined as a fundamental value that constitutes a person's personality, produced either by the impact of heredity or the environment, and shown in attitudes and conduct in everyday life (Sholichah, 2018). Character development in young children is heavily influenced by parental behavior, so that children's behavior tends to mimic that of their parents. The character of children in elementary school is heavily influenced by the instructor, thus it is not surprising that they always believe what the teacher says. During this phase, the child begins to search for his individuality, despite the fact that his childlike tendencies remain frequently manifest. This is also why junior high school students were chosen as research samples, as this is when children's character and identity begin to take shape and will become the foundation of their mature character. To mould the character of children into a generation that is superior, characterized, and globally competitive, unique formal and informal efforts are required, including the introduction of character education in schools.

The essence of the educational work of instilling character in students is the development of a whole person, i.e., a good person with good character. Good and character refer to the adopted standards, namely the noble qualities of Pancasila. All aspects of Pancasila are thoroughly incorporated within the concept of human dignity (Salahudin & Alkrienciehie, 2013). According to Lickona (Muchlas et al., 2013), "psychological character education must integrate the elements of moral reasoning, morally based feelings, and moral behavior" (moral behavior). According to some sources, good character consists of knowing the good, desiring the good, and doing the good—habits of the mind, habits of the heart, and habits of the will (Lickona, 2012). According to this understanding, character education is not limited to teaching or enhancing character values. Character education encompasses comprehension (cognitive) of goodness, motivation or desire (affective) to do well, and action (action) to do good (psychomotor).

The prevalence on television and the internet, the rise in crime, the high number of drug users, discord within religious communities, anarchist marches, and other crimes constitute a highly concerning plague. This nation's economic downturn appears to be a clear indication that its resources are still being depleted by unresolved internal problems. Therefore, one of the best ways to get out of this rut is to reorient the values of the nation's character and culture, and the ideal location to construct the pillars of the nation in question's character and culture is through education.

A student who possesses natural character qualities and national culture will undoubtedly be a member of a future generation that is vastly superior. Therefore, education in Indonesia must be able to impart principles consistent with the culture of the country. Table 1 provides a description of the nation's character and cultural values.

Numerous researchers have conducted research on character formation and character, such as Eva, who discussed heredity and environmental factors in character formation (Nerizka et al., 2021), or Lailati and Erni's research on strengthening the character of children in the family (Nazula & Munastiwi, 2021), or Sri and Pramudaani, who asserted that the role of teachers and parents is crucial in integrating character values into learning (Astuti, However, the majority of them continue to explore the genesis of certain character values and the topic has not been covered in its entirety. In reality, in order to teach character values in children, it is vital to understand the elements that influence the development of their character so that impediments can be eliminated.

Therefore, the character of junior high school students will be identified based on 18 character values and national culture in this study. This information will be extremely useful for future research, as it will serve as a starting point for devising solutions to aid the government in the National Mental Revolution Movement (GNRM) initiative and to promote the implementation of Strengthening Character Education (PPK) in schools.

Method

The approach used in this research is descriptive quantitative, which clearly describes the results of the identification of the character values of junior high school students in Rantau Selatan District, Labuhanbatu Regency. The character values identified in this study consist of 18 character values and national culture which are described in table 1 below.

Table 1. Description of National Character and Cultural Values

No	Character Value	Description
1	Religious	Obedient attitudes and behavior in carrying out the teachings of the religion they adhere to, being tolerant of the implementation of worship of other religions, and living in harmony with followers of other religions.
2	Honest	Behavior based on efforts to make himself a person who can always be trusted in words, actions and work.
3	Tolerance	Attitudes and actions that respect differences in religion, ethnicity, ethnicity, opinions, and actions of others who are different from themselves.
4	Discipline	Actions that show orderly behavior, and comply with various rules and regulations.
5	Hard work	Behavior that shows a genuine effort in overcoming various learning and task barriers, as well as carrying out tasks as well as possible.
6	Creative	Thinking and doing something to produce a new way or result from something you already have.
7	Independence	Attitudes and behaviors that are not easy to depend on others in completing tasks.
8	Democratic	A way of thinking, behaving, and acting that evaluates the rights and obligations of himself and others equally.
9	Curiosity	Attitudes and actions that always seek to find out more deeply and broadly from what they have learned, seen, and heard.
10	Nationality spirit	A way of thinking, acting, and having insight that places the interests of the nation and state above the interests of themselves and their groups.

11	Loving the homeland	A way of thinking, behaving, and acting that shows loyalty, care, and high appreciation for the language, physical, social, and cultural, economic and political environment of the nation.
12	Appreciating achievements	Attitudes and actions that encourage him to produce something useful for society, and recognize, and respect the success of others,
13	Friendly/ communicative	Actions that show a sense of pleasure in talking, associating and collaborating with others.
14	Loving peace	Attitudes, words, and actions that make others feel happy and secure in their presence.
15	Reading interest	The habit of taking time to read various readings that create virtue for him.
16	Environmental care	Attitudes and actions that always try to prevent damage to the surrounding natural environment and develop efforts to repair the natural damage that has occurred.
17	Social care	Attitudes and actions that always want to provide help to other people and communities in need.
18	Responsibility	The attitude and behavior of a person to carry out his duties and obligations that he should do to himself, society, the environment (nature, social, and culture), the state and God Almighty.

The population in this study were all junior high school students in Rantau Selatan District, Labuhanbatu Regency, which were spread over five schools. The junior high schools that became the population in the study were junior high schools under the auspices of the Department of Education and Culture of Labuhanbatu Regency. The sample used was seventh grade junior high school students whose number was determined based on the Slovin technique. For the sample selection is done by stratified sampling method (Safitri et al., 2019). The reason that only grade VII students were sampled was to make it easier for researchers to carry out multi-year research in the future so that the samples used remained the same. The following is the distribution of Junior High Schools in Rantau Selatan sub-district, Labuhanbatu Regency.

Table 2. Distribution of SMP in Labuhanbatu Regency

No	School name	Description
1	SMP Negeri 1 Rantau Selatan	State
2	SMP Negeri 2 Rantau Selatan	State
3	SMP Islam Terpadu Robbani Rantauprapat	Privat
4	SMP Islam Terpadu Arrozaq Rantauprapat	Privat
5	SMP Swasta Muhammadiyah 35 Sigambal	Privat

The data collection technique used is to give a character questionnaire sheet to the seventh grade junior high school students to identify what character values already exist in the students. The questionnaire data obtained were then analyzed by several tests as follows:

1. Test the validity and reliability of the instrument: namely to measure whether or not an item in the questionnaire instrument will be used which is then tested whether the instrument is reliable or not.
2. Univariate analysis: aims to describe individual characteristics descriptively by displaying the frequency and percentage. Univariate analysis was carried out on each of the variables studied. Furthermore, the data that has been processed from the test is entered into the

frequency distribution table, then percentage is assigned to each category using the following formula:

$$P = \frac{f}{N} \, x \, 100\% \quad \text{(Sugiyono, 2017)}$$

Description:
P = percentage
f = frequency
N = number of samples

Results and Discussion

From the character questionnaire that has been distributed to seventh grade students of public and private junior high schools in Rantau Selatan District, the data obtained are as follows.

1. Description of the Character Values of State Junior High School Students

First, the identification of the character values of state junior high school students in Rantau Selatan District, Labuhanbatu Regency, namely SMP Negeri 1 and SMP Negeri 2. Each school consists of 7 study groups class VII and 6 study groups class VII. After the character questionnaires were distributed to VII students, the data distribution for each character values was obtained as follows.

Figure 1. Graph of Character Values for Students of SMP Negeri 1 and
SMP Negeri 2 Rantau Selatan

Based on the graph above, it is known that at SMP Negeri 1 Rantau Selatan, the highest percentage achievement of character values is in the character of 'hard work' and 'appreciating achievement' which both get 95%, and the lowest percentage is on the character of 'reading interest' by 53%. While the achievement of the highest percentage of character values of SMP Negeri 2 students is in the character of 'appreciating achievement' of 96.48% and the lowest percentage of the character of being 'likes to read' by 56.7%.

In general, the character values of the students of SMP Negeri 2 Rantau Selatan are higher than the character values of the students of SMP Negeri 1 Rantau Selatan. If we look further, the character values of the students of SMP Negeri 2 Rantau Selatan are low on the characters of 'hard work' and 'environmental care', namely with a percentage of 90.66% and 85.4%,

while the percentages in other characters appear to be higher. However, judging from the percentages for each character value, actually the difference in percentage between students of SMP Negeri 1 and SMP Negeri 2 is not too far apart, which is in the range of 0.6% to 12.79%.

Looking at the percentage of achievement of character values as a whole, most of the percentages are above 60% and only two characters whose percentage is below 50%, namely the 'friendly/communicative' character and the 'reading interest' character. This indicates that the friendly/communicative character and the love of reading are still low in public junior high schools in Rantau Selatan District.

2. Description of the Character Values of Private Junior High School Students

Furthermore, the identification of the character values of private junior high school students in South Rantau District which consists of 3 schools, namely Arrozaq Rantauprapat Integrated Islamic Junior High School, Robbani Integrated Islamic Junior High School, and Muhammadiyah 35 Sigambal Private Junior High School. These three schools are Islamic-based schools, namely there is an added curriculum content in the form of Islamic lessons such as Arabic, Hadith, and Al-Qu'ran lessons. The following is a graph based on the data obtained.

Figure 2. Graph of Character Values of Private Junior High School Students
in Rantau Selatan District

Based on the graph above, it can be seen that the percentage of student character values in each school fluctuates. That is, there is no school that dominates the percentage of students' character is higher than the others. At the Arrozaq Rantauprapat Islamic Junior High School, it can be seen that the highest percentage of students' achievement is in the character of 'appreciating achievement' of 98.57% and the lowest percentage of being 'reading interest' at 53.57%. On the graph, the Rantauprapat Islamic Junior High School shows the highest achievement on the character of 'loving peace' by 96.3% and the lowest percentage in the character 'reading interest' at 49.52%. Likewise, from the graph of the Muhammadiyah 35 Sigambal Private Junior High School, the highest percentage achievement of student character values on the character of 'appreciating achievement' is 96.98% and the lowest percentage is on the 'creative' character of 59.52%.

Looking at the percentage of achievement of character values as a whole, most of the percentages are above 65% and only two characters whose percentage is below 65%, namely the 'creative' character and the 'reading interest' character. This indicates that the creative character and love of reading are still low in private junior high school students in Rantau Selatan District.

3. Description of the Comparison of Character Values of Public and Private Junior High School Students in Rantau Selatan District

After obtaining a description of the data on the character values of public and private junior high school students, then a comparison is made between the two. The data description of the percentage of character values of public and private junior high school students displayed is the average percentage of each public and private school. Here is a description of the data.

Figure 3. Graph of Character Values of State and Private Junior High School Students in Rantau Selatan District

From the graphic above, the percentage of achievement of the character values of private junior high school students in Rantau Selatan District is higher than the percentage of students' character values in public junior high schools. In the graph, it can be seen that there are 17 character values of private junior high school students whose percentage is higher than the character of public junior high school students. In addition, it was also observed that there was 1 value for the same character, namely the 'loving homeland' character of 82%.

Seen further as a whole, there are 16 character values whose percentage is above 65% in both public and private junior high schools, but there are 2 character values whose percentage is still below 60%, namely the 'friendly/communicative' character of 59% for public junior high schools, on the character of 'reading interest' by 58% for private junior high schools and 53% for public junior high schools.

Discussion

The purpose of this research is to identify character values that have emerged in seventh grade junior high school students in Rantau Selatan District. According to the facts shown above, the majority of 18 character traits have emerged among pupils. Character values

whose percentage gain is greater than 90 percent are "religious, hard-working, and achievement-oriented." The high percentage of the three character traits shows that seventh-grade students at SMP Rantau Selatan Subdistrict are extremely religious, diligent, and achievement-oriented. This is due to the fact that the majority of schools in Rantau Selatan District, particularly private schools, implement an Integrated Islam-based curriculum, which integrates the national curriculum with Islamic values in order to build a religious character in students (Hildani & Safitri, 2021). In addition, the successes of the students who have been chosen multiple times to represent Labuhanbatu Regency in various events at the regional and national levels demonstrate the importance of diligence and appreciation for this accomplishment. The importance of hard work as a character trait for students stems from the correlation between it and the will to achieve a goal (Rezekiah et al., 2022). Students that work diligently are typically successful in achieving their goals.

In addition, the character values whose numbers fall between 80% and 89% include tolerance, democracy, national spirit, love for the homeland, love for peace, concern for the environment, social care, and responsibility. These six traits show that kids have a well-developed social spirit. Although grade VII SMP students do not understand the meaning of 'tolerance, democracy, national spirit, and love for the homeland,' their daily behavior and attitudes demonstrate the implementation of these characteristics, such as listening attentively when others speak, participating in group discussions, imitating the hero archetype, and not insulting or belittling his friends (Supriyanto & Wahyudi, 2017). In accordance with the findings of a study, nationalism is characterized by care, respect, and a willingness to make sacrifices for the benefit of one's nation and homeland. In a broader sense, this trait is exemplified by a love for domestic products, diligence in studying for the advancement of the nation and state, a love of the environment, a commitment to a clean and healthy lifestyle, and knowledge of the homeland's geography without regional fanaticism (Atika et al., 2019).

In addition, the character values whose percentages fall between 70 and 79 percent are "honest, disciplined, independent, and curious." These four traits are crucial to recognize since they have a significant impact on the identity formation of students. A person with an honest, disciplined, independent, and inquisitive personality will undoubtedly have a high quality of self and life (Wati et al., 2022). Returning to the percentage of achievement of the four characters, this has shown that the students' self-quality is already good. Although the percentage gain is only in the range of 70-79%, this data acquisition is sufficient to support the development of student character in the future.

Finally, the percentage of character values in the range of 50-69% is on the character of 'creative, friendly/communicative, and likes to read'. The percentage gain shows that the junior high school students in Rantau Selatan Subdistrict have quite low creativity and literacy, so special efforts are needed to improve these two characters. Creative character means a person's capacity to generate new ideas that are original, insightful, scientific, have aesthetic value, social value, or technological value (Wahyuni & Mustadi, 2016). Actually, these two characters are still a national issue where the government is trying to improve reading and writing literacy in students through national programs that have been implemented (Safitri et al., 2022). However, these programs have not been implemented for quite some time, thus their result is not yet apparent. Therefore, in the next two or three years, additional data collection will be required to assess the rise in literacy resulting from the implementation of government programs.

Conclusion

The conclusions of this study are:

1. Character values that have been well identified in junior high school students in Rantau Selatan District are religious, honest, tolerant, disciplined, hard work, independent, democratic, curiosity, national spirit, love for the homeland, respect for achievement, love peace, care for the environment, social care, and responsibility' with a percentage above 70%.
2. The character values identified are still low for the senior high school students in Rantau Selatan District, namely the characters of 'creative, friendly/communicative, and reading interest' which get a percentage below 70%.
3. The percentage gain of character values of private junior high school students tends to be higher than the percentage of character values of public junior high school students.

References

Astamal, Firman, & Rusdinal. (2021). Pembentukan Karakter Peduli Sosial Pada Siswa Di SMA Negeri 3 Payakumbuh. Jurnal Pendidikan Tambusai, 5(1), 79–84.

Astuti, S., Pramudiani, P., Masykuroh, K., & Ulfah, S. (2021). Sinergitas Guru dan Orang Tua dalam Integrasi Nilai Karakter Pada Pembelajaran Daring di Masa Pandemi Covid-19. Jurnal Pendidikan Karakter, 12(1), 117–133. https://doi.org/10.21831/jpk.v0i1.38898

Atika, N. T., Wakhuyudin, H., & Fajriah, K. (2019). Pelaksanaan Penguatan Pendidikan Karakter Membentuk Karakter Cinta Tanah Air. *Jurnal Mimbar Ilmu*, *24*(105–113). https://doi.org/https://doi.org/10.23887/mi.v24i1.17467

Hildani, T., & Safitri, I. (2021). Implementasi Pembelajaran Matematika Berbasis Kurikulum Jaringan Sekolah Islam Terpadu (JSIT) Dalam Membentuk Karakter Siswa. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, *5*(1), 591–606. https://doi.org/https://doi.org/10.31004/cendekia.v5i1.549

Lickona, T. (2012). Mendidik untuk Membentuk Karakter: Bagaimana Sekolah dapat Memberikan Pendidikan Tentang Sikap Hormat dan Bertanggung Jawab. Bumi Aksara.

Muchlas, Samani, & Hariyanto. (2013). Konsep dan Model : Pendidikan Karakter. PT Remaja Rosdakarya.

Nazula, L., & Munastiwi, E. (2021). Penguatan Karakter Anak Dalam Keluarga Dalam Situasi Pandemi Coid-19. Jurnal Pendidikan Karakter, 12(1), 77–87. https://doi.org/10.21831/jpk.v0i1.37648

Nerizka, D., Latipah, E., & Munawwir, A. (2021). Faktor Hereditas dan Lingkungan dalam Membentuk Karakter. Jurnal Pendidikan Karakter, 12(1), 55–64.

Rezekiah, P. T., Safitri, I., & Harahap, R. D. (2022). Analisis Nilai-Nilai Karakter Mahasiswa Program Studi Pendidikan Matematika. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, *6*(2), 1251–1267. https://doi.org/https://doi.org/10.31004/cendekia.v6i2.1325

Safitri, I., Chastanti, I., Hasibuan, lily R., Rohana, Sujarwo, Irmayanti, & Nasution, H. F. (2022). Teachers' readiness in the implementation of online learning during COVID-19 pandemic. *International Journal of Evaluation and Research in Education*, 1082–1089. https://doi.org/http://doi.org/10.11591/ijere.v11i3.22463

Safitri, I., Pasaribu, R., Simamora, S. S., & Lubis, K. (2019). The effectiveness of android application as a student aid tool in understanding physics project assignments. *Jurnal Pendidikan IPA Indonesia*. https://doi.org/10.15294/jpii.v8i4.19433

Salahudin, A., & Alkrienciehie, I. (2013). Pendidikan Karakter (Pendidikan Berbasis Agama dan Budaya Bangsa) (H. Mahmud, Ed.; Pertama). Pustaka Setia.

Sholichah, A. S. (2018). Urgensi Tumbuh Kembang Anak Terhadap Pembentukan Karakter. Jurnal Pendidikan Islam, 1(2), 154–171.

Sugiyono. (2017). Metode Penelitian Kuantitatif, Kualitatif, dan R&D. Alfabeta.

Supriyanto, A., & Wahyudi, A. (2017). Skala karakter toleransi: konsep dan operasional aspek kedamaian, menghargai perbedaan dan kesadaran individu. *Jurnal Ilmiah Counsellia*, *7*(2), 61–70. https://doi.org/http://doi.org/10.25273/counsellia.v7i2.1710

Wahyuni, M., & Mustadi, A. (2016). Pengembangan Perangkat Pembelajaran Collaborative Learning Berbasis Kearifan Lokal Untuk Meningkatkan Karakter Kreatif dan Bersahabat. *Jurnal Pendidikan Karakter*, *7*(246–260). https://doi.org/https://doi.org/10.21831/jpk.v6i2.12056

Wati, E., Harahap, R. D., & Safitri, I. (2022). Analisis Karakter Siswa pada Mata Pelajaran IPA di Sekolah Dasar. *Jurnal Basicedu*, *6*(4), 5994–6004. https://doi.org/https://doi.org/10.31004/basicedu.v6i4.2953

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Vocabulary-Enhanced ESP for Physical Therapy

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

A large population uses English for Specific Purpose (ESP) instructions with a content-based approach in Japanese universities. Given this trend, various studies have been conducted that focus on ESP's theory, status, effects, and issues. Many have suggested further effective implementation of the ESP program, thus emphasizing the importance of acquiring vocabularies. Believing in the requirement of learning vocabulary to implement effective ESP instructions, the current study focuses on students' vocabulary learning, their vocabulary size and ESP corpus development in an English as a Second Language context. Participants are 98 university students majoring in physical therapy (PT). The study first performs a needs analysis for designing the vocabulary-emphasized instruction. The instruction involves various types of vocabulary-enhanced activities, including word list construction (index), translation and definition exercises, fill in exercises, and round up tests. The instruction's effectiveness is measured by students' pre- and post-test vocabulary scores. The numerical and correlational analysis is performed using the IBM SPSS Statistics software. The results of the vocabulary size test and PT corpus vocabulary tests are also included in the analysis. Although significant improvements in students' vocabulary acquisition were not observed, examining each vocabulary item helps understand students' learning tendencies and difficulties. Further studies are needed to delve into various factors such as students' autonomy and vocabulary learning strategies in vocabulary acquisition. It is believed such examination will help to design successful ESP instructions.

Keywords: English for Specific Purpose, Physical Therapy, Vocabulary-Emphasized Instruction

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Introduction

Following the transfer of university curriculum control from the Ministry of Education, Culture, Sports, Science and Technology (MEXT) in 1994, each university shifted its English curriculum to adapt to internationalized or globalized societies. As a result, ESP (English for Specific Purposes), EMI (English as a Medium of Instruction), CLIL (Content and Language Integrated Learning), and CBI (Content-Based Instruction) succeeded the more traditional general English courses. In such instructions, students are expected to expertly utilize their practical English skills and knowledge to function in this global society. Taking into consideration students' English proficiency and motivation levels, vocabulary-enhanced instruction is considered as suitable and effective. Although such instruction has been practiced, the effectiveness has not been evaluated. Therefore, this study aims to measure the effectiveness of vocabulary-enhanced instructions using various vocabulary measurements. It is believed such information will help review and modify this particular approach.

Literature review

The literature review covers the following topics:
　　1. Tertial English education in Japan
　　　　EMI (English as a Medium of Instruction)
　　　　CLIL (Content and Language Integrated Learning)
　　　　CBI (Content-Based Instruction)
　　2. ESP (English for Specific Purposes)
　　　　Overview of ESP
　　　　Difficulties in constructing the ESP instructions
　　3. Vocabulary
　　　　Importance of vocabulary learning
　　　　ESP vocabularies
　　　　Vocabulary size of Japanese students

1. Tertiary English education in Japan

In 1994, the MEXT decided to largely hand over its control of university curriculum to the individual universities. Subsequently, this has led to rapid growth or changes in English courses. Each university shifted its English curriculum, promoting students' practical skills so they could function well in our globalized society. Notably, the growth of ESP, EMI, CLIL, and CBI instructions has been observed at a tertiary level. As such, this section summarizes EMI, CLIL, and CBI in relation to tertiary levels of education in Japan.

EMI (English as a Medium of Instruction)

Dearden (2015) explains the rapidly growing global phenomenon of EMI. In her report, she defined EMI as "the use of the English language to teach academic subjects in countries or jurisdictions where the first language (L1) of the majority of the population is not English (p. 2)." In Japan, the MEXT introduced the Top Global University Project (TGUP) in 2014 and heavily invested in the internationalization of higher education, thereby aiming to increase the number of its EMI courses in Japanese universities.

According to a MEXT survey (2019), 309 out of 774 universities (about 40%) in Japan offered certain types of EMI programs; however, some have criticized this particular

government policy. Phan (2012) argues MEXT English language policy over-promotes English and undermines local languages for the sake of internationalization. Kuwamura (2019) examined the situation of EMI using a questionnaire targeting 260 colleges and universities in Japan offering EMI courses. The study found a shortage of qualified faculty who could effectively deliver academic content in English. Leong (2016) explored constraints in implementing EMI programs at Japanese universities. He argued several major factors hindered the implementation which included a lack of trained teachers, students' English proficiency and motivation in learning English, institutional culture, an English-speaking environment, and finally, a lack of understanding of EMI by top-level management. Aizawa and McKinley (2020) presented the inconsistencies in university policies and reported practice as students with low proficiency levels need language support. The study called for an investigation regarding the English language level required for EMI teaching and learning, the effectiveness of EMI for improving students' language knowledge, the aims of EMI, the role of L1 in EMI, challenges placed on students and teachers, and support and training consideration for students and teachers.

CLIL (Content and Language Integrated Learning)

CLIL approaches can be traced back to the mid-1990s, originating in European secondary schools. Mehisto and Marsh (2008) defined CLIL as an approach used to lead dual-focused education where attention is given to both topic and language. Furthermore, an additional language is used as a medium in the teaching and learning of non-language content. The 4 C's framework from Coyle et al. (2010) suggests the 4 C's framework of CLIL. In this regard, the CLIL consists of four crucial elements—content, communication, cognition, and culture, key to deeper learning and understanding intercultural awareness.

Advocates argue CLIL has great potential in the area of facilitating English as a second language. Ikeda (2011) contends CLIL is designed for students not only to acquire new knowledge, but also to be able to apply their knowledge to solve problems and develop interactive skills to collaborate with others to solve larger problems. Tanaka (2019) examined the compatibility of CLIL to Japanese higher education. Through examining the concepts of CLIL and an implemented CLIL course, she concluded CLIL serves as an excellent approach to teaching both content and English as a part of a larger goal, which matches goals of the 21st Century Skills and Global Competencies. Thus, CLIL is believed to help students prepare to meet the challenges they might encounter in their future endeavors.

CBI (Content-Based Instruction)

There has been a dramatic increase in the number of degree programs taught through English; specifically, through Content Based Instruction (CBI) in Japan. Many definitions refer to CBI as an umbrella term covering all approaches that teach subject matter in a second language. Brown and Bradford (2016) argue the use of CBI as an umbrella term is too broad. Thus, they defined it as an approach to language teaching in which content, texts, activities, and tasks drawn from subject matter topics are used to provide learners with authentic language input and engage them in authentic language use (p.332). Hirai (2015) suggests using CBI to foster higher order thinking skills in Japanese settings after observing CBI classes in the United States. She believes in the importance of setting goals for language development and content understanding; notably, this includes the four language skills and providing rubrics, which promoted the cohesive integration of all learning. Kobayashi (2015) examined the students' reaction to CBI in college reading classes. The results showed CBI promotes students'

language learning and motivates them to learn by analyzing their responses. Shibata (2019) studied the effectiveness of CBI on beginners' writing skills. In fact, his nine months of study at a private senior high school in Japan showed the participants improved their writing abilities regarding the number of tokens used and the increase of supporting sentences.

2. ESP (English for Specific Purposes)

Since the current study focuses on ESP, this section of literature review places emphasis on ESP.

Overview of ESP

ESP is defined as a subset of English as a foreign language (EFL). It refers to the teaching of English that focuses on developing communicative skills in a particular field or occupation and is designed to help learners master relevant vocabulary, expressions, and other elements of English needed to function well in a specific field. Dudley-Evans (1997) contended the definition of ESP has absolute and variable characters. The absolute features of ESP are: 1) ESP is defined to meet specific needs of the learners; 2) ESP makes use of underlying methodology and activities of the discipline it serves; and 3) ESP is centered on the language appropriate to these activities in terms of grammar, lexis, register, study skills, discourse, and genre.

Although ESP has a long history—which began in the early 60—the ESP movement in Japan started developing in the 1990s and eventually showed rapid growth, thereby becoming one of the most prominent areas of EFL teaching today. The reasons behind this rapid growth are closely related to MEXT's emphasis on practical skills to function well in our global society. Sugiyama (2021) argues the necessity of ESL is recognized when the Central Education Council of MEXT suggests English education should be designed in accordance with students' specialized fields. Meanwhile, Amano (2014) points out an information-oriented society—which includes the Internet and mobile phones as well as rapid globalization—is responsible for ESP approaches in tertiary levels of education.

Many universities reported how their ESP approaches work (Yokoyama, 2005; Hirouchi, 2012; Mullaer, 2015; Ishikawa & Ito, 2017; Davis et.al, 2020).

Difficulties in constructing the ESP instructions

Dudley Evans and St. John (1998) presented five different roles that should be accomplished by an ESP practitioner: teacher, collaborator, course designer and materials provider, researcher, and evaluator. Specifically, a course designer develops or selects materials and textbooks while being concerned about the authenticity and level appropriateness of the content. A collaborator works directly with content teaching instructors in material development; moreover, they also evaluate learning outcomes, which include students' knowledge and skills, assessing the outcomes, and the effectiveness of instructions. Since ESP teachers have such various roles to play, they tend to face many difficulties in teaching.

As such, there are specific difficulties that are associated with this situation. First, in ESP instruction, emphasis is placed on both learners' English skills and their knowledge in the content area. Yamada (201?) suggests ESP materials should be authentic, organized, and rationalized. She argues such content quality has great influence on students' learning and

their motivation. Meanwhile, it is assumed that students have well-founded basic knowledge needed for understanding ESP materials. However, if too much emphasis is placed on the context, students do not develop language skills. Therefore, beside the authenticity and level appropriateness, well-balanced materials should be necessary.

The second concern is students' English proficiency level. Currently, many universities in Japan face the issue of low academic achievement among students. Many students are admitted by a recommendation-base and so their academic proficiencies are not measured or evaluated through the entrance examination. As a result, underprepared students have been increasing. Okamo (2012) argues that students should have enough English proficiency before learning ESP materials. He argues that if students with low English proficiency levels have little knowledge in the content area, they suffer from difficulties not only in language but also in understanding content. So, and increase in students with low English proficiency create a situation in which the gaps with students who entered the university through general entrance examination become wider.

Besides such specific concerns, Orr (1998) points out while many studies deal with specific applications of ESP, it is still important to address the broader issues. These issues include establishing clear learning goals, examining the needs and levels of students, selecting or developing content that matches with learning goals and students, and considering ways to deliver instructions.

Considering such matters, it is not easy to create a syllabus regarding the aims of the instruction as well as the determination on focusing on certain levels while helping individual students build their foundation of language skills. Instructional goals and learning objectives that match the educational goals and school philosophy should be clarified while guaranteeing the quality of education so that students can promote their practical English skills and knowledge, and functions well in the global society.

3. Vocabulary

Importance of vocabulary learning

As Meara (1980) argues, vocabulary was once a neglected aspect of language teaching and learning; additionally, it has been acknowledged as L2 learners' greatest source of difficulty. Previous research indicates vocabulary teaching may be problematic because many teachers are not confident about best practices in vocabulary teaching and at times do not know where to begin to form an instructional emphasis on word learning. (Berne & Blachowics, 2008). At the same time, other research reveals vocabulary is the source of many learners' difficulties as learners have inadequate receptive as well as productive vocabulary knowledge. Even learners with higher levels of language proficiency still feel they need to learn vocabulary (Laufer, 1986; Nation, 1990).

Accordingly, some studies suggest the need for a systematic and principled approach to vocabulary teaching and learning. Creating and implementing such an approach is urgent to improve students' ultimate language development. Nation (1982) contended deliberately teaching vocabulary is one of the least efficient ways of developing learners' vocabulary knowledge, but nonetheless it was an important part of a well-balanced vocabulary program. He also indicated a good vocabulary component of a course ensures balanced learning through listening and reading on the one hand, and production through speaking and writing

on the other. Direct formal study of vocabulary and activities helps learners to develop necessary language skills.

Laufer (2000) argues good instruction will promote both intentional and incidental vocabulary learning. The keys for retention depend on the quality of information processes, degree of elaboration, quality of attention, and richness of encoding. Facilitating the intentional learning of vocabulary seems to be critical for English learning. Schmitt (2018) suggests, "A more proactive, principled approach needs to be taken in promoting vocabulary learning."

The following theories and practices may remain controversial but are well- recognized in the vocabulary learning research field.

1. Level of processing, by Craik and Lockhart (1972), concerns the level of processing effects. According to their theory, the depth of mental processing affects memory function. As such, memories that are deeply processed lead to longer-lasting memories; the memories remain with elaborate rehearsal in which the information is analyzed in a deeper way.

2. Involvement of Load Hypothesis (ILH), by Hulstijn and Laufer (2001), concerns the ILH, which is a motivational–cognitive construct of involvement comprising three basic components: need, search, and evaluation. Hulstijn and Laufer claimed the retention of unfamiliar words is contingent upon the involvement load of a task, which can be perceived in terms of the degrees of need, search, and evaluation. The combination of the degrees of these three factors determines its effectiveness in promoting word learning. They argue the greater the involvement load, the more effective the task is.

3. Use of L1 for L2 vocabulary learning. Notably, some research has shown the effectiveness of using L1 for L2 vocabulary learning, like Liu (2008).

4. Teaching etymology (affix, suffix, and root). It is quite common for over 10% of the words in a text to contain a prefix or a suffix (Vocabulary in ESP, p. 6). Therefore, teaching knowledge of prefixes and suffixes is a useful strategy to improve students' vocabulary knowledge, which also enhances their awareness of such prefixes and suffixes.

5. Other deliberate teaching practices—such as making word lists, word association practices, and repetition through a variety of activities—enhance retention and are effective ways to facilitate vocabulary learning.

ESP vocabularies

Although vocabulary acquisition is an essential part in any type of English learning environment, the mastering of vocabulary becomes vital for ESP. Nababan (1993) mentions the vocabulary component is a core part of ESP programs and that vocabulary is the most prominent feature of a register. Therefore, he argues vocabulary learning and acquisition are essential in ESL course design.

In fact, there are some distinctive features of vocabularies in ESP. According to Zaharan (2017), ESP vocabularies have the following characteristics: They are used less frequently in everyday situations; they are learned for specific uses related to a particular field; they include many abstract terms; and they are designed around the needs of the students in their fields. In light of these features, learning vocabulary plays a crucial role in successful learning in ESP programs. Sinadinovi (2013) points out the difficulty of the vocabulary in medical English. He argues it is highly technical, having restricted, specific meanings within

the field. Moreover, there are numerous collocations, an abundant use of synonyms, abbreviations, and eponyms, and much of the vocabulary has Greek and Latin origins. Sinadinovi argues such characteristics of the vocabulary make it a very demanding subsystem of ESP. However, Nation (2001) argues vocabulary learning should be directed to more specialized areas when learners have mastered the 2,000 to 3,000 words of general usefulness in English (p.187).

Therefore, it is critical for teachers to make a careful selection of vocabularies that range from general use vocabulary, academic use vocabulary, and specialized vocabularies specific to a particular field.

Vocabulary size of Japanese students

There have been numerous studies of Japanese learners' vocabulary sizes. Shillaw (1995) and Barrow, Nakanishi, and Iishino (1999) suggest the vocabulary size of non-English major Japanese university students is between 2,000 (by Shillaw) and 2,300 (by Barrow et al.) word families. In these studies, vocabulary knowledge was assessed using over 3,000 word families for which students are required to complete self-checking familiarity surveys. Such a self-checking approach depends heavily on students' recall rather than measuring receptive reading vocabulary knowledge.

Several studies widely applied and used vocabulary tests based on studies by Nation or Schmitt. McLean, Hogg, and Kramer (2014) studied the vocabulary size of Japanese students and its relation to university department standardized rank scores using Nation's Vocabulary Size Test (VST). The results estimated an average score of 3,715.20 word families; specifically, the VST scores were significantly higher for students in departments that were ranked more highly on standardized tests. Furusho (2005) studied the relationship between university students' vocabulary knowledge and English standardized tests using the Vocabulary Level Test (VLT) version 1 by Schmitt (2000); the VLT version 2 by Schmitt, Schmitt, and Clapham (2001); and the Vocabulary Levels Dictation Test (VLDT) by Fountain and Nation (2000). The study found a significant correlation between the VLDT and VLT, with the highest correlation at the 3,000-word level.

Several studies claim Nation's vocabulary test is not suitable for the Japanese population. Three studies used Mochizuki's Vocabulary Size Test.

First, Nonaka (2004) used Mochizuki's Vocabulary Size Test in a study of 172 university students at the lower intermediate level, and estimated the students' vocabulary size as 3,772.9 words. In another study (2009), he examined the vocabulary size of junior college students whose level was similar to that in the previous study. In this study, he looked at the changes of subjects' vocabulary size over nine months. His pretest and posttest estimated a vocabulary size of 3679.7 and 4130.1, respectively. Nonaka states the test in 2004 was conducted in September while the second tests were performed in April and the next January. Therefore, he suggests an estimate of Japanese university students' vocabulary size as 3,600 to 3,800.

Chino and Ominato (2007) studied the development of the vocabulary size of students at a college of technology using Mochizuki's Vocabulary Size Test. The study found the average vocabulary size of first-year students is 2,370, that of second-year students is 2,612, and that of third-year students is 3,417.

Katagiri (2007) investigated the vocabulary size of Japanese high school students, having tested them four times over three years. The average vocabulary sizes (two tests) of the first-year students were 2,423 and 3,111, while the averages for the second-year and third-year students were 3176 and 3525, respectively. The study further revealed that 63.9% of the students made little or negative progress in their second year and 42.2% of them made little or negative progress in their third year.

Although Mochizuki's test is widely used with Japanese subjects, some research points out it yields higher estimated scores than other tests. Mochizuki's test includes vocabulary items for which the examinees could guess the correct answers.

Two studies developed original tests to measure students' vocabulary size. One of these studies, Ishihara, Okada, and Matsui (1999), developed a vocabulary recognition and production test based on Yoshida's List, comprising two sub-lists of 1,200 words of "Vocabulary for College Study." They provide a tentative estimate of participants' recognition vocabulary ranging from 2,000 to 2,500 word families.

The other one, Igarashi (2003), was a study involving anxiety and its relationship with vocabulary size among 477 college students in five different majors. In order to measure students' vocabulary size, she used the JACET 8,000 words, randomly choosing 10 words from each of eight levels. While Japanese college students' average vocabulary size is 1,800, her subjects' vocabulary size was about 1,797. Physical therapy (PT) majors had the highest mean of 2,140.66, while social welfare majors had the lowest mean, 1,541.71.

In short, the vocabulary sizes of Japanese university students have been tested using various measures as described above; also, the reliability and validity of most of these tests have been tested. The sizes estimated by the Nation's test are about 2,000 to 2,500 words, while other measures indicate a range from 1,541 to 4,130, with the averages ranging between 2,370 to 3,800 words.

Discussion of the significance of the results of the work

Literature review reveals the ESP approach has been gaining momentum at the tertial level in Japan. Although certain research reported various ESP approaches, difficulties in constructing materials, and the importance of the acquisition of ESP vocabularies, few studies provide specific vocabulary learning approaches. At the same time, cases of evaluating such activities are not observed. Therefore, the current study presents a concrete example of vocabulary learning instructions and its examination of the effectiveness through student outcomes. Ultimately, it is hoped the current study would help designing effective ESP instructions with an emphasis placed on vocabulary learning.

Methodology and Methods

Purpose of the study

The current study aims to first present an example of vocabulary-enhanced instruction, and then move to evaluate the effectiveness of the instruction. The effectiveness is measured by students' outcomes with regard to their vocabulary learning.

To achieve the latter, three types of vocabulary tests were prepared as follows:
1. VST: Hamad et al. (2021) developed a VST for Japanese EFL learners, using the New JACET List of 8,000 Basic Words (VST-NJ8). It consisted of the current study level 1 to level 5, concluding 100 words. It was administrated at the beginning of the school year.
2. Vocabulary test for the semester (pre- and post-): In total, 100 key terms were selected through the textbook. This test was performed twice, at the beginning and the end of the semester.
3. PT corpus (pre- and post-): From Miyamoto et al., Miyamoto developed a list of ESP vocabulary for PT. The current study involves 50 words, including 25 frequently used terms from the RA (research article) corpus and 25 frequently used PT terms. This was also administrated at the beginning and the end of the semester.

In all the above measurements, there were questions requiring students to match English and Japanese via a multiple choice approach.

Participants

The classes involved were two PT major classes, each consisting of 33 students. A total of 66 second-year students majoring in PT, received required English instruction. This session was held once a week for 90 minutes; specifically, there were 15 sessions in a semester. For their referencing, they used an originally developed textbook, ESP for Physical Therapy.

The participants were notified their scores would be used for the study while protecting their confidentiality; in addition, the data would be anonymous and would not influence their grades. The data were entered in SPSS for descriptive approaches, including rank/order, numerical interpretation, distribution, and frequency; correlational analysis was employed to assess the relationships among variables.

Vocabulary-enhanced instruction

Principles used for the introduced vocabulary emphasis instruction.

Although the research findings described in the literature review are still controversial, the presented vocabulary activities adhere to the principles listed below.
1. Deliberate (Explicit) vocabulary teaching: A large amount of research supports the idea that explicit instruction is effective for vocabulary learning (Rinaldi, Sells, & McLaughlin, 1997).
2. Repetition/recycling: According to empirical studies (Gu, 2003; Schmitt, 1997), repetition strategies are crucial, especially when starting to learn vocabulary.
3. Key words first (Making word lists first): The research suggests when students are taught key words before reading the text, they have a greater comprehension than students who do not receive this instruction (NRP, 2000).
4. Prefix/suffix teaching: Some studies suggest teaching the knowledge of prefixes and suffixes is a useful strategy to improve students' vocabulary knowledge (Nakayama, 2008; Wu, 2014).
5. Variety of activities: Better learning outcomes can be expected when students are exposed to a variety of activities. (Nation, 1990; Stahl, 2005).

Using a vocabulary-enhanced instruction in this study

Instead of EMI or CLIL, the presented instruction uses ESP instruction, combined with CBI. Here are the reasons: First, our English curriculum aims to have students promoting their necessary and practical PT skills. Second, our students are not motivated to study English since they believe they do not need English skills in their career; subsequently, many are taking English just because it is a required course. Therefore, if the instruction is related to their future field, it is hoped their motivation would be promoted while using their content knowledge. Moreover, the English proficiency levels of our students are low. In particular, they have a weakness of vocabulary and grammar due to their previous education. Classes are also mixed-level classes and have a variety of students. Therefore, it is determined that using EMI or CLIL—which require certain student proficiency levels—is not level appropriate.

Moreover, it seems necessary to implement instruction in which students develop their vocabularies first so they would have a better understanding of the content.

English textbook used in the class

English II-1 and II-2, which are required courses for second-year students in the Health Science Department, use original university English textbooks created by instructors. English II classes use major-specific English for Rehabilitation Purpose (ERP) textbooks for Physical Therapy (PT), Occupational Therapy (OT), and Welfare and Psychology (WP). The classes involved in the study used the PT textbook.

These are the units common for all majors:
Unit 1: Regenerative Medicine & Rehabilitation
Unit 2: Brain & Its Function
Unit 3: International Classification of Functioning (ICF), Disability & Health

The units for major-specific topics (for PT) are as follows:
Unit 1: Stroke
Unit 2: Osteoarthritis
Unit 3: Parkinson's Disease
Unit 4: Spinal Cord Injury
Unit 5: Diabetes
Unit 6: Lower Back Pain

Appendix
1. Medical Terminology (Muscles)
2. Glossary
3. Physical Therapy

Summary of the vocabulary enhancement instruction

For this study, Spinal Cord Injury (Unit 4), from the textbook was used as an example.

The activities are implemented through the following steps.

1. Preparation

As vocabulary is a fundamental component of ESP courses, carefully choosing target words is necessary. With this consideration in mind, 20 target terms were chosen (e.g., central nervous system, cervical, dysfunction, spine, paraplegia, and lumbar). Based on these 20 terms, homework is then developed.

2. Homework

Before starting a new unit, students are required to complete their homework. For the homework, the students have to match each target term with a Japanese translation.

3. Creating a glossary sheet

A vocabulary list including the key terms necessary for understanding all of the materials in the unit is developed. In the left column, the English terms are listed, while the Japanese terms are listed in the right column. The key terms mentioned above are written in red and their Japanese translations are left blank. The students have to complete these Japanese translations. (See Appendix A)

4. Explanations using the glossary sheet

The instructor goes through all of the key terms, checking the answers (meanings and usage).
Have students pronounce all of the key terms as well as other important terms.
Add some explanations if necessary.

5. Etymological analysis (prefix, suffix, and root) for medical terms

The instructor explains the prefix, suffix, and/or root of each word where possible.
e.g., quadr(i)-/tetra means 4 (also in Japanese)
plegia means paralysis

6. Vocabulary exercise

For the Vocabulary exercise, two types of the activity sheet are given. One matches the term with the appropriate explanation and the other involves filling the blanks for the given term.

7. Other activities

The textbook includes the following materials and students use their glossary sheets as necessary. All activities use the key terms:

1. Reading materials
2. Grammar
3. Listening
4. Speaking activities (e.g., giving advice)
5. Other activities

8. Quiz for each unit

At the end of each unit, a vocabulary quiz for the key terms is given (Matching English and Japanese).

9. Quiz for a semester

Moreover, at the end of semester, the quiz for all terms learned throughout the semester is given (Matching English and Japanese).

Findings (Evaluation of the instructions)

The results of the VST

The following graph (Figure 1) shows the results of the VST. The average score is 1,578.71, the medium is 1,530, ranging from 960 to 2,820. The box plot shows the scores are clustered in the middle. The interquartile range was 1,350 to 1,800 and the outliers are only three, which is 2820, 2670, 2520. The available research found the average of VST scores for Japanese university students are between 2,370, which is the lowest among various studies to 4,130, the highest among studies. Compared to such an average score, this result shows the students' VST is much lower.

Figure 1. *The results of the VST*

The results of the PT corpus test

Figure 2. *The results of the PT corpus tests*

Left: The results of the first test. Right: The results of the second test

The above graph (Figure 2) shows the results of the PT corpus test. The left graph describes the first test whereas the right shows the second test. The average score on the left is 30.74; the medium is 33, ranged from 7 to 50. The average score on the right is 33.63; the medium is 36, ranged from 8 to 50. Although the score of the end of the second test as well as average score are higher than the first test score, the statistical analysis (t-test) found there is no significant difference.

The results of the semester vocabulary tests

The next graph (Figure 3) shows the results of semester vocabulary tests. The left graph shows the pretest whereas the right shows the posttest. The average score on the left is 21.82, medium is 19, ranged from 9 to 46. The average score on the right is 30.50, medium is 32, ranged from 6 to 49. The score from the end of the semester as well as the average score are higher than the scores of the beginning and the t-test proved the difference is significant. When you look at the interquartile range, the left one has 13 to 28 while the interquartile of the right is 20 to 40.5. It is also clear that the right one has longer lower whisker.

Figure 3. *The results of the semester vocabulary tests*

Left: The results of the first test. Right: The results of the second test

Correlational Analysis

The next table shows the results of a correlational analysis of each test.

As it is observed, a very strong correlation (.091) was found between the first PT corpus measurement and the second PT corpus as well as between the first semester vocabulary test. At the same time, high correlations are also found in the same tests. The correlation between the first PT corpus measurement and the second corpus test was .743 whereas the correlation of the first semester vocabulary and the second semester vocabulary test was .689. On the other hand, although correlations between the VST and each measurement was found to be rather weak, ranging from .243 (with the first semester vocabulary test) to 366 (with the post-PT corpus test).

Table 1. *Correlational analysis of each measurement*

		Sem. 1	Sem. 2	Co.1	Co.2	VTS
Sem.1	Pearson's correlation	1	.689**	.587**	.640**	.243
	Sig. (2-tailed)		.000	.000	.000	.053
	N	66	65	62	65	64
Sem,2	Pearson's correlation	.689**	1	.672**	.901**	.342**
	Sig. (2-tailed)	.000		.000	.000	.006
	N	65	65	61	65	63
Co.1	Pearson's correlation	.587**	.672**	1	.743**	.365**
	Sig. (2-tailed)	.000	.000		.000	.004
	N	62	61	62	61	62
Co.2	Pearson's correlation	.640**	.901**	.743**	1	.366**
	Sig. (2-tailed)	.000	.000	.000		.003
	N	65	65	61	65	63
VTS	Pearson's correlation	.243	.342**	.365**	.366**	1
	Sig. (2-tailed)	.053	.006	.004	.003	
	N	64	63	62	63	64
**. Correlation is significant at the 0.01 level (2 tailed); $p < .001$						

Sem.: Semester vocabulary test
Co.: PT corpus test

Conclusions, Implications, and Limitations of the study

The results of the test suggest the possibility of the modification of the instructions as well as the measurement method.

First, the study found extremely low VST scores among the participants; so, these students need to build their foundation of vocabulary. Although the instruction is aimed to increase vocabulary, the basic competencies—including understanding functional words—are necessary before acquiring skills and knowledge needed in the ESP context. Therefore, utilizing opportunities for building such basic vocabulary knowledge is urgent. In the studied university, ESP material in PT is provided for the second-year students. Therefore, during their first year, students should be exploring in various activities for building their basic competency in which ESP in rehabilitation in general is implemented. Then, they should shift their efforts in the direction of more specialized ESP in PT.

Second, although vocabulary measurements show the improvement in both the semester vocabulary test and PT corpus, reviewing semester vocabularies are necessary. It is believed a close match between two tests is more practical and productive. At the same time, the number of items in tests is set at 50; yet, for further examination, the number should be increased to 100 so more accurate and precise data would be accessible. Hence, it would increase reliability.

The study also found a wide gap between the first and the second semester vocabulary tests.

The interquartile range became wider with longer lower whisker in the second test. It is clear that the gap among students becomes wider in which some students with lower vocabulary scores become more evident. As such, it is necessary to consider these students with difficulty in acquiring new vocabularies. One possibility is vocabulary learning strategies can be suggested. In order to provide necessary support, an analysis on students' vocabulary learning strategies would be necessary. Based on such data, appropriate and effective strategies can be suggested. Meanwhile, it should be recognized that several students have high scores in vocabulary tests. Therefore, strategies for improving their potentials should be sought. Suggesting watching online English sites, using English learning applications, or challenging certified English proficiency tests are some examples.

Since the circumstances of tertiary education constantly change, a continuous need for analysis as well as evaluations are necessary to assure the quality of education.

In this regard, this study has some limitations. First the study involves a limited number of subjects (N = 66) who are focused on PT majors. Therefore, generalizability of the study may not be applicable. Another concern relates to the measurement. The validity or reliability of the semester vocabulary test has not been tested.

Although such limitations should be called into account, the study argues the students should have become familiar with the language used in the specific community through vocabulary-enhanced activities. Such activities are believed to increase their awareness of how language features are used in their subject areas.

Ultimately, it is hoped the current study may shed light on the design and implementation of effective vocabulary teaching in ESP. The results of the study would provide a reassuring guide for improving not only the designed vocabulary activities in the rehabilitation field but also other programs in similar fields. At the same time, it is also hoped that it will help raise awareness of the importance of ESP vocabularies and improve a student's ability to productively use such vocabularies.

Appendix A

A section of the glossary note (Unit for SCI) Only a part

accept	受け入れる	sensory paralysis	(　　　　　)
acceptance of disability	(　　　　　)	severe	重篤な
adequate	十分な、適切な	social resource	(　　　　　)
appropriate	適切な	spine	(　　　　　)
at present	現在のところ	strengthen	(　　　　　)
autonomic	(　　　　　)	suffer from	~に苦しむ、〜を患う
autonomic dysfunction	自律神経機能障害		
autonomic nerves	自律神経	swelling	腫れ
available	利用できる	temporarily	一時的に
cause	原因、原因する	tetraplegia	(　　　　　)
central nervous system	(　　　　　)	thoracic	(　　　　　)
certified	認定された、有資格の	trauma	(　　　　　)
cervical	(　　　　　)	trunk	体幹、胴体
		tumor	(　　　　　)

Reference

Aizawa, I, Rose, H. (2019). An analysis of Japan's English as medium of instruction initiatives within higher education: the gap between meso-level policy and micro-level practice. *Higher Education. 77(1)*. 1125-1142.

Aizawa, I. & McKinley, J. (2020). EMI challenges in Japan's internationalization of higher education. In H. Bowles & A. C. Murphy (Eds.). *English-Medium Instruction and the Internationalization of Universities.* (pp. 27-48). Palgrave MacMillan.

Brown, H., & Bradford, A. (2017). EMI, CLIL, & CBI: Differing approaches and goals. In P. Clements, A. Krause, & H. Brown (Eds.), *Transformation*. CELES, 46 253-260.

The Class Report from the ESP（English for Specific Purposes：Viewpoint of English Communication of Nursing Students. *Sonoda Journal. (46)*. 99.-111

Coyle, D., Hood, P. & Marsh, D. (2010). *CLIL. Content and Language Integrated Learning.* Cambridge : Cambridge University Press.

Davis H. et.al. (2020) Reflections on an EMP (English for Medical Purposes) Project, *Hiroshima Studies in Language and Language Education. 23*. 201-216.

Dearden, J. (2014). English as a Medium of Instruction—A Growing Global Phenomenon: Phase 1. *Going Global 2014, Interim Report*. Oxford: Department of Education, University of Oxford.

Dudley-Evans, T. (1998). *Developments in English for Specific Purposes: A multi-disciplinary approach.* Cambridge University Press. ERIC digest (ED326233).

Gu, P.Y. (2003). Vocabulary Learning in a Second Language: *Person, Task, Context and Strategists-EJ, 7(2)*.125-134.

Hamada, A., Iso, T., Kojima, M., Aizawa, K., Hoshino, Y., Sato, K., Sato, R., Chujo, J., & Hirai, K (2016) *An Analysis of Content-based ESL Classes in a US Public School*.

Hsiao-I Hou (2014) Teaching Specialized Vocabulary by Integrating a Corpus-Based Approach: Implications for ESP Course Design at the University Level. *English Language Teaching; Vol. 7(5).*

Ikeda, M. (2011). CLILL New Challenges in Foreign Language Education at Sophia University Vol.1. Sophia University Press: Tokyo.

Ishikawa, Y. Ito, T.（2017）Measurement of Characteristics of Engineering Students. *Kitasato Review Annual Repost of Studies in Liberal arts and Science*. 20 (0), 81-103

Kobayashi, K. (2015). Student Reactions to Content-Based Instruction in EFL Reading Classes: A Survey on Motivational Strategies. *Journal of Osaka Jogakuin College. Vol.44*. 31- 44.

Kuwamura. (2019). English-Medium Instruction and the Expanding Role of Language Educators. In P. Clements, A.Kurause, P. Bennet. (Eds.) *Diversity and Inclusion.* Tokyo JALT.

Leong, P. (2017). English-medium instruction in Japanese universities: policy implementation and constraints. *Current Issues in Language Planning. Vol. 18(1).* 57-67.

Mehisto, P., Marsh, D. & Frigols, M. J. (2008). *Uncovering CLIL. Content and language integrated learning in bilingual and multilingual education.* Oxford: MacMillan Publisher Limited.

Miyamoto, S. (2011) Selecting Technical Vocabulary in the Field of Physical Therapy and Determining its Characteristics. *Physical Therapy Research. 38(6).*421-435.

Muller, T. (2015). Project-based learning in the Japanese medical ESP curriculum - Examining implementation of video projects in the university classroom.   *The journal of liberal arts and sciences, University of Toyama. 43.* 1-13.

NRP (the Report of the National Reading Panel) (2000). Teaching Children to Read. Nababan, P. W. J. (1993). *E.S.P. Materials Preparation in a Foreign Languages Situation.*

Nakayama, N. (2008). *Effects of Vocabulary learning Using Affix: Special focus on prefix.* Paper presented at 32th Annual Conference of Japan Association of language Teachers held in Kita-Kyushu.

Nation, P. (1990). Teaching and learning vocabulary. Boston, Mass.: Heinle&Heinle

Noguchi, & A. Tajino (Eds), *Towards a new paradigm for English language teaching: English for specific purposes in Asia and beyond* (pp.141-151). Oxford: Routledge.

Okamo, T.（2012）.The Teaching of Aviation English: In Search of ESP with EGP's Involvement. *Bulletin of Kindai University Junior College Division. 45(1).* 37-54.

Orr, T. (1998). ESP for Japanese Universities: A guide for Intelligent Reform. *The Language Teacher 22.* 11.

Phan, L. H. (2013). Issues surrounding English, the internationalization of higher education and national identity in Asia: a focus on Japan. *Critical Studies in Education. 54,* 160–175. Publishers Limited.

Rinaldi, L., Sells, D., & McLaughlin, T. F. (1997). The effects of reading racetracks on the sight word acquisition and fluency of elementary students. *Journal of Behavioral Education, 7(2),* 219-233.

Schmitt, N. （2008）. Instructed second language vocabulary learning. *Language Teaching Research, 12(3)*, 325-363.

Schmitt, N. (1997). Vocabulary learning strategies. In Schmitt, N. and McCarthy, M. (Eds.), *Vocabulary: Description ,Acquisition and Pedagogy* (pp.199-227).Cambridge: Cambridge University Press

Shibata, N. (2019). The Effectiveness of Content-Based Instruction on Beginners' Writing Skills. In P. Clements, A. Kurause, P. Bennet. (Eds.) *Diversity and Inclusion.* Tokyo JALT.

Sinadinović, D. (2013). The importance of strategies in learning and acquiring medical English Vocabulary. *JAHR, 4(7)*, 273-91.

Stahl, S. A. & Fairbanks, M. M. (1986). "The effects of vocabulary instruction: A model-based meta analysis," *Review of Educational Research, Vol. 56,* pp. 72–110.

Sugiyama, A. (2021). The possibility of ESP in foreign education at university. Bulletin of Otsuma Woman's College. *IREE Journal.4.* 177-187.

Tanaka, K. (2019). Content and language integrated learning (CLIL): Compatibility of a European model of education to Japanese higher education. *Meiji Gakuin Review International Regional Studies 54.* 61-81.

Wu, J. (2014). Gender differences in online reading engagement, metacognitive strategies, navigation skills and reading literacy. J. Computer Assisted Learning, 30, 252–271.

Yamada, H, Maswana, S (2019). ESP in primary and secondary education. In H. Terauchi, J. Noguchi, & A. Tajino (Eds), *Towards a new paradigm for English language teaching: English for specific purposes in Asia and beyond* (pp.141-151). Oxford: Routledge

Yamauchi, Y. (2021). Development of a vocabulary size test for Japanese EFL learners using the New JACET List of 8,000 Basic Words. *JACET Journal, 65*, 23-45.

Yokoyama, S., Yamauchi, H., Nakano, H., Yasunami, S., & Kawakita, N. (2005). *Research on effective syllabus design and materials development for teaching ESP at the tertiary level*. Report of Current Research supported by Grant-in-Aid for Scientific Research in 2004.

Zahran, H. A. H. (2017). Effective methods for teaching and learning ESP vocabulary in EFL classes. *European Academic Research, 5(10).* 8643-8651.

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Force for Good: The Value of High-Achieving University Students in Tutoring Struggling Younger Students in Underserved Communities

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Abstract

Disparities in education access have been exacerbated by the pandemic. Children in communities with less access to education often experience additional vulnerability outside the classroom, compounding the gap between their education and that of other children. Given the paramount role that education plays in personal development, disparities in education pose a threat to the future of communities. Drawing on prior research and the success of the Texas Tech University Honors College's Bayless Elementary Mentoring Program in Lubbock, Texas, we propose the intervention of partnering struggling students in impoverished communities with high-achieving university students in mentoring relationships that involve one-on-one academic tutoring as well as companionship. To represent the steps of the intervention, we propose the IPBMO model: "I" for Identify, "P" for partner, "B" for Befriend, "M" for Mentor, and "O" for Observe. In the Identify stage, students struggling academically or socially should be noticed. In the Partner stage, the identified student should be teamed up with a high-achieving university student whose personality matches the younger student's temperament well. In the Befriend stage, the university student and the younger student form a bond that increases trust between the two individuals. In the Mentor stage, the university student tutors and advises the younger student on school, all while continuing friendship development. In the Observe stage, any changes in the younger student's outcomes should be observed to ascertain the efficacy of the intervention. This model serves to be a good template to close the gap of disparities in education.

Keywords: Education Disparities, Mentoring, Tutoring

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Introduction

The emergence of the novel coronavirus near the end of 2019 was an unforeseen disturbance of the global system, altering the day to day lives of people across the globe. The COVID-19 pandemic ballooned the already present inequalities in societies and drew attention to these widening disparities (Darmody et al., 2021). Observations of these disparities yield the sobering understanding that the consequences of these turbulent changes are borne most heavily by those of lower socioeconomic status (Darmody et al., 2021). Neglecting the psychological and emotional toll, the job losses and the economic hardship disproportionately affected people of lower income and less education (Perry et al., 2021). This paper is concerned with the disparity in education that the drawn-out societal effects of the pandemic have fattened.

Education is a contextual phenomenon—the livelihood and education of the child are not isolated in a vacuum, but instead are existing in a broader nexus of factors (Darmody et al., 2021). The restrictions, social distancing, job losses, and other changes that accompanied the pandemic altered the fabric of many households, influencing the livelihoods of countless young adults and children, potentially changing their academic performance (Darmody et al., 2021). Additionally, the threat to people's lives by the pandemic posed a heavy psychological burden that was festered by the social isolation and could also potentially produce a decline in educational results (Engzell et al., 2021). Even before the pandemic, educational inequalities materialized because of the degree to which a student's scholastic endeavors could be supported by his or her family, the conduciveness of his or her home environment to these endeavors, and the amount of resources possessed by the family (Darmody et al., 2021). It makes sense then that a young student's socioeconomic background is a potent predictor for his or her scholastic success, and these gaps along socioeconomic lines emerge early in a child's academic career and do not typically shrink as the child progress through the education system (Darmody et al., 2021).

The already unlevel playing field in education was skewed more with the pandemic. Families with higher levels of education or from higher social classes were able to weather the pandemic better, with students from those families outperforming others likely because their households possessed better forms of the technologies needed for learning and parents from those households could likely afford to work from home, making it easier to help their children keep up with educational tasks (Darmody et al., 2021). Learning losses due to school closure were observed as being higher for students from less-educated families, perhaps because their parents were less capable of providing support under the looming dangers of economic uncertainty and the taxing nature of working from home (Engzell et al., 2021; Haelermans et al., 2022).

The existence of educational inequality amongst young students—and its exacerbation by the pandemic—is troubling because of correlations between education level and other aspects of an individual's future life. Education has become the primary path to "financial security, stable employment, and social success" (Zajacova & Lawrence, 2018).The decrease in manufacturing jobs in America, coupled with globalization, and the significant returns of higher education have fostered the economic inequality that makes education increasingly more important to the success of young people (Zajacova & Lawrence, 2018). Additionally, adults with higher education levels "live healthier and longer lives compared with their less educated peers" (Zajacova & Lawrence, 2018). Numerous studies have observed the positive correlation between objective measures of health and a high educational level, with a possible

link being that higher educational attainment confers better access to jobs, allowing for a higher income and greater accumulation of familial wealth, which in turn leads to increased access to healthcare (Zajacova & Lawrence, 2018). The quantity and quality of an individual's social relations are correlated with education level (Fernández-Carro & Gumà Lao, 2022). A sense of loneliness is "prevalent among older adults with a low level of education," while those with higher levels of education "are at a lower risk of feeling late-life loneliness"(Fernández-Carro & Gumà Lao, 2022).

Given the existence of educational inequality and the importance of education to the path of an individual's life, an intervention is needed for struggling students, with an earlier intervention being ideal since it would minimize the amount of time that the students struggle educationally. This intervention should foster a portrait of education that will prepare the students most strongly for success. Being successful in the 21st century economy entails more than academic skills and a robust intellect (Whitehall et al., 2016). Employers highly value soft skills, including "communication, decision making/problem solving, self-management, and leadership," in their employees (Whitehall et al., 2016). Social-emotional skills, including "adaptive coping, emotional intelligence, social integration, problem solving, and a sense of personal well-being" are also highly valuable to the individual as these features are correlated with good mental health and excellent scholastic achievement (Whitehall et al., 2016). Similarly, an individual's self-confidence has been found to be extremely important in their success and a potent predictor for grade point average (Whitehall et al., 2016). With this in mind, we believe that the goal of education is not only the accruing of academic knowledge, but also the progressing along a journey of personal development.

Our opinions have also been influenced by success of the Texas Tech University (TTU) Honors College's Bayless Elementary Mentoring Program in Lubbock, Texas, a program in which one author was a mentor. In this program, selected students and faculty from the TTU Honors College are paired with and mentor a student at Bayless Elementary (Monacelli, 2019). Over one hundred TTU Honors College students participate as mentors in this program, setting aside time to tutor their mentee at least once a week during lunch time or the mentee's physical education period (Monacelli, 2019). The program's philosophy is that mentoring engenders role modeling, academics, and the encouragement of pursuing higher education (Monacelli, 2019). Often, over the course of a mentor's undergraduate career and tenure in the program, the mentor works with the same mentee (Monacelli, 2019). The weekly meetings over the course of semesters provides consistency and something for the mentee to look forward to as part of their weekly schedule (*Bayless Elementary Mentoring Program*, n.d.; Monacelli, 2019). The result of this steady relationship is not only that the mentee benefits greatly, but the college student mentors are also impacted themselves, with many describing their relationship with their mentees as akin to siblinghood (Monacelli, 2019). The healthy, enriching, mutualistic relationships that sprout from the program is evidenced by the high mentor retention rate and the fact that many children at Bayless Elementary ask for mentors (Monacelli, 2019).

The selection process for mentors in the program is meticulous. Students in the TTU Honors College who are in good standing—in regard to academics and conduct—are eligible to apply to be a mentor after they have finished their first semester at the Honors College (*Bayless Elementary Mentoring Program*, n.d.). Following their application, mentor candidates are interviewed by the director of the program and members of the board of the program (*Bayless Elementary Mentoring Program*, n.d.). Desirable characteristics of a mentor are holistic in scope: patience, enthusiasm, interest in the mentees, excellent communication skills,

excellent listening skills, the ability to self-evaluate, the desire to improve, experience in working with younger learners, the ability to connect with the mentees, and the knowledge of "how to handle sensitive issues that might require intervention" (*Bayless Elementary Mentoring Program*, n.d.).

This strong intentionality to recruit mentors that are holistically and emotionally intelligent provides a substrate that is conducive to the formation of a deep bond between the mentor and mentee, a relationship that has a profound effect on both members. Claire Crawford, a former board member of the program, said, "I want (people) to know how rewarding it is to have a relationship with a student that not only needs them but likes them" (Monacelli, 2019). Max Rowley, another former board member, echoed this when he stated, "In my experience, once the mentees get to know you and begin to start talking openly, it is very important to actively listen so the mentor can connect with the mentee. I feel this is important to have because it allows a friendship to be formed between the mentee and mentor" (*Bayless Elementary Mentoring Program*, n.d.).

The success of the Bayless Elementary Mentoring Program points to the high potential benefit of similar programs. Across the United States, there is a need for similar programs. Efficient setup and execution of such future programs warrants a simple, easy to understand model that can provide a basic skeleton for the philosophy and fundamental structure of such programs, a foundation that is applicable and adaptable to a wide range of communities across the country.

We assert that it is most helpful to frame this model as an intervention. Since a sociological intervention concerns a particular situation, viewing this model as an intervention compels one to thoroughly think through, discern, clarify, and define the relevant elements because they form the basis of social interaction in the relevant situation (Straus, 1989). Like many other sociological interventions, this model will combine multiple foci (Straus, 1989). For example, there is the mentor, the organization to which the mentor belongs, the mentee, and the organization to which the mentee belongs. Different levels of foci are often relevant, and sociological interventions should incorporate both the micro and macro views (Straus, 1989). For example, the model must encapsulate both the effect on each individual student and the collective effect on the school as a community.

To increase the positive effects and success of an intervention, the intervention should be based on theory and research, with theory and basic research giving rise to the design of the intervention which in turn produces the results of the intervention (Pillemer et al., 2003). Feedback mechanisms should exist within the apparatus so that findings from the intervention can help restructure the program design and potentially lead to modifications in the underlying theory (Pillemer et al., 2003). A model that is not based on theory or research or a model that is not evolving in the direction of improvement via feedback mechanisms can be ineffective and potentially dangerous for the participants. This poses a potential challenge to creating a model for a tutoring relationship between college students and elementary students because even successfully college students are not trained in the practical and research techniques necessary to run a self-sustaining program that is integrating theory and research. This situation is also difficult because the development of children can potentially involve sporadic, unsystematic, and emergent links between actions and consequences (Moore et al., 2019). More so, it is difficult to separate the effects of the intervention from the effects of the broader community system (Moore et al., 2019). This makes it difficult to have complex feedback mechanisms within the apparatus of the model. Given the potential pitfalls and

difficulty of this situation, we believe that any model for a program in which college students are paired in a mentoring relationship with struggling elementary students should prioritize simplicity so that the potential downside of a more complex intervention is avoided. Rather than this simplicity and minimalism in the model being a source of discouragement, it is a keystone that could increase the potential of the model if chosen correctly. This foundational keystone in our simplistic model is the relationship between the mentor and the mentee. Although there is no elaborate feedback mechanism here, a model based on this relationship is inherently fluid and adaptable because people, such as the mentor and mentee, are active agents that are constantly reacting and responding to one another. This close-to-the-action adaptation and the limits of an individual relationship can potentially help the model avoid any dangers that a model possessing a large, multi-level apparatus might unintentionally pose. Additionally, this foundation of relationship between the mentor and mentee is congruent with the philosophy the model seeks to uphold—the understanding that not only is education is far more than academic, but also that the academic aspect of education is enhanced by the non-academic aspects of education.

With this understanding of the foundational importance of the relationship between the mentor and the mentee, we propose the intervention of partnering younger, struggling students in impoverished communities with excelling college students in mentoring relationships that entail both one-on-one academic tutoring and companionship. Summarizing the steps of this intervention, we propose the IPBMO model: "I" for Identify, "P" for partner, "B" for Befriend, "M" for Mentor, and "O" for Observe. In the Identify stage, vulnerable students struggling academically or socially should be noted. In the Partner stage, the identified individuals should be partnered with an excelling college student of compatible temperament and personality. In the Befriend stage, the college student and the younger student form a bond that facilitates and cultivates trust between the two individuals. In the Mentor stage, the college student tutors and mentors the younger student, all while continuing the development of their friendship. In the Observe stage, changes in the mentee's outcomes should be noted to indicate the potential efficacy of the intervention.

Identify

The purpose of the first stage of the IPBMO model is identify students who are struggling academically or socially. The key observers who can identify such students in this stage are the classroom teachers. The teachers will have a much closer view and understanding of the students under their care than will the leadership or members of the mentoring program. The teachers should take note of students who they believe to be vulnerable to school disruption, which consists of interruptions in their relationships in school, the classroom environment, and the learning conditions (Sun et al., 2021). Identifying students vulnerable to school disruption is important as such disruption can prevent children from gaining the social, civic, and academic skills that school fosters (Sun et al., 2021). To identify students who are struggling, the teacher can look at quantitative metrics, such as a student's grades over the course of the school year. The teacher should also look for absenteeism and disengagement in class. Disengaged students are more often in dysfunctional families than are their peers (Sun et al., 2021). The student's relationship with classmates can also give the teacher clues about their social vulnerability. Students with tumultuous family relationships tend to have relationships with classmates that are compromised, making it more likely that such students will participate in or be victimized by bullying (Sun et al., 2021). Bullying often worsens the situation of the student, leading to inadequate socio-emotional adjustment, increased rates of substance abuse, guilt, worry, withdrawal from social interactions, disobedience, and

academic underachievement (Sun et al., 2021). After observing students who are at vulnerable to school disruption and are struggling academically or socially, the teacher should take note of these individuals in preparation for the next stage of the model. If the students need attention from a licensed professional, the teacher should notify the relevant parties, especially before proceeding to the next stage of the model.

Partner

The purpose of the second stage of the IPBMO model is to partner struggling younger students with high-achieving university students. The students identified in the previous stage as struggling and their parents should be contacted and asked whether they would be interested in being a mentee in the mentoring program. It is important that the teacher be the one to reach out to the students and their families, not the mentors or the leadership of the mentoring program, as the teacher already has an established relation to the student. A challenge that arises at this step is that if the student comes from an unstable household or has a negative relationship with the teacher, it will be difficult for the teacher to connect with the student and their families and encourage them to join the program. Often, students who have low participation and a poor attitude towards school—students that the teacher would be interested in helping—have a teacher-student relationship that is low in quality (Jederlund & von Rosen, 2022). Consequently, the students most in need of help might be less receptive to the teacher's advice. If the student and their families are interested in the program, the teacher can contact the leadership of the mentoring program and convey to them what are the needs and struggles of the student. Another obstacle presents at this step because if the teacher lacks an adequate understanding of the student, the teacher may be unsuccessful in correctly conveying the needs and struggles of the student to the leadership of the mentoring program. Based on the teacher's description of the student, the leadership of the program can select a potential mentor that will be partnered with the student. The leadership should select a potential mentor that has a high likelihood of forming a bond with the student. In situations where there is limited information on other persons, individuals may use the extent to which they feel themselves to be similar to another when making trust-based decisions—similarity between two persons often increases the likelihood of trust forming (Clerke & Heerey, 2021). Consequently, the leadership should choose a mentor who shares similarities to the mentee to accelerate the process of trust formation. It is possible that this correlation between similarities and trust exists because having similarities with another person helps one to process the other's communication and trust the other more easily—the other's beliefs feel more accessible if they are similar to one's own (Clerke & Heerey, 2021). One's own attitudes can help one predict an interpret another's the attitudes and behaviors of others who are similar (Clerke & Heerey, 2021). Accordingly, when partnering a mentee with a mentor, the leadership of the program should consider the individual's gender, background, and challenges so that they can pair them with a mentor who is similar, taking an accelerated path towards trust. A challenge that arises here is that the leadership's ability to partner a mentee with a similar mentor could be hindered if the teacher's own understanding and description of the mentee is incomplete or if the leadership's understanding—of the potential mentor or of the teacher's description of the mentee—is inadequate or flawed.

Befriend

The purpose of the third stage of the IPBMO model is for the mentor and mentee to form a bond that increases the trust between them. As the mentor and mentee meet at least once a week for one-on-one tutoring, it is expected that both individuals will converse and find

similarities or topics they can bond over. This stage is complete once the mentor and mentee consider each other friends. Also, it should be noted that even though the high-achieving college student is already being referred to as a mentor and the younger student is being referred to as a mentee, neither is embodying that role yet. Part of the philosophy of the IPBMO model is that the foundation of the model is the relationship between the two individuals, and the two individuals cannot fully become mentor and mentee until they are friends.

Mentor

The exact definition of a mentor varies from person to person, but most scholars agree that a mentor is an older individual who supplies career and personal advice to a less experienced person who is often younger (Haggard et al., 2011). The general understanding suggest that mentoring has both an instrumental aspect to it as well as a psychosocial dimension (Mullen & Klimaitis, 2021). Mentoring that effectively embodies this duality leads not just to significant learning but also can have the effect of social transformation (Mullen & Klimaitis, 2021). The IPBMO model relies on this conception of mentoring—entailing both academic learning and personal development—and this reliance comes to the forefront in the fourth stage of the model. In the Mentor stage, the college student provides not just academic tutoring to the student, but also advises the younger student on school, all while continuing the friendship. The IPBMO model states that the Mentor stage must come after the Befriend stage because for the potential mentor to live up to the psychosocial dimension of mentoring, the older and younger student must first become friends and have a significant amount of trust. The younger student must understand that the older college student genuinely cares for them before the older college student can truly become a mentor. The IPBMO model encourages mentors to actively try to stimulate certain behaviors in their mentees in ways that simultaneously make the mentee feel cared for. For example, a former board member of the Bayless Elementary Mentoring Program gifted her mentee four presents for the mentee's birthday and told her mentee to share one of the presents with another mentee in the program (Monacelli, 2019). This example shows a mentor encouraging the behavior of sharing in a mentee while also making the mentee feel cared for and special. The potential behavioral mimicry—inadvertent mimicry of another individual's nonverbal conduct—that may result could lead to an increased connection between the mentee and the mentor (Clerke & Heerey, 2021). Once in the Mentor stage, the mentor should set goals and milestones that the mentee can reasonably achieve. The goals need not be highly specific or extensive; the goal may simply be improvement over prior performance. The goals set should be communicated to the mentee's teacher and will be used to gauge the mentee's progress in the next stage of the model.

Observe

In the observe stage, the mentor and mentee are still continuing their relationship—a relationship which has both academic and developmental purposes—but now the mentor is actively observing the mentee's progress. The progress can be gauged based on the goals set in the previous stage of the model. Of paramount performance in this stage is the communication between the mentee's teacher and the mentor. The teacher should be gauging the student's academic and social condition before communicating the mentee's progress, regress, or stagnation in the classroom to the mentor. Based on the mentee's trajectory, the teacher and mentor can decide on things to try, change, or continue. Additionally, the teacher should be sure to ask the mentee and his or her family if they want to continue in the

program, have any feedback regarding the mentor, or desire to change anything. The teacher should provide this input from the mentee and his or her family to the leadership board of the mentoring program. If the mentee continues with the program, the model should be continued at the Mentor and Observe Stages.

Conclusion

The COVID-19 pandemic amplified existing inequalities, with the effects of the pandemic being borne more heavily by individuals of lower socioeconomic status (Darmody et al., 2021). Even before the pandemic, educational inequalities existed, and a student's socioeconomic background was a notable predictor of their scholastic success, with these gaps along socioeconomic lines emerging early in a child's academic career (Darmody et al., 2021). Learning loss due to the closing of schools during the pandemic was observed as being greater for students from lower socioeconomic status because their families were less able to provide support due to the wave of economic uncertainty and the because of the toll of working from home (Engzell et al., 2021; Haelermans et al., 2022). This increase in the education disparities is alarming because of the significant role that education plays in the course of one's life. Education represents the main path for an individual to attain "financial security, stable employment, and social success" (Zajacova & Lawrence, 2018). Given the foundational role that education plays in an individual's life course, an intervention is needed for students who are struggling in school.

This intervention is not just for students struggling academically but also for students who may be struggling socially. Employers in the 21st century place emphasis not just on intellect but also on social-emotional skills (Whitehall et al., 2016). Drawing on inspiration from the TTU Honors College's Bayless Elementary Mentoring Program in Lubbock, Texas, a program in which one author was a mentor, we propose the intervention of pairing struggling students in vulnerable communities with high-achieving college students in mentor-mentee relationships that involve one-on-one academic tutoring as well as companionship. The core of this intervention is the relationship between the mentor and the mentee and the philosophy that effective mentoring can lead not just to increased academic performance but also social development and transformation with the likelihood of this transformation increasing if the relationship between the mentor and mentee is one of friendship and trust.

The stages of the intervention are captured by the IPBMO model: "I" for Identify, "P" for partner, "B" for Befriend, "M" for Mentor, and "O" for Observe. In the Identify stage, the teacher takes note of students that are struggling academically or socially and who could potentially benefit from participation as a mentee in the mentoring program. In the Partner stage, if the student and his or her family are interested in participating in the program, the struggling student can be paired with a high-achieving university student. If possible, the leadership of the mentoring program should select a potential mentor who shares some similarities with the struggling student to accelerate the relationship's path to trust. In the Befriend stage, the mentor and mentee form a close bond as friends. In the Mentor stage, the mentor continues to provide weekly academic tutoring and companionship to the mentee while also offering the mentee advice and trying to encourage positive behaviors in the mentee. In the Observe stage, the mentee's progress is gauged by the teacher against goals set in by the mentor in the Mentor stage. Based on the mentee's progress and feedback, the teacher and mentor can decide the next steps for the student.

The IPBMO model is a minimalistic model for the intervention and provides a skeleton that can be adapted to different environments. Further experimentation is needed not just to improve this skeleton, but also to determine the optimal ways to customize it to a particular situation. We believe that, with this experimentation and optimization, the IPBMO model can be implemented across a wide range of communities to help decrease modifiable disparities in education. To accelerate this process of experimentation and optimization, we encourage programs that are working on this intervention to communicate with other similar programs to share improvements and insights.

References

Bayless Elementary Mentoring Program. (n.d.). Texas Tech University.
    https://www.depts.ttu.edu/honors/students/bayless/

Clerke, A. S., & Heerey, E. A. (2021). The Influence of Similarity and Mimicry on Decisions
    to Trust. *Collabra: Psychology*, *7*(1). https://doi.org/10.1525/collabra.23441

Darmody, M., Smyth, E., & Russell, H. (2021). Impacts of the COVID-19 Control Measures
    on Widening Educational Inequalities. *YOUNG*, *29*(4), 366–380.
    https://doi.org/10.1177/11033088211027412

Engzell, P., Frey, A., & Verhagen, M. D. (2021). Learning loss due to school closures during
    the COVID-19 pandemic. *Proceedings of the National Academy of Sciences*, *118*(17).
    https://doi.org/10.1073/pnas.2022376118

Fernández-Carro, C., & Gumà Lao, J. (2022). A Life-Course Approach to the Relationship
    Between Education, Family Trajectory and Late-Life Loneliness Among Older
    Women in Europe. *Social Indicators Research*, *162*(3), 1345–1363.
    https://doi.org/10.1007/s11205-022-02885-x

Haelermans, C., Korthals, R., Jacobs, M., de Leeuw, S., Vermeulen, S., van Vugt, L., Aarts,
    B., Prokic-Breuer, T., van der Velden, R., van Wetten, S., & de Wolf, I. (2022). Sharp
    increase in inequality in education in times of the COVID-19-pandemic. *PLOS ONE*,
    17(2), e0261114. https://doi.org/10.1371/journal.pone.0261114

Haggard, D. L., Dougherty, T. W., Turban, D. B., & Wilbanks, J. E. (2011). Who Is a
    Mentor? A Review of Evolving Definitions and Implications for Research. *Journal of
    Management*, *37*(1), 280–304. https://doi.org/10.1177/0149206310386227

Jederlund, U., & von Rosen, T. (2022). Changes in Students' School Trust as a Reflection of
    Teachers' Collective Learning Processes: Findings from a Longitudinal Study.
    Scandinavian Journal of Educational Research, *66*(7), 1161–1182.
    https://doi.org/10.1080/00313831.2021.1982764

Monacelli, A. (2019). Honors College Bayless Mentoring program impacts lives. *The Daily
    Toreador*. https://www.dailytoreador.com/lavida/honors-college-bayless-mentoring-
    program-impacts-lives/article_ff4253ba-5411-11e9-aaee-87dc846a63f7.html

Moore, G. F., Evans, R. E., Hawkins, J., Littlecott, H., Melendez-Torres, G. J., Bonell, C., &
    Murphy, S. (2019). From complex social interventions to interventions in complex
    social systems: Future directions and unresolved questions for intervention
    development and evaluation. *Evaluation*, *25*(1), 23–45.
    https://doi.org/10.1177/1356389018803219

Mullen, C. A., & Klimaitis, C. C. (2021). Defining mentoring: a literature review of issues,
    types, and applications. *Annals of the New York Academy of Sciences*, *1483*(1), 19–
    35. https://doi.org/10.1111/nyas.14176

Perry, B. L., Aronson, B., & Pescosolido, B. A. (2021). Pandemic precarity: COVID-19 is exposing and exacerbating inequalities in the American heartland. *Proceedings of the National Academy of Sciences*, *118*(8). https://doi.org/10.1073/pnas.2020685118

Pillemer, K., Suitor, J. J., & Wethington, E. (2003). Integrating Theory, Basic Research, and Intervention: Two Case Studies From Caregiving Research. *The Gerontologist*, *43*(suppl_1), 19–28. https://doi.org/10.1093/geront/43.suppl_1.19

Straus, R. A. (1989). Changing the Definition of the Situation: Toward a Theory of Sociological Intervention. *Sociological Practice*, *7*(1), 123–135. http://digitalcommons.wayne.edu/socprac/vol7/iss1/16

Sun, L., Semovski, V., & Stewart, S. L. (2021). A Study of Risk Factors Predicting School Disruption in Children and Youth Living in Ontario. *Canadian Journal of School Psychology*, *36*(3), 191–205. https://doi.org/10.1177/0829573521991421

Whitehall, A. P., Hill, L. G., Yost, D. M., & Kidwell, K. K. (2016). Being Smart Is Not Enough to Ensure Success: Integrating Personal Development into a General Education Course. *The Journal of General Education*, *65*(3–4), 241–263. https://doi.org/10.5325/jgeneeduc.65.3-4.0241

Zajacova, A., & Lawrence, E. M. (2018). The Relationship Between Education and Health: Reducing Disparities Through a Contextual Approach. *Annual Review of Public Health*, *39*(1), 273–289. https://doi.org/10.1146/annurev-publhealth-031816-044628

The Effects of Podcast Sound Bites on Information Retention: An Experimental Analysis

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Abstract

Podcasts are an increasingly popular tool for teaching and learning in higher education (e.g., Newman et al., 2021). These audio recordings often couple narration with sound bites, or excerpts from interviews. To date, little-to-no research has been conducted on the cognitive effects of educational podcasts. This lack of research, in combination with the structure of podcasts, begs the question: *Does the use of sound bites in podcasts affect information retention?* The current study uses the limited capacity model of mediated message processing (Lang, 2006) to explore this question. We use a between-groups experimental design to investigate if the use of sound bites affects retention of information. Participants were randomly assigned to one of three podcast groups: (1) Long sound bites, (2) Short soundbites, and (3) No sound bites. A post-test about the podcast content was administered directly after exposure to the podcast, and each participant received a score out of 10 representing the total number of correct answers. Results revealed no difference in information retention between groups. These results are discussed in light of their implications for research and application in educational contexts.

Keywords: Podcasts, Sound Bites, Message Processing

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Introduction

Podcasts are a major source of news and information for young adults (Bratcher, 2022). Podcasts are centered around many different themes, including, but not limited to, social belonging and companionship (Rime, Pike, & Collins, 2022). Of interest to the current study is the central theme of education; podcasts are often used as means to learn about news and information (Rime et. al., 2022). Unsurprisingly, then, podcasts have become an increasingly popular tool for teaching and learning in higher education (e.g., Newman et al., 2021).

A podcast is a piece of media that is available in digital format in online environments (e.g., Apple Music, Spotify, various applications). Often, podcasts are in serial format, are program-driven, and span a wide array of content areas (e.g., health and wellness, politics, sports, video games; Berry, 2006; Berry 2015). Regardless of content area, however, podcasts frequently couple narration with sound bites, or excerpts, from interviews. This is particularly true for news-based podcasts.

Given their popularity in educational contexts (Newman et al., 2021), it becomes important to examine how podcasts may impact educational outcomes. In the current study, we examine how one particular element of podcasts, the use of soundbites, impacts a major desirable educational outcome: Information retention.

To date, little-to-no research has been conducted on the cognitive effects of educational podcasts. This lack of research, in combination with the structure of podcasts, begs the question: *Does the use of sound bites in podcasts affect information retention?* Using the limited capacity model of mediated message processing (Lang, 2006), this study uses a between-groups experimental design to investigate if the use of sound bites affects retention of information in news-based podcasts.

Information Processing: The Limited Capacity Model for Motivated Mediated Message Processing (LC4MP)

Of central interest to the current study is how the use of sound bites in podcasts impacts the retention of information contained within the podcast. To understand this question, we turn our attention to an overview of short-and long-term memory processing using the limited capacity model for motivated mediated message processing (LC4MP) as a guiding theoretical framework.

Humans are cognitive misers. In large part, this is due to our limited information processing capabilities (Lang, 2017). As such, the retrieval, storage, and encoding of information is largely an automatic process (Lang, 2017; Rumelhart, Lindsay & Norman, 1972). This idea is most certainly true in new media landscapes, where individuals are inundated with information at a rapid pace.

For years, short and long-term information processing has been examined by researchers across disciplines. Rumelhart, Lindsay, and Norman (1972) see information processing as a three-step process that starts with exposure to a message. Next, according to the trip, comes the attention phase: A person chooses to ignore the information, which in turn causes the information to deteriorate in memory (i.e., attention diversion), or they choose to pay attention to this information. From there, the information is then encoded into their short-term, working memory (Ruiji, 2012). Once this step is complete, this information may be

integrated into long-term memory, and is stored with other accumulated knowledge (Fleming, 2006).

But what information gets encoded into memory and what information does not? Cognitive load theory (Schweppe & Rummer, 2014; Sweller et al., 1998; Chandler & Sweller, 1991) suggests that working memory has a limited capacity which can be easily exceeded in a variety of ways, such as receiving information that is redundant. Academic research by Sweller and Chandler (1994) provide evidence of this phenomenon in an educational context. They found that students perform better when redundant information is removed from a lesson, compared to students who are exposed to redundant information.

Long-term memory does not appear to have similar capacity limitations. Focusing primarily on long-term retention, the Limited Capacity Model for Motivated Mediated Message Processing (LC4MP; Lang, 2006) sees three steps in cognitive processing, which include encoding, storage, and retrieval. These steps are viewed as constant, continuous, and simultaneous.

Of the components of LC4MP, three are most relevant to this study: people have limited processing capacity; people process information in order to survive and thrive in an uncertain world; and mediated and non-mediated communication is processed in a similar fashion (Fisher & Weber, 2020; Pavolik, 2015; Fulton, 2014). While the limitations of working memory can limit what is successfully processed into long-term memory, the capacity of long-term memory is notably greater than working memory. (Schweppe & Rummer, 2014).

One potential way that information may be stored in memory is through attentional processes. If an individual pays attention to information, it becomes more likely that they will encode it into their short-term memory. From this, the question arises for educators: How might a message be more likely to gain attention? In the current study, we look at specifically at podcasts and propose that one way to influence attentional processes, and therefore information retention and memory, is through the use of sound bites. We now turn our attention to a discussion on sound bites in media and podcasts.

The Use of Sound Bites in News Media

Research regarding the use of sound bites in podcasts is relatively non-existent. To better understand how the use of sound bites in podcasts may impact information retention, we focus on other types of media, specifically television.

One of the key assumptions of American culture is that news programming creates a better-informed society. Partly as a result of this perspective, as well as the competition for ratings, the news industry attempts to feed as much information as possible to the viewers, in the quickest manner possible. One technique for incorporating additional media into a story is the added production element of soundbites. Studies show that sound bites in journalism have decreased from 43 seconds in 1968 to about 9 seconds in 1992 and has stabilized since (Hallin, 1992; Farnsworth & Lichter, 2011).

When it comes to television sound bites, critics argue that sound bites provide insufficient time for politicians to articulate their positions on issues, which ultimately results in fragmented, journalist-centered public discourse (Rinke, 2016; Bennett, 2009; Lichter, 2001).

One purpose of the soundbite is to deliver information to the audience directly from the source. If news consumers are expected to make informed opinions and decisions based on news stories that include sound bites, how can they successfully do so? The current student will explore this question and explain how this idea translates to news podcasts. We specifically focus on the following question:

RQ1: Does the inclusion of sound bites in news programming lead to increased information retention?

Methodology

A total of 132 undergraduate students were recruited from a mid-size public university in the northeast. Participants averaged an age if 19.86 years ($SD = 1.30$), were mostly female ($N = 84$), and White ($N = 117$).

This study utilized a between-group experimental design. Upon recruitment, participants were instructed to bring their headphones and listening device (e.g., laptop, tablet) to the classroom. Next, they clicked a link to a survey and then were randomly assigned to sound bite condition: (1) No soundbites, (2) Short soundbites (i.e., 10 seconds), and (3) Long soundbites (i.e., 30 seconds). Sound bites took the form of interview excerpts. Participants then listened to a news podcast corresponding with their sound bite condition.

The podcast was a re-recording of an Iowa public news segment that lasted roughly eight minutes. In this podcast, a host of issues were discussed, including political news, economic issues, and COVID vaccination updates.

After listening to the podcast, participants completed a 10-item quiz on the information presented in the podcast. Each participant then received a single score representing the total number of questions they got correct, which ranged from zero to ten. After completing this quiz, participants reported on other measures and their demographics.

Results

Our research question asked if there would be differences in quiz scores across sound bite condition. To explore this possibility, we first examined the condition means of each condition. Those who heard no soundbites scored an average of 4.62 ($SD = 2.10$), while those in the short sound bites condition scored an average of 4.64 ($SD = 2.53$). Those in the long sound bites condition scored an average of 4.96 ($SD = 1.93$).

To examine if these mean differences were meaningful we conducted an Analysis of Variance (ANOVA). The ANOVA did not detect a statistically significant difference among conditions, $F(2, 132) = 0.97$, $R^2 = .02$, $p = .73$. Therefore, there was no difference in quiz score based on the presence or length of sound bites in the podcast.

Discussion and Conclusions

Podcasts are a popular form of media among young adults for news and information (Bratcher, 2022) and are frequently used in teaching and learning in higher education contexts (e.g., Newman et al., 2021). In light of this information, the current study examined how podcasts may impact information retention and memory. We specifically focused on

how variations in sound bite length would impact memory and information retention. Our study was guided by a central research question: Does the inclusion of sound bites in news programming lead to increased information retention?

We used the limited model of mediated message processing (LC4MP) to guide our study. Participants were randomly assigned to one of three conditions that represented varying levels of sound bite lengths. They then listened to a podcast corresponding with their condition. After, participants completed a ten-item quiz on the information contained in the podcast. The higher the score of the quiz, the closer to a participant was to getting all ten answers correct.

An examination of condition means reveals that regardless of condition, all participants scored near the midpoint of the scale. While the long sound bites condition featured the highest mean score, an ANOVA revealed no differences among condition. Therefore, our results indicated that sound bite length did not impact information retention and memory of the information contained in the podcast.

Our failure to detect an effect may be explained by a few methodological decisions. First, it may be the case that our sample was underpowered and a larger sample may yield an effect. An examination of condition means does suggest a potential difference in conditions may exist, such that listening to long sound bites in a podcast would lead to enhanced memory and information retention, compared to other conditions. If there is a meaningful difference between conditions, a larger sample would allow for these differences to be detected in an ANOVA.

Second, it may be the case that our experimental conditions were not strong enough to detect an effect. In the current study, we used a podcast from Iowa, a state from which our sample does not reside. It may be the case that participants found the podcast less relevant to them, and thus, this perception drove our results. Relatedly, podcasts are frequently used in educational contexts, where students likely have their own clear educational goals (e.g., pass a test, earn an A in the class). In the current study, our participants likely did not have major goals related to the information contained in the podcast, and therefore were less motivated to retain the information contained in the podcast, regardless of condition. Future research should address this issue by perhaps providing participants with some type of incentive for listening to the podcast, thereby creating a clear goal in listening to the information.

Additionally, the current study looked at only the effects of sound bites using a single podcast; it may be the case that these effects are visible over an extended period of time. A longitudinal design, which exposes participants to sound bite podcasts over a period of time, may be a superior method to detect effects, should they be present. Studies in the future research should take these limitations into consideration.

Academic research on the effects of sound bites in podcasts on information retention and memory is quite limited. The current study begins to build a foundation for subsequent work examining the effects of sound bites on a host of educational variables. While in the current study, we failed to find evidence that the presence and length of podcast sound bites impacts information retention and memory, this does not mean that the use of podcasts is not an effective means of teaching and learning. In fact, it stands to logic that pairing a popular medium with an educational context is a unique, and likely effective means of enhancing teaching and learning.

References

Bennett, W. L. (2009). News: The politics of illusion (8th ed.). New York, NY: Pearson Longman.

Berry, R. (2006). Will the iPod kill the radio star? Profiling podcasting as radio. *Convergence*, *12*(2), 143-162.

Berry, R. (2015). A golden age of podcasting? Evaluating serial in the context of podcast histories. *Journal of Radio & Audio Media*, *22*(2), 170-178.

Bratcher, T. R. (2022). Toward a deeper discussion: A survey analysis of podcasts and personalized politics. *Atlantic Journal of Communication*, *30*(2), 188-199.

Chandler, C. C. (1994). Studying related pictures can reduce accuracy, but increase confidence, in a modified recognition test. *Memory & Cognition*, *22*, 273-280.

Chandler, P., & Sweller, J. (1991). Cognitive load theory and the format of instruction. *Cognition and Instruction*, *8*(4), 293-332.

Farnsworth, S. J., & Lichter, S. R. (2011). *The nightly news nightmare: Media coverage of US presidential elections, 1988-2008*. Rowman & Littlefield.

Fisher, J. T., & Weber, R. (2020). Limited capacity model of motivated mediated message processing (LC4MP). In J.V. den Bulck (Ed.), *International Encyclopedia of Media Psychology. Hoboken, NJ: Wiley Blackwell*.

Fulton, L. A. (2014). *Information retention of audio based public service announcements: The impact of messages created using different production methods*. Indiana University of Pennsylvania.

Hallin, D. C. (1992). Sound bite news: Television coverage of elections, 1968–1988. *Journal of Communication*, *42*(2), 5-24.

Lang, A. (2006). Using the limited capacity model of motivated mediated message processing to design -effective cancer communication messages. *Journal of Communication*, *56*, 57-80.

Lang, A. (2017). Limited capacity model of motivated mediated message processing (LC4MP). In A. Rossler (Ed.), *The international encyclopedia of media effects*, (pp. 1-9). Wiley.

Lichter, S. R. (2001). A plague on both parties: Substance and fairness in TV election news. *Harvard International Journal of Press/Politics*, *6*(3), 8-30.

Newman, J., Liew, A., Bowles, J., Soady, K., & Inglis, S. (2021). Podcasts for the delivery of medical education and remote learning. *Journal of Medical Internet Research*, *23*(8), e29168.

Pavolik, B. L. (2015). *News crawls and audience retention: A test of information overload in local television news programming*. Indiana University of Pennsylvania.

Rime, J., Pike, C., & Collins, T. (2022). What is a podcast? Considering innovations in podcasting through the six-tensions framework. *Convergence*, *28*(5), 1260-1282.

Rinke, E. M. (2016). The impact of sound-bite journalism on public argument. *Journal of Communication*, *66*(4), 625-645.

Ruiji, L. (2012). The development on multimedia teaching resources based on information processing theory. *International Journal of Advancements in Computing Technology*, *4*, 58-64.

Rumelhart, D. E., Lindsay, P. H., & Norman, D. A. (1972). A process model for long-term memory. In E. Tulving & W. Donaldson (Eds.), *Organization of memory,* Academic Press.

Schweppe, J., & Rummer, R. (2014). Attention, working memory, and long-term memory in multimedia learning: An integrated perspective based on process models of working memory. *Educational Psychology Review*, *26*, 285-306.

Sweller, J., Van Merrienboer, J. J., & Paas, F. G. (1998). Cognitive architecture and instructional design. *Educational psychology review*, 251-296.

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Do Sound Bites Impact Students' Perceptions of Credibility of Podcasts? An Experimental Analysis

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

Due to their relatively low price and appeal, podcasts are commonly used in educational contexts (e.g., Cho et al., 2017). A common structural element of podcasts is the use of *sound bites*, which are excerpts of longer pieces of outside media (e.g., interviews). A main indicator of quality upon which students judge podcast material is *credibility*, or the degree to which the content is trustworthy (Lin et al., 2014). One potential pathway to credibility is through including multiple perspectives, which may be accomplished through the use of podcast soundbites. Thus, the question arises: *Do podcast sound bites impact students' perceptions of credibility?* This paper explores this question using an experimental design. Participants first listened to a podcast and were randomly assigned to one of three groups: (1) Long sound bites, (2) Short soundbites, and (3) No sound bites. Immediately following the podcast, participants responded to survey items pertaining to credibility. Results revealed no differences in credibility perception. We discuss these results in light of their implications for research and application in educational contexts.

Keywords: Podcasts, Sound Bites, Credibility

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Introduction

Podcasts are a popular form of media among young adults (Bratcher, 2022), and due to their relatively low price and appeal, podcasts are commonly used in educational contexts (e.g., Cho et al., 2017). These pieces of media can "turbocharge" unit areas across disciplines (Williams, 2007, p. 45). While the effects of podcasts in educational contexts has been examined, little-to-no research examines the effects of a common structural element of podcasts: s*ound bites*, which are excerpts of longer pieces of outside media (e.g., interviews).

A main indicator of quality upon which students judge podcast material is *credibility*, or the degree to which the content is trustworthy (Lin et al., 2014). One potential pathway to credibility is through including multiple perspectives, which may be accomplished through the use of podcast soundbites (Lankes, 2007).

Because podcasts are an increasingly popular tool used in teaching and learning (Newman et al., 2021), it becomes important to examine how they may impact students' perceptions of credibility, which may ultimately lead to a host of positive educational outcomes. In the current study, we examine how the use of a less examined element of podcasts, sound bites, influence students' perceptions of credibility.

This paper explores this question using a between-groups experimental design centered around the following question: *Do podcast sound bites impact students' perceptions of credibility?* Participants first listened to a podcast and were randomly assigned to one of three groups: (1) Long sound bites, (2) Short soundbites, and (3) No sound bites. Immediately following the podcast, participants responded to survey items pertaining to credibility. The following sections provide a brief explication of our key constructs: Credibility and sound bites.

Credibility of Podcasts

Credibility is a term used to describe the perception of a receiver regarding the believability of an information source (O'Keefe, 2016). Two dimensions of credibility exist: Expertise and trustworthiness. While the expertise dimension captures whether or not a receiver believes the source to understand the truth, the trustworthy dimension focuses on whether a receiver believes that a source will in fact be truthful (O'Keefe, 2016).

While perceptions of credibility lie in the mind of the receiver, sources may modify messages in specific ways that may enhance (or diminish) credibility. Various messages, including those that mention one's expertise in an area (e.g., education level) and conveyance of specific nonverbal behaviors (e.g., eye contact) are examples of how a source may attempt to influence their credibility perceptions (O'Keefe, 2016). Often overlooked, however, is how the sources that one uses in a message may go on to influence perceptions of credibility.

Within this area, evidence does suggest that including multiple sources may be a means to enhance perceptions of credibility, which some have labeled a "reliability approach" (Lankes, 2008, p. 678). Thus, by presenting evidence from a multitude of sources, individuals may perceive a piece of media to be more credible compared to a piece of media that features fewer sources.

In light of the aforementioned evidence, it stands to reason, then, that podcast soundbites may have the ability to impact the perceived credibility of the overall podcast. By including multiple sources through interview excepts that take the form of sound bites, audiences may perceive the information to be more credible. In an educational context, then, the question arises: How might podcast sound bites influence students' credibility perceptions of the overall podcast? The current study explores this question. To better understand this question, and to frame the current study, we now turn our attention to research on sound bites.

The Use of Sound Bites in News Media

To date, there is little-to-no research regarding the use of sound bites in podcasts in educational contexts. However, research on traditional forms of media, such as television, provides us with a general framework for understanding the use of sound bites, and how their use may differentially impact perceptual-level variables.

A sound bite is an excerpt of a longer piece of outside media that is contained within a media product. Often, sound bites take the form of interview excerpts, but may include other pieces of media including, but not limited to, excerpts from speeches or television shows. Regardless of type, however, the purpose of the soundbite is to convey information directly from sources.

The television news industry, driven by competition and the desire to create a well-informed public, strives to provide audiences with the most amount of information in a short time frame. One common way to do this is by incorporating sound bites into a media product.

While sound bites may provide audiences with multiple perspectives on an issue, they may also hinder the audiences' ability to fully comprehend public issues. Research demonstrates that at least within the context of television news, interview sound bites prevent a full summary of given issues. The result is that the information presented becomes fragmented (Rinke, 2016; Bennett, 2009; Lichter, 2001). These conflicting possibilities raise questions regarding perceived credibility of podcasts. Thus, the following question arises:

> RQ1: Does the inclusion of sound bites in podcasts impact students' perceived credibility of the podcast?

Methodology

One hundred thirty-two undergraduate students completed this between-groups experiment. Participants came from a mid-size public university in the northeast and were on average years of an age (*SD* = 1.30). The majority of our sample was female (*N* = 84), and White (*N* = 117).

A between-groups experimental design tested the effects of sound bites on perceptions of credibility. Participants brought headphones and a lap top or tablet to the lab. They then were provided with a link to a survey. Upon entering the survey, participants were randomly assigned to condition: (1) No soundbites, (2) Short soundbites (i.e., 10 seconds), and (3) Long soundbites (i.e., 30 seconds). We used varying lengths of interview excerpts for each condition. After random assignment, participants listened to a podcast consistent with their condition.

Our experimental stimuli were a recording of an eight-minute news broadcast from an Iowa public news station. Covered in the podcast were a host of issues including issues pertaining to COVID-19, politics, and economics.

After listening to the podcast, participants completed Appleman and Sundar's (2016) credibility scale, which used ten items to measure credibility. These items used a series of adjectives (e.g., objective, well-presented) rated on seven-point Likert type response scales ranging from *describes very poorly* to *describes very well*. These items were then averaged for each participant such that each participant had a single score ranging from one to seven that represented their perceived credibility of the podcast ($\alpha = .92$).

Results

Our research question asked if there would be differences participants' perceptions of credibility based on experimental condition. To examine this question, we first looked at the condition means. Participants in the no sound bites condition had an average credibility perception 4.91 ($SD = 1.02$, $N = 42$), while those in the short sound bites condition had an average of 4.75 ($SD = 0.93$, $N = 45$). The average scores for those in the long sound bite condition was 5.05 ($SD = 1.13$, $N = 45$).

We then conducted an Analysis of Variance (ANOVA) to determine if any meaningful differences existed between groups. The ANOVA did not detect a statistically significant difference among conditions, $F(2, 132) = 0.97$, $p = .38$. Thus, results indicated that participants did not perceive the podcast to be more or less credible based on sound bite condition.

Discussion and Conclusions

In the current study, we examined the effects of an often-overlooked feature of podcasts: Sound bites. We specifically examined how the length of sound bites in a podcast may influence students' overall perceptions of the credibility of that podcast. Our study was guided by the following research question: *Does the inclusion of sound bites in podcasts impact students' perceived credibility of the podcast?*

Informed by research on sound bites in news media and credibility, we examined whether the length and number of sources in a podcast influenced credibility perceptions. We randomly assigned participants to one of three conditions that featured different levels of sound bites (i.e., no sound bites, short sound bites, long sound bites). After listening to a podcast that matched their assigned condition, participants completed Appleman and Sundar's (2016) credibility scale. Higher scores on this scale represented more favorable perceptions of credibility.

Results of an ANOVA revealed that perceptions of credibility did not differ based on experimental condition. Therefore, our results indicated that sound bites did not have an impact on perceptions of credibility. While previous research (e.g., Lankes, 2008) would suggest that sound bite conditions, and specifically, the inclusion of multiple perspectives, would impact how credible students rated the information, we failed to find evidence for that possibility.

Our study was guided by a research question, as opposed to hypothesis, because conflicting research exists regarding the effects of sound bites on perceptions of credibility. As previously mentioned, work by Lankes (2008) suggests that the more sound bites in a podcast, the more credible audiences would perceive that podcast to be. On the other hand, Rinke (2016), Bennett (2009), and Lichter (2001) suggest that sound bites cause the overall message to become fragmented and as a result, they prohibit a full presentation of the issue at hand. Results of the current study suggest that findings from the later group of scholars holds true. These results also build on the work of others to demonstrate the effects that this may have on credibility.

Our findings may also be the result of methodological weaknesses. Our experimental stimuli, which featured news and information in Iowa, may have caused our sample (who was located in the Northeast section of the United States) to feel that the information was less relevant to them, which in turn biased the results. Future research should utilize podcasts that students view more consistent with their own goals and interests. Finally, of course it is possible that the effect size is smaller than anticipated and that we would need a larger sample size to detect an effect, should there be one present. We are currently in the process of collecting data from a separate sample to see if that is the case.

Research on sound bites in general, and the effects of sound bites on perceptions of credibility specifically, are quite limited. While there is still much work to do in this area, the present study does start to build a foundation for work examining the effects of podcasts and sound bites in educational contexts.

References

Appelman, A., & Sundar, S. S. (2016). Measuring message credibility: Construction and validation of an exclusive scale. *Journalism & Mass Communication Quarterly*, *93*(1), 59-79.

Bennett, W. L. (2009). News: The politics of illusion (8th ed.). New York, NY: Pearson Longman.

Bratcher, T. R. (2022). Toward a deeper discussion: A survey analysis of podcasts and personalized politics. *Atlantic Journal of Communication*, *30*(2), 188-199.

Cho, D., et al. (2017). Podcasting in medical education: A review of the literature. *Korean Journal of Medical Education*, *29*(4), 229.

Lankes, R. D. (2008). Credibility on the internet: Shifting from authority to reliability. *Journal of Documentation*, *64*(5), 667-686.

Lichter, S. R. (2001). A plague on both parties: Substance and fairness in TV election news. *Harvard International Journal of Press/Politics*, *6*(3), 8-30.

Lin, M., et al. (2015). Quality indicators for blogs and podcasts used in medical education: modified Delphi consensus recommendations by an international cohort of health professions educators. *Postgraduate Medical Journal*, *91*(1080), 546-550.

Newman, J., Liew, A., Bowles, J., Soady, K., & Inglis, S. (2021). Podcasts for the delivery of medical education and remote learning. *Journal of Medical Internet Research*, *23*(8).

Rinke, E. M. (2016). The impact of sound-bite journalism on public argument. *Journal of Communication*, *66*(4), 625-645.

Williams, B. (2007). *Educator's podcast guide*. Washington, DC: International Society for Technology in Education.

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A Model for Using Data and Differentiated Instructional Strategies to Support Students' Learning Needs

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Abstract

Learning Analytics is an important area in education, with limited evidence that it improves student outcomes and supports learning and teaching needs (Viberg et. al, 2018). In a creative school, the use of data to understand students' needs is even less straightforward because many of our learning goals are more subjective and not as easily quantified. We pioneered an approach of blending the use of data with differentiated instructional (DI) strategies in a creative education setting. First, data is collected on students' abilities or needs through a quiz, survey or diagnostic task on the school's learning management system. When students come to class, the lecturer employs a DI strategy like "tiering" (Tomlinson, 2017) to better support their learning needs or abilities. Finally, a post-class survey is conducted to check on students' perceptions, which allows the lecturer to continually monitor and adapt his/her lesson activities. Survey results (n=108) from our pilot suggest that our model of using data and differentiated activities are well-received by students from different creative disciplines, with 70% to 74% of students reporting a high level of perceived competency after the lesson activities. The school has continued to pilot different ways to assess students' needs and more ways to differentiate lesson activities (e.g. compacting, flexible groupings). We hope to share this model and our experience with other teaching practitioners to move beyond a "one-size-fits-all" approach to teaching and learning.

Keywords: Differentiated Learning, Differentiated Instruction, Learning Analytics, Creative Education

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INTRODUCTION

Since the Covid-19 pandemic ushered in a new age of remote and hybrid learning, teachers have creatively found more ways to engage with students on digital platforms. At Singapore Polytechnic (SP), like many educational institutions globally, a learning management system is used for teaching and learning. Aside from storing and disseminating lesson materials, our learning management system is also used to collect data about their students' learning through quizzes and surveys. It is also possible to set up assignment boxes or discussion boards where the teacher can assess students' abilities. D2L provides teachers with dashboards that summarise student performance (see Appendix A). Teachers may also download the data and perform additional analysis as necessary.

The data on the LMS allows the teacher to make informed decisions about how to run the class and what additional support or clarification is needed (Martin & Ndoye, 2016). In the process of collecting relevant data on student learning, there lies a golden opportunity to design appropriate interventions for students based on this data.

In this paper, we propose a model for using data and differentiated instructional (DI) strategies to better support students' learning needs. The model is piloted in three modules (*n = 108*) in the media, arts, and design school at Singapore Polytechnic. Results show that the use of data and DI strategies were well-received by students from different creative disciplines, with 70% to 74% of students reporting a high level of perceived competency after the lesson activities.

Differentiated Instruction

To get a clearer idea of how to design appropriate interventions based on students' different abilities, preferences, or learning styles, we reviewed the literature on differentiated instruction and strategies.

Tomlinson (2014) defines differentiated instruction (DI) as the **systematic approach where teachers modify curricula, teaching, learning pace, routines, methods, resources, and activities to honour and address the broad range of students' readiness levels, needs, interests, motivations, and learning styles to maximise their learning opportunity and capacity**. Underpinning the approach is a student and equity-based philosophy that regards diversity as normal and valuable, putting students in a safe, supportive, and intellectually-rigorous environment (Tomlinson, 2001). Tomlinson's definition of DI is highly egalitarian and democratic and reflects a learner-centric curriculum model.

In Renzulli and Reis (1998) work in comparison, it distinguishes and prioritises the higher ability students with the intention of elevating their learning. It gives us a perspective on DI being an efficient teaching and learning strategy based on student abilities. Renzulli and Reis focus on DI functioning as a teaching strategy to serve students who are identified as having advanced abilities (skills, creativity, focus). It focuses on the DI strategy - curriculum compacting, as its main strategy for differentiation. Curriculum compacting, also mentioned briefly by Tomlinson (2014) as a technique for DI, is one which quickly identifies students level of mastery in their materials and allows teachers to make adjustments to curriculum to replace the content students already mastered with new content, enrichment options, or other activities (Renzulli and Reis, 1998). Although the function of DI in this aspect is to keep content academically challenging for higher ability students, it also goes to demonstrate that

DI can go beyond its equity nature, and be effective even as a learning strategy to elevate the readiness of students through differentiating the instructions to accommodate their individual strengths.

Ultimately, not all DI are the same. Different DI prioritises different dimensions and thus foregrounds different aspects of DI. In Bondie et al. (2019), it analysed how 28 U.S based research studies conducted between 2001 to 2015 have defined, described, and measured changes in teaching practices related to implementation of DI. How we frame DI influences the purpose DI, the objective of DI, the materials used or made, the data type being gathered and interpreted, the skills required of the teacher, the level of teacher decision-making control, and the necessary teacher professional knowledge. Hence the type of DI definition selected can influence the teachers' practice, and will thus influence their experience and perception.

As SP's mission is to prepare our students to be beyond work ready, our curriculum aims to prepare students to be life ready and world ready. So beyond the mastery of skills, it is our mission to educate students to be purposeful, motivated, self-directed inspired learners who engage in life-long learning (Singapore Polytechnic, 2021). Hence, a framework that is more balanced and learner-centric is needed. At the same time, most teachers in SP do not know, and have not used DI in their classes before. So the definition needs to provide a clear definition that helps teachers to get familiar with the concept. Therefore, the framework we have chosen for the purpose of our research is Tomlinson's (2014) definition of DI. In support of this main definition, we will use the other frameworks mentioned in our review as supplementary definitions when necessary. We will also use Tomlinson's (2014) list of frameworks, toolkits, strategies and case studies to craft our differentiated instructions.

Factors that may affect DI implementation in our school

Sociocultural factors

In Singapore's public school sociocultural context, teachers have a more authoritarian approach as compared to the teachers in the west where DI is conceived. It is to our teachers' preference to have a "stronger hierarchical relationship and teacher's authority" (Heng and Song, p.607, 2020). However, being in the media, arts and design school in SP, the preference in some classes are shifted to a more democratic classroom environment instead (Waterman, 2007).

Singapore teachers from public schools associate quiet and cooperating classes to be 'in-control'. They control what is being taught based on their perception of the students and knowledge that is delivered, rather than co-constructing the content with the students (Heng and Song, 2020). Teachers shared their views that there are expectations that teachers need to be in control of their classroom, along with the idea that learning can only be done when students are quiet and attentive. This adds an external pressure on how the classes can be designed. The situation is quite different in our school. Here, lessons are run in small tutorial classes where students are encouraged to participate actively in the learning process. Studio-based modules are conducted by lecturers who are facilitators of learning rather than just deliverer of content. In some cases, students participate in projects that work directly with industry partners on projects in highly authentic experiences. During these projects students have the chance to work in small teams and to hone skills that are beyond the content of the module. These key features of the curriculum are some contributing factors as to why our

school could be different from conventional public schools. We believe that there could potentially be better implementation of DI in our school because of its unique creative and egalitarian culture even though it is still part of a national educational system and milieu.

SP media, arts, and design school teachers could be less results-oriented and more process-oriented as compared to Public Schools in Singapore which might have an overemphasis for what can be tracked and measured. However since teachers of our school are generally also local Singaporeans, perceptions could be deeply rooted as teachers are inclined to teach as they were taught. The students themselves may also prefer the mode of teaching to be more instructional rather than self-directed (Heng and Song, 2020). Another possible resistance to DI implementation as part of the sociocultural context, could be a preference over standardisation as a means to ensure fairness (Heng and Song, 2020). The perception of differentiating access and differentiating the allocation of resources (time and materials) could be deemed as unfair both to the teachers and the students.

Stakeholder tensions and support

Tensions come in all directions and from different stakeholders (teacher, leadership, students, parents). When there is an introduction to new pedagogy, a significant amount of energy is needed to change what they are familiar with. The justification has to be clear, the results have to be measurable, and there has to be proof of the effectiveness of DI. Furthermore, syllabi and examinations are centrally designed and there are also expectations to report on students' progress by checking their work. The top-down pressure leads to the belief that teachers will need to handle more work to demonstrate their teaching and their students' learning. All these are factors that add to the resistance to experiment and adapt new pedagogies. However, in our school, unlike primary and secondary schools, teachers are also the curriculum designers. As subject experts in their own domains, our school's specialisations work with the relevant industries and its teachers to map out the subject syllabus. Teachers are given a healthy amount of autonomy and decision-making support. The supportive environment to experiment new pedagogies might be a factor to encourage DI implementation and might lead to a positive uptake for DI implementation in our school.

On the whole, students might not be familiar or receptive to this new mode of learning. DI has a different style as compared with the rest of the teaching styles. This might cause tension and discomfort with the students. There might also be morale issues, when students do not receive the same set of questions as the rest of the students. This might cause disgruntled students to be uncomfortable and frustrated with the teaching style (Heng and Song, 2020). In our implementation of our model, we tried to minimise this issue by ensuring that the communication to the students was fair and honest.

Differentiated instructional strategies

Differentiated instructional (DI) strategies are useful when they are aligned with lesson standards, targets, and objectives. Determining which strategy to use is a creative and fluid process involving the data collected, teachers' keen observation and a general intuition of the students. At the same time, experienced teachers also need to be knowledgeable and flexible enough to quickly change strategies to keep students interested and continue to engage them in learning. We have identified DI strategies listed by Tomlinson (2017) that are potentially useful to our school's teachers that can help students progress in their learning effectively.

Tiering is a readiness-centric DI strategy that differentiates students based on their "critical knowledge, understandings, and skills (KUDs)" (Tomlinson, p. 201, 2017). Teachers begin the process by identifying one task that aligns with the intended lesson standards, targets, and objectives. Then by varying the difficulty level to challenge advanced students to keep them in the zone of proximal development. After determining the medium and extended instructions, teachers can plan the tiering according to the level and type of scaffolding required. The differentiated instructions are then able to provide students with access to the content and push them to a better learning experience. On top of what Tomlinson (2017) has illustrated, we suggest considering the level of authenticity for the task when designing the instructions. The level of difficulty can go beyond the technical application in a higher authentic activity. Students can be challenged beyond the content and have an opportunity to hone skills beyond the content.

Interest Centers/Stations/Groups provide additional opportunities for the students to learn more deeply about a specific topic beyond the intention of the standards set by the curriculum (Tomlinson, 2017). It can go beyond providing more information for the students about the specific topic. Teachers can also consider interest centers as an extension opportunity for students to work on (individually or in teams) a particular topic or skill set. These interest centers can also be formed with readiness in mind. Students of different readiness levels can be grouped and given interesting topics that vary in their level of complexity and interest topics so that the activity can be appropriately positioned to engage the learners. It is also important to distinguish between 'centers' and 'stations' and 'groups'. When using stations, students will be expected to complete all stations to achieve a level of understanding and proficiency for a topic or skills. Centers on the other hand are independent of the curriculum, and there are no expectations for the students to move through all of the centres by the end of the lesson. At the same time, centers provide some flexibility for students to move to different centres during the lesson. Arrangements in a group however are usually fixed for the duration of the activity.

Learning Centers/Stations are areas of the classroom where students can work on their KUDs. Learning centers are usually longer in duration, and the resources provided for the students will remain accessible to the students for days or weeks. Learning stations are informal spaces for shorter-term setups that are less permanent and resources come and go after the students have finished engaging with them. Learning centers and stations are useful strategies that cater to a wide variety of student needs and may be based on readiness, language, interest, and learning profile. Ultimately it is a place to develop and apply KUDs and other areas of the lesson objectives. This DI strategy is useful for SP MAD School's teachers as it is able to accommodate diverse students' needs. Learning centers can be highly self-directed according to the tutor's instructions and allow students to learn at their own pace. At the same time, it enables tutors to break the class up into groups flexibly so the tutors are able to prescribe differentiated instructions for the students. Students who share similar traits are also able to work together and help each other with the activity.

Flexible Grouping allows students to be part of different groups throughout the duration of the module, as well as have the opportunity to work alone. The grouping can be arranged by the teachers, based on the students' readiness, interest and learning profile. The groupings can also be done in either a homogenous or heterogeneous manner to ensure the students can benefit from a mix experience. Alternatively, teachers can empower students to decide their own groupings or to randomly assign the members in the groups. Flexible grouping strategy is a good strategy for the teachers to consider implementing across the duration of the module

rather than just the duration of a single class. Flexible groupings can be used to build a sense of community and belonging among students, and encourage collaborations and knowledge co-construction among students.

A model to use data and differentiated instructional strategies

Figure 1: Our school's data-enabled flipped learning model (based on Tiering)

In this model, students are first assessed on their abilities before they come to class. The lesson in class consists of multiple activities at various tiers of support and scaffold to match students' needs. Students start with an easier activity that has easier questions and/or more scaffolding, then move on to a more difficult activity that has harder questions and/or less scaffolding. In such a lesson design, more competent students work on more challenging activities and remain engaged while teachers can spend more time with less competent students to help them complete the easier activity. Teachers can also rope in more competent students to provide peer support and teaching.

Appendix B shows an example of a lesson plan with the tiered activities. Alternative models of the possible DI classroom strategies based on Tomlinson (2017) that can be deployed are in Appendix C.

Anticipated student outcomes

The impact of differentiated instructional strategies on students' learning has been well-documented. DI strategies have been shown to have a positive impact on students' learning gains (Karst et. al, 2022), understanding of course concepts (Joseph et. al, 2013) and students' well-being and self concept (Pozas et al., 2021).

The model is expected to have an impact on is on student's level of intrinsic motivation and perceived competency. According to the self-determination theory (Deci & Ryan, 1985, 1991, 2002), three psychological needs need to be met in order for individuals to be intrinsically motivated: autonomy, competence, and relatedness. Specifically, competence needs are fulfilled when individuals perceive that they have the ability to perform a task effectively. Guay et. al (2017) found that differentiated instruction amplified the teacher's

effectiveness in the classroom and this was further mediated by students' perceived competency. Another study found that when teachers provided adequate support and scaffolding based on students' needs, intrinsic motivation and engagement increased (Hornstra et. al., 2018).

Two aspects of the model are expected to contribute to an increased sense of perceived competency and intrinsic motivation. First, from the pre-class quiz, students get an indication of which aspects of the flipped learning they have learnt. Having timely and accurate feedback about their learning has been found to help students track their learning and build perceived competency (Liu and Wang, 2004). Second, the tiered activities that are matched to students' abilities allow students to work on activities that are moderately difficult but reasonably challenging for them. Being able to complete the tasks with the appropriate scaffolding should also build perceived competency (Liu and Wang, 2004). An increase in perceived competency is then likely to contribute to increased intrinsic motivation among students (Liu & Chye, 2008).

Besides intrinsic motivation, effort and value are two other related outcomes that impact students' learning (McAuley, Duncan, & Tammen, 1989). Perceived effort is the amount of effort one puts into a learning task, while perceived value is the level of usefulness of the learning task (McAuley, Duncan, & Tammen, 1989).

As the literature review supports the impact of differentiated instruction on students' intrinsic motivation, perceived competency, effort and value, we focus on measuring students' perceptions in those areas in the post-class survey in the model. The following research questions are asked:

> RQ1: What are students' level of intrinsic motivation and perceived competency after a lesson using data and differentiated instructional strategies?

> RQ2: What are student's level of perceived effort and value after a lesson using data and differentiated instructional strategies?

METHOD

Research Design and Participants

The data-enabled flipped learning model was piloted in three modules from Oct 2021 – Feb 2022 (AY2122 Semester 2). In each module, two or three lessons in the semester were identified to test the model. A description of the activities that students go through in each lesson is as follows:

1) Complete e-learning before lesson
2) Complete a pre-class quiz
3) Go through a series of tiered activities that match their competency level
4) Complete a post-class survey to gather feedback

A total of 128 students across the Year 1 and 3 cohorts were involved. Table 1 shows the student profile in the modules.

Table 1: *Students' profile in the three pilot modules*

Module	No. of students (classes)	Year of Study	Diploma
Motion Capture	20 (1 class)	Year 3	Visual Effects & Motion Graphics
Motion Analysis & Techniques	42 (2 classes)	Year 1	Media, Arts, & Design (Motion Design)
Research Methods	66 (3 classes)	Year 1	Media, Arts, & Design (Integrated Marketing Communications)

Materials

The pre-class quizzes were close-ended (single-select or multi-select) questions which could be automatically graded by the LMS. They were designed to diagnose students' level of knowledge and comprehension after perusing the e-learning materials. Examples of the pre-class quizzes are in Appendix D.

The post-class survey consisted of 10 questions adapted from the Intrinsic Motivation Inventory (IMI, n.d.) (see Appendix E for the questions). Students rated their level of agreement with the statements on an 8-point scale (1 = not true at all, 8 = very true). The objective was to measure students' perception of the differentiated activities in the dimensions of enjoyment, perceived competence, effort, and value. As the questions are repeated across the dimensions, four questions, one for each dimension, are selected for reporting in this paper.

RESULTS

Post-class Survey Results

Our pilot endeavor was dynamic, adaptive, and iterative. As such, a number of differentiated lessons were piloted using earlier versions of the model and did not match the proposed model as laid out in this paper. For clarity, only results from four differentiated lessons in two modules (Research Methods and Motional Analysis Techniques) were included below as these lessons most closely matched the finalized proposed model as laid out in this paper.

Table 2: *Students' perceptions of the differentiated lessons*

Dimension		Research Methods	Motion Analysis & Techniques
Interest/Enjoyment	I enjoyed today's lesson.	91%	80%
Perceived Competence	After working on the lesson activities for a while, I felt pretty competent.	74%	70%
Effort/Importance	I put a lot of effort into this lesson.	90%	80%
Value/Usefulness	I believe doing the lesson activities could be beneficial to me.	99%	97%

Note: Questions were adapted from the Intrinsic Motivation Inventory (IMI, n.d.). Percentages are those who selected top 3 options on an 8-point scale

As shown in Table 2, the perceptions of the differentiated lessons were generally very high (74%-99%). Majority of students perceived the lesson to be enjoyable (91% & 80%), put in a lot of effort in the lesson (90% & 80%), and saw value in what they were doing (99% & 97%). Perceived competency was slightly lower though it is noted that almost three-quarters felt pretty competent after going through the differentiated lessons (74% & 70%).

The qualitative feedback from the survey also indicated that students enjoyed the activities and had high intrinsic motivation. "Fun", "Enjoyable" and "Fruitful" were some of the top words used to describe the lessons. As important as enjoyment, students indicated in the qualitative feedback that they felt that the lessons helped them to gain competency and learnt the necessary skills.

> *It helps me improve my After Effects skills as well as learn new skill sets that I have never learned before! Each lesson, it was very fun to attend class as there's always a new activity we could do. (Motion Analysis student)*

> *It felt productive as I am actively doing the task so that I can learn more effectively. (Research methods student)*

We are encouraged by the positive results and note that more work can be done in the differentiated activities to improve perceived competence.

Module Feedback

The module feedback for the 3 modules on the pilot were generally positive and above 4.0 on a 5-point scale. After the implementation of data-enabled flipped learning together with other tweaks to the module, the modules receive a higher or similar module feedback score as previous semesters (see Table 3).

Table 3: *Module feedback before and during pilot*

Module	AY1920 Sem 2	AY2122 Sem 1	AY 2122 Sem 2 (Pilot)
Motion Capture	4.36	4.35	4.58
Motion Analysis & Techniques	4.25	-	4.26
Research Methods	-	4.11	4.28

Note: Scores were the average scores on 5 standard module feedback statements used to assess module quality in Singapore Polytechnic (maximum score of 5). Research Methods and Motion Analysis & Techniques were new modules in AY2122 Sem 2. For some semblance of comparison, scores from the previous module in the old curriculum were provided.

Despite differentiated activities being used in a few and not all of the weekly lessons, in the qualitative module feedback, students specifically singled out some aspects of the activities that they enjoyed. Two aspects that students liked were the ability to track and monitor their own progress and the activities that helped them build their own self-confidence. These aspects are elaborated below.

Students being able to track their own progress - Data-enabled flipped learning also gives students the ability to track their own progress. The D2L learning management system has dashboards that show students how they are performing on pre-class quizzes and which e-learning they have completed. As mentioned by a student in Research Methods:

> *The brightspace portal is easy to use and navigate which also keeps me on track with my work. the RAT quiz is also useful for me to know how I am doing.*

Tiered activities that are hands-on help to build confidence - Corroborating the effectiveness of tiered activities in building perceived competency, many students also mentioned how the in-class lessons help them to apply their knowledge on hands-on activities. While students may not be aware that they are working on tiered activities, their sense of self-confidence is likely boosted from working on tasks that are at the appropriate level of challenge for them. One student in Motion Capture commented that the "*practical lessons helped*" and another student in Motion Analysis said that the "*in-class activities have definitely helped us get more familiar with After Effects.*". A third student in Research Methods commented:

> *In-class lessons are the best for me because they help to cement the knowledge that I learnt and give me opportunities to apply it. It is also when I get to clarify my doubts with <lecturer> and learn from my friends. Hence, it is when I feel the most confident in my learning. (Research Methods student)*

One negative feedback obtained was that some students felt confused using different learning management systems as only their pilot module was on D2L while other modules continued to use Google Classroom or Blackboard. Having a consistent learning and tracking platform for students is important in enhancing the student experience. As SP moves towards D2L for all modules, this issue should be less salient in future semesters.

DISCUSSION AND CONCLUSION

This paper proposes a model which integrates the concept of tiering (Tomlinson, 2017) with the data analytics afforded by the learning management system. In the model, lecturers get an indication of students' abilities through a pre-class quiz, a self-report survey, or a diagnostic task. Based on their abilities, they are then assigned to tasks that are tiered with different difficulties. Finally, students complete an exit poll to understand their perceptions of the differentiated lesson. This is a model that can be easily implemented by other lecturers in SP or other schools.

The model was piloted in the media, arts, and design modules and shown to have positive perceptions among students. Contrary to what Heng and Song (2020) found that students might be uncomfortable or frustrated with DI, we found that students had high levels of enjoyment of the DI lessons and found the activities to be beneficial to them. We did not see any severe morale issues as perceived competency was also found to be quite high. Module feedback at the end of the semester was as high or higher than in previous semesters without differentiated activities. Finally, qualitative comments showed that students enjoyed being able to track their own progress using the analytics afforded by D2L and that the activities helped them learn and build self-confidence.

During the pilot, several obstacles in implementing DI that were highlighted in Heng and Song (2020) were considered and addressed:

1. *Student may perceive DI as unfair as there is differentiation in resources* - We ensured that all materials were released to students after class so that students have access to all materials
2. *Classroom sizes and structures must support DI* - our pilot classes were held in classrooms where there was sufficient space and adjustable chairs and tables for spacing out arrangements
3. *Staff may perceive a large amount of preparatory work* - our proposed model builds off an existing lesson activity and adds or removes scaffolding or questions. We hope to show other teachers that it is not too much extra work to implement DI

One issue we had not looked at in this pilot implementation was parental concerns. Parents in Singapore are very results driven and may feel negatively towards DI and its assessment. They might have an issue with their child's learning progress being different from the rest of their classmates. In a competitive environment like Singapore, equity might not be perceived as fairness and parents might be resistant to DI enacted in their child's class.(Heng and Song, 2020). As we roll out more modules using data and DI strategies, it must consider the communications to parents and students in a fair and constructive manner.

Another issue raised by Heng and Song (2020) found that teachers felt incapable of enacting DI without training, development, and support to adequately respond to the diverse students' needs. Without knowing the definitions, strategies, models, and styles, teachers have expressed the lack of confidence in enacting DI (Heng and Song, 2020). To this end, we intend to run training workshops for our teachers and to provide support in their implementation of DI.

In future studies, we intend to try out more DI strategies in the model (see Appendix C). These areas will be experimented with in future semesters.

References

Bondie, R. S., Dahnke, C., & Zusho, A. (2019). How does changing "one-size-fits-all" to differentiated instruction affect teaching? Review of Research in Education, 43(1), 336–362. https://doi.org/10.3102/0091732x18821130

Deci, E. L., & Ryan, R. M. (1985). Intrinsic motivation and self-determination in human behavior. New York: Plenum Press.

Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: Integration in personality. In R. A. Dienstbier (Ed.), Nebraska Symposium on Motivation (pp. 237-299). Lincoln, NE: University of Nebraska Press.

Deci, E. L., & Ryan, R. M. (2002). Overview of self-determination theory: An organismic dialectical perspective. In E. L. Deci & R. M. Ryan (Eds.), Handbook for self-determination research (pp. 3-33). Rochester, NY: University of Rochester Press.

Guay, F., Roy, A., & Valois, P. (2017). Teacher structure as a predictor of students' perceived competence and autonomous motivation: The moderating role of differentiated instruction. *The British Journal of Educational Psychology*, *87*(2), 224–240. https://doi.org/10.1111/bjep.12146

Heng, T. T., & Song, L. (2020). A proposed framework for understanding educational change and transfer: Insights from Singapore teachers' perceptions of differentiated instruction. *Journal of Educational Change*, *21*(*4*), 595–622. https://doi.org/10.1007/s10833-020-09377-0

Hornstra, L., Stroet, K., van Eijden, E., Goudsblom, J., & Roskamp, C. (2018). Teacher expectation effects on need-supportive teaching, student motivation, and engagement: a self-determination perspective. *Educational Research and Evaluation*, *24*(3-5), 324-345. doi: 10.1080/13803611.2018.1550841

Intrinsic motivation inventory (IMI). (n.d.). Retrieved Mark 13, 2022 from https://selfdeterminationtheory.org/intrinsic-motivation-inventory/

Karst, K., Bonefeld, M., Dotzel, S., Fehringer, B., Steinwascher, M. (2022). Data-based differentiated instruction: The impact of standardized assessment and aligned teaching material on students' reading comprehension. *Learning and Instruction*, *79*(June 2022). https://doi.org/10.1016/j.learninstruc.2022.101597

Liu, W. C. & Chye, S (2008). The importance of perceived needs satisfaction: A look at polytechnic students' motivation. In Towndrow, P. A., Koh, C., Tan, H. S., & Chan, D. F. C. (Eds.), Motivation and practice for the classroom (pp. 255-269). Netherlands: Sense Publishers.

Liu, W. C., & Wang, C. K. J. (2004). Project work and lower-ability stream students. In B. T. Ho, J. Netto-Shek & A. S. C. Chang (Eds), Managing project work n schools: Issues and innovative practices. Singapore: Prentice Hall.

Martin, F., & Ndoye, A. (2016). Using learning analytics to assess student learning in online courses. *Journal of University Teaching & Learning Practice, 13*(3). https://doi.org/10.53761/1.13.3.7

Renzulli, J. S., & Reis, S. M. (1998). Talent development through curriculum differentiation. NASSP Bulletin, 82(595), 61–74. https://doi.org/10.1177/019263659808259508

Singapore Polytechnic. (2021, June 29). Singapore Polytechnic Mission and Vision. Retrieved March 13, 2022, from https://www.sp.edu.sg/sp/about-sp/corporate-information/mission-vision

Singapore Polytechnic. (2021). MAD School Brochure. Singapore, Singapore; Singapore Polytechnic. Retrieved March 14, 2022, from https://www.sp.edu.sg/mad

Tomlinson, C. A. (2001). *How to differentiate instruction in mixed-ability classrooms*. Upper Saddle River, NJ: Pearson Education.

Tomlinson, C. A. (2014). *The differentiated classroom: Responding to the needs of all learners*. Alexandria, Va: Association for Supervision and Curriculum Development.

Tomlinson, C. A. (2017). *How to differentiate instruction in academically diverse classrooms*. Alexandria, Va: Association for Supervision and Curriculum Development.

Waterman, S. S. (2007). *The democratic differentiated classroom*. Larchmont, NY: Eye on Education.

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APPENDIX A

An example of the dashboards available on the D2L learning management system

Summary dashboard of students' performance on a quiz (class overall and individual student performance)

Summary dashboard of students' answers on a survey (closed-ended and open-ended questions)

APPENDIX B

An example of how tiering is used to design activities of different difficulty levels. Students can be assigned tasks that are appropriate for their ability level.

APPENDIX C

Variations of the data-enabled flipped learning model using other DI concepts of learning centres/interest groups and flexible groupings.

Variation of the model using learning stations

Variation of the model using flexible groupings

APPENDIX D

Examples of the pre-class quizzes to assess students' abilities before class.

Question 1 (2 points)

What should you look out for when preparing your data for analysis?

☐ Whether there's a need to color-code any responses

☐ Whether there's a need to calculate any new variables

☐ Whether any questions require a non-alphabetical order of sorting

☐ Whether there's a need to create dummy variables

Question 2 (2 points)

When analysing single-select questions, which of the following types of data analysis is the most appropriate?

○ Reporting the averages of each response using pivot tables

○ Reporting the percentages of each response using pivot tables

○ Showing a word cloud

○ Reporting the percentages of each response using COUNTIF

APPENDIX E

Examples of the post-class quiz to assess students' perceptions of the differentiated lessons. These questions were adapted from the Intrinsic Motivation Inventory (IMI, n.d.).

Let me know how has the lesson been for you:

1 - --8

Not true at all   Very true

#	Statement	1	2	3	4	5	6	7	8
1	I enjoyed today's lesson.	○	○	○	○	○	○	○	○
2	This lesson did not hold my attention at all.	○	○	○	○	○	○	○	○
3	I thought this lesson was quite enjoyable.	○	○	○	○	○	○	○	○
4	After working on the lesson activities for a while, I felt pretty competent.	○	○	○	○	○	○	○	○
5	I was pretty skilled at this lesson's activities.	○	○	○	○	○	○	○	○
6	This was a lesson that I couldn't do very well.	○	○	○	○	○	○	○	○
7	I put a lot of effort into this lesson.	○	○	○	○	○	○	○	○
8	I did not try very hard to do well in today's lesson. activities.	○	○	○	○	○	○	○	○
9	It was important to me to do well in the activities for this lesson.	○	○	○	○	○	○	○	○
10	I believe doing the lesson activities could be beneficial to me.	○	○	○	○	○	○	○	○

Assessing Collaborative Teaching Under the Impact of COVID-19 Pandemic: Instrument Development in the Context of the SECI Model

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

This paper aims to develop and validate a SECI model (socialization, externalization, combination and internationalization) instrument to assess collaborative teaching quality under the impact of COVID-19 pandemic on transnational education in China. Although Chinese universities responded to this education disruption in emergent response, lockdown due to the COVID-19 brings pandemic pedagogy to transnational higher education. Collaborative teaching responds to this situation by updated practices to tackle pedagogical and contextual differences in transnational education. This research updates Cheng's 21-item model (2022) by adding information technology utilization and cultural context factors to validate the joint knowledge production. This study finally explored a SECI knowledge-creation model with new factors discussing of collaborative teaching quality during COVID-19. It was also found that collaborative teaching management can be linked to on multidimensions of knowledge generation, such as resource exchange, culture, and technology.

Keywords: Collaborative Teaching, COVID-19 Impact, SECI Model

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1. Introduction

Knowledge creation and transfer is the primary aim of higher education institutions (HEIs). The huge changes in the technical support, the social needs for higher education, and fierce competition at both national and international level drive HEIs to tackle more with when confronted deciding how to produce, manage and transit knowledge. Moreover, the growing call for improvement and quality also boosts HEIs to improve the knowledge creation and transfer process. Cultural differences (Heffernan et al., 2010), political and educational policy gaps (Mok, 2021), as well as social-demographic changes are challenging that higher education institution need to confront with when it seeks global partnerships (Xu, 2019). Cheng applied the SECI knowledge conversion model developed by Nonaka (1995) as an analytical tool to explain how knowledge can be created and transferred among teaching team members by collaborative lesson planning (Cheng, 2022). As a result of increasing needs in knowledge management (KM) in transnational higher education, growing research have been devoted in enhancing KM technologies (Annabi & Wilkins, 2016), producing, and sharing academic knowledge (Li et al., 2014), mapping and measuring knowledge (Kleibert et al., 2020), as well as fostering learning and education (Hautala, 2011).

However, whereas numbers of studies have investigated the indications of KM on transnational education. Research on KM for transnational education COVID-19 pandemic still lacks comprehensive understanding. This lack has been made worse by the fact that, there are some attempts to provide insights for international students' experiences, but this review is limited only to students' anxiety to studies and future career (Hari et al., 2021). However, such big challenge to physical mobility of international resources deserves a depth investigation to trace what have been done and what will do in the future, considering the unique forms of accountability and multifaceted impact on TNE landscape.

This paper analyses the collaborative teaching from SECI model perspective, in order to understand how KM maintain TNE partnerships and teaching quality during COVID-19 pandemic in Chinese universities. The starting point of this research was the assumption that collaborative teaching quality in transnational education can be assessed by an instrument developed from SECI model. To testify this assumption, the research investigated (1) how and what extent do collaborative teaching team members share their knowledge during COVID-19? (2) how do knowledge attributes influence knowledge transfer and knowledge creation within transnational education during the COVID-19 pandemic?

This paper is structured as follows. Following the literature review, it will present the methodology and analytical framework. Next, the main findings of instrument exploration and validation will be presented. From these findings, it will that link collaborative teaching management to multidimensions of knowledge generation and transfer. Finally, some conclusions and limitations are drawn from the main findings.

2. Literature review

2.1 Transnational education during COVID-19

COVID-19 pandemic has an unprecedented impact on the landscape of transnational higher education from physical mobility of scholars and students, which is the most frequent cross-borders mode of knowledge transfer in HE (Zentrum, 2004). The policy differences between national system during COVID-19 is also a barrier to international cooperation and mobility.

Because there is a risk that a partnership university could interpret the difference as an indication of reluctance to engage in exchange, cooperation, and mobility (Zentrum, 2004). Even students are in the education provider country, they still must take online courses, as campus and classrooms are predominantly closed. Except the uncertainties, many students who are in joint programme tend to defer or cancel their plans of aboard study. Therefore, the pandemic drives the educational operators carefully balanced interests with university strategies and overseas exchanges.

2.2 Collaborative teaching

The collaborative teaching is a dynamice process, staring from individual levels and finally reach out through interactions that surpass indivudual, team and organizational ranges. The active interaction among acadmemics encouranges team members to share ideas and give suggestions to improve teaching quality (Sengpoh, 2019). It not only boosts confidence of both tearchers and students, but also creates quality teaching performance because the cooperative interaction in learning is more effective compare with individual study. In transnational education, collaborative teaching builds a glocal cirruculum for sustainable development(Caniglia et al., 2018). It provides an opportunity to teach academic knowledge by emphasizing the global and local nature of sustainability. Cheng(2022) explored a 21-item model to assess teachers collaborative planning practices under the SECI knowledge conversion processes. The instrument verified in his research has devoted in practices of assessment and monirtoring collaborate teaching practices in school. Collaboration in team teaching during COVID-19 takes more time and efforts for teachers to work together in planning, teaching and assessment. ("Impact of Covid-19 Pandemic on Higher Education," 2020) However, no further research has mended the gap between TNE and SECI model from collaborative teaching perspective.

2.3 Academic knowledge in collaborative teaching

Collaborative teaching involves academic explicit knowledge and tacit knowledge transfer for learning and instruction from an individual to a group and vice-versa (Cheng, 2022). In higher education (HE), Eleni (2003) classifies knowledge into two types: academic or scholarly knowledge and non-academic organizational knowledge. The production and dissemination of academic knowledge represents the primary purpose of HE. Thus, in this research, knowledge refers to academic knowledge, whether explicit or tacit. This is the conceptual framework to knowledge in transnational education in this study. The explicit knowledge is classified to curriculum outline, teaching slides, textbooks, assessment strategies, and tacit knowledge is classified to delivery, teaching style-learning by doing, course design, as well as course management (Li et al., 2014). From collaborative teaching in TNE, teaching knowledge include knowledge of subjects, methods of teaching, knowing of students learn methods and outcomes, the ability to apply and practice, an understanding of teaching and learning effectiveness assessment, and knowledge of quality assurance and improvement. Tacit academic knowledge supports collaboratively pedagogical practices (Quarchioni et al., 2020).

2.4 SECI model in knowledge management

Knowledge management involved knowledge sharing, creation, validation, and application. (Bhatt, 2011) It also emphasizes the integration of technologies (Gurteen, 1998) SECI model is a knowledge creating process featured in spiral form. It is a two-dimensional matrix

depicting four possible scenarios for interacting or converting tacit and explicit knowledge (Nonaka & Takeuchi, 1995). This model includes four knowledge conversion processes, they are socialization, externalization, combination and internationalization. In collaborative teaching, these four processes are elaborated as following:

Socialization is a knowledge conversion mode that convert tacit knowledge through interaction between indiviuals(Nonaka, 1994). In collaborative teaching context, individual tacit knowledge in teaching experiences and practices can be shared with and absorbed by other team members. In collaborative class preparation meeting during COVID-19, tutors within a team can share the teaching material design, teaching pedagogical ideas, and reflection on assessment standard.

Externalization mode captures tacit knowledge and expands into explicit knowledge through mutual interaction (Nonaka, 1994). In collaborative teaching, it happens where tutors' tacit pedagogical thinking and actions converted into explicit pedagogical knowledge, expressing in teaching belief, methodologies or academic knowledge during collaborative class preparation activities (McGill & McGill, 2007). Pedagogical ideas exchanges during unprecedented COVID-19 may be ambiguous or vague, however, it will be clearer by verbal or image communication. Finally new ideas for teaching materials, class management and pedagogical implementation will be created.

Combination involves the use of social processes to combine different bodies of explicit knowledge held by individuals (Nonaka, 1994). This process creates new explicit knowledge from the existed explicit knowledge. In collaborative teaching scenario, tutors within a teaching team exchange their explicit knowledge in teaching materials, curriculum outline and assessment strategies in external mechanism, such as joint class preparation meetings, assessment standardization meeting, email communication. Tutors create new academic knowledge by sorting, adding, recategorizing the existed knowledge from teaching material and assessment materials.

Internalization is very similar to traditional definition "learning". It is a conversion mode that transfer the organizational knowledge into individual tacit knowledge (Nonaka, 1994). It associates with team learning and emphasizes the process of new tacit knowledge creates. In collaborative teaching scenario, internalization refers to incorporating knowledge into the teaching to achieve better learning results from students, including teaching style-learning by doing, internalizing team knowledge into personal knowledge.

3. Research methodology

3.1 Participants

This study will use factor analysis method. Since tutors in the TNE need to implement course outline, teaching materials, assessment criteria, which are defined as explicit knowledge in TNE. They also need to deliver knowledge, teach style-learning by doing, design course and manage course in an accumulated way, which are defined as tacit knowledge in TNE. Thus, the 240 participants are randomly selected from 10 joint programme in China, 4 in Dalian, 2 in Beijing, 2 in Shanghai and 2 in Xiamen. The participants received an invitation by email and consented to take part in the research survey. 150 participants are Chinese citizens while the rest are non-Chinese citizens.

3.2 Questionnaire design

All the items in the questionnaire were developed from the literature on knowledge conversion in TNE and SECI model. (Cheng, 2022; Li 2012) During COVID-19, technological support and culture factors play an important role in collaborative teaching. Since the lack of physical mobility from tutors and students, hybrid teaching mode are very common in TNE. Thus, the items expanded to information technology utilization and cultural context factors categories were supplemented by in-depth interview with TNE administrative. The final items in questionnaire include statements that assess SECI processes, knowledge transfer and technological support during COVID-19 pandemic. Items measuring collaborative teaching during the Covid-19 pandemic were modified based on the interviews with module leaders' suggestion. Participants can make choice on a 6 Likert-scale method, from 1 which represents totally disagree to 6 which equal to totally agree.

3.3 Data analysis

The total number of questionnaires collected is 432, and 12 samples were excluded because of invalid answers. A total of 420 participants were used in this research. The sample, which is n=420 are randomly equally divided into 2 groups, 210 for exploratory factor analysis and 210 for confirmatory factor analysis. To find the four factors influencing variables and analyze which variables are correlated, this research first used exploratory factor analysis, assembling common variables into descriptive data of the collaborative teaching. Analysis of EFA and CFA will be conducted by SPSS Statistics 26.

4. Results and discussion

4.1 Exploratory factor analysis

The randomly selected half of the sample(n=120), the KMO=.908, which is over 0.6, and Bartlett's test $p<0.05$, indicating the sample is adequate for factor analysis. Based on the questionnaire items and SCEI model, Factors 1 represents socialization, Factor 2 represents externalization, Factor 3 represents combination, and Factor 4 represents internalization. It can be seen from the Table 1 that the absolute value of the factor loading cutoff to all research items is greater than 0.4, indicating that there is a strong correlation between the research items and the factors.

Table 1 Exploratory factor analysis of 21 items

Items	Factor 1	Factor 2	Factor 3	Factor 4
1. I can reach agreement with other members in course outline of the collaborative teaching team.	**0.855**	0.058	0.059	0.111
2. The whole teaching team can prepare course outline effectively and collaboratively during weekly collaborative material preparation	**0.659**	0.116	0.125	0.135
3. Members of the collaborative teaching team can share their teaching slides weekly in pursuit of professionals and academic knowledge to improve students learning results.	**0.757**	0.065	0.071	0.047
4. The textbooks on blackboard and shared E book have a depth understanding by both students and tutors.	**0.743**	0.059	0.016	0.105
5. When a tutor from collaborative teaching teams	**0.768**	0.014	0.052	0.139

has questions and consults with other team members, they will endeavor to answer the questions, no matter in China or outside China.			
6. When members try to discuss about the academic knowledge input, they will attempt to provide them own opinions during the online class preparation meeting or email exchanges.	**0.739**	0.1	-0.051	0.039
7. Majority of team members can express them opinions about course design and academic knowledge teaching plan very clearly and understandably.	**0.729**	0.035	0.013	0.068
8. When tutors from the collaborative teaching team fail to get others point of view, I can often try to explain with proof and information flow among teams' members which are quite successful.	0.089	0.118	0.099	**0.859**
9. I can convert the curriculum theories into understandable verbal description assists the delivery among team members in the aspect of course design, course management and assessment criteria.	0.287	0.114	0.069	**0.773**
10. I can organize my hybrid model and share my teaching reflections and teaching belief with others.	0.156	0.173	0.069	**0.829**
11. I often listen to other team members and adopt their opinions when I agree with, which can help enhance my teaching content, teaching skill and assessment criteria understanding.	0.077	**0.816**	0.209	0.127
12. I often organize and generalize other team members' opinions from weekly online preparation meeting and daily email exchanges.	0.114	**0.734**	0.266	0.107
13. I will compare the newly appeared teaching methods which created from hybrid mode with my existed experience.	0.106	**0.703**	0.263	0.107
14. I will dare to ask when I have questions with others' opinions on material designing, teaching methods, course design and course development skills.	0.104	**0.764**	0.187	0.013
15. I will exchange my ideas with others to figure out whether I have made improvement for my students during hybrid teaching period.	0.034	**0.711**	0.255	0.123
16. I often try to apply opinions collected from collaborative preparation meeting when I encounter difficulties in my own teaching.	0.032	**0.796**	0.212	0.101
17. I have a deep cognition of the teaching aims and assessment criteria of academic subjects through class preparation and standardization meeting.	0.13	0.152	**0.845**	0.08
18. Collaborative teaching team members develop better teaching skills in style learning by doing.	0.052	0.353	**0.699**	0.014
19. Collaborative teaching team members can fully link up, as well as adopt the hybrid teaching knowledge and hybrid teaching experience through class preparation meeting and email communication.	0.04	0.304	**0.747**	0.031
20. The class implementation after collaborative meeting and team member communication can support me in internalizing other members' teaching knowledge into my own knowledge.	0.06	0.282	**0.714**	0.114
21. Collaborative class preparation helps me integrate my own knowing and experience to collaborative teaching team, which will finally	-0.041	0.262	**0.747**	0.067

improve the hybrid teaching quality.

The internal reliability of Cronbach are .880, .818, .888, .863, which shows the items in questionnaires are correlated.

Table 2 Cronbach of four factors

Factor	AVE	CR
Scl	0.514	0.880
Ext	0.600	0.818
Cmb	0.570	0.888
Int	0.558	0.863

Figure1. Four Factor Model of socialization, externalization, combination, and internalization

4.2 Confirmatory factor analysis

The other half sample is tested the four-factor model for CFA by using 21-item questionnaire identified in EFA. The four-factor model shows good model fit with the following data, the CRI=0.981, TLI=0.978, RMSEA=0.032, SRMR=0.04.

Table 3 Fit indices of confirmatory factor analysis

χ^2/df	GFI	AGFI	RMSEA	RMR	CFI	NFI	TLI	IFI	SRMR
1.437	0.946	0.932	0.032	0.047	0.981	0.939	0.978	0.981	0.04

Table 4 Confirmatory factor analysis

Items	Estimate	S.E.	C.R.	Lower	Upper
1. I can reach agreement with other members in course outline of the collaborative teaching team.	0.864	0.021	41.143	0.814	0.901
2. The whole teaching team can prepare course outline effectively and collaboratively during weekly collaborative material preparation.	0.638	0.035	18.229	0.562	0.699
3. Members of the collaborative teaching team can share their teaching slides weekly in pursuit of	0.717	0.028	25.607	0.656	0.767

professionals and academic knowledge to improve students learning results.					
4. The textbooks on blackboard and shared E book have a depth understanding by both students and tutors.	0.688	0.03	22.933	0.624	0.744
5. When a tutor from collaborative teaching teams has questions and consults with other team members, they will endeavor to answer the questions, no matte r in China or outside China.	0.74	0.028	26.429	0.679	0.786
6. When members try to discuss about the academic knowledge input, they will attempt to provide them own opinions during the online class preparation meeting or email exchanges.	0.682	0.03	22.733	0.61	0.732
7. Majority of team members can express them opinions about course design and academic knowledge teaching plan very clearly and understandably.	0.666	0.03	22.200	0.605	0.724
8. When tutors from the collaborative teaching team fail to get others point of view, I can often try to explain with proof and information flow among teams' members which are quite successful.	0.779	0.031	25.129	0.712	0.835
9. I can convert the curriculum theories into understandable verbal description assists the delivery among team members in the aspect of course design, course management and assessment criteria.	0.746	0.029	25.724	0.678	0.797
10. I can organize my hybrid model and share my teaching reflections and teaching belief with others.	0.798	0.033	24.182	0.725	0.856
11. I often listen to other team members and adopt their opinions when I agree with, which can help enhance my teaching content, teaching skill and assessment criteria understanding.	0.827	0.018	45.944	0.788	0.859
12. I often organize and generalize other team members' opinions from weekly online preparation meeting and daily email exchanges.	0.758	0.027	28.074	0.701	0.803
13. I will compare the newly appeared teaching methods which created from hybrid mode with my existed experience.	0.718	0.03	23.933	0.657	0.771
14. I will dare to ask when I have questions with others' opinions on material designing, teaching methods, course design and course development skills.	0.731	0.03	24.367	0.663	0.782
15. I will exchange my ideas with others to figure out whether I have made improvement for my students during hybrid teaching period.	0.722	0.029	24.897	0.662	0.777
16. I often try to apply opinions collected from collaborative preparation meeting when I encounter difficulties in my own teaching.	0.78	0.025	31.200	0.727	0.826
17. I have a deep cognition of the teaching aims and assessment criteria of academic subjects through class preparation and standardization meeting.	0.8	0.023	34.783	0.751	0.84
18. Collaborative teaching team members develop better teaching skills in style learning by doing.	0.739	0.03	24.633	0.674	0.79
19. Collaborative teaching team members can fully link up, as well as adopt the hybrid teaching knowledge and hybrid teaching experience	0.765	0.028	27.321	0.707	0.815

through class preparation meeting and email communication.					
20. The class implementation after collaborative meeting and team member communication can support me in internalizing other members' teaching knowledge into my own knowledge.	0.718	0.033	21.758	0.644	0.774
21. Collaborative class preparation helps me integrate my own knowing and experience to collaborative teaching team, which will finally improve the hybrid teaching quality.	0.711	0.032	22.219	0.639	0.766

4.3 Discussion

This study aims to mend the research gap in knowledge management within collaborative higher education partnerships from academic knowledge perspective during COVID-19 Pandemic. It applies the SECI model into TNE research, and it also validates an instrument assessing collaborative teaching in hybrid mode. The results from exploratory factor analysis identified the four factor processes, including socialization, externalization, combination, and internalization. The CFA further verified these four processes identified in EFA.

The knowledge socialization factor measures how the collaborative teaching team share their tacit knowledge and teaching experiences in hybrid mode during class preparation meeting. Tutors can exchange their experiences and practices clearly. The higher the scores are, they more they can explain their tacit knowledge to others understandably. During the COVID-19 pandemic, there are many creative activities and practices in teaching materials and knowledge delivery mode. They need to accept the original ways of tacit knowledge in teaching. Also, they need to upgrade their pedagogies and teaching believes to reduce students' study difficulties from lack of physical mobility during the pandemic. This result indicates that socialization in collaborative teaching can help tutors well prepare with curriculum pedagogies and teaching materials. This result echoes the research of Lim, the effectiveness of collaborative teaching is affected by the peers in the team (Lim, 2019).

The knowledge externalization dimension measure how tutors can transform the pedagogical belief into perspectives for sharing and interpreting with texts, words or concepts. Tutors can codify the existed teaching resources and improve other tutors' understanding of how to apply academic knowledge into their class. Team members reflect on their teaching materials and curriculum pedagogies in explicit form by class preparation meeting and email exchange. This sharing of preliminary ideas with team members help to improve tutors' recodification of knowledge in academic knowledge transfer process. This finding validates the study of Guzman, emphasizing the diverse nature of knowledge and knowledge transfer process to fit special needs (Guzman, 2011).

The knowledge combination dimension weighs how the participants organize and generalize their collective-achieved teaching experience, which are vague, to share with others. During the preparation meeting and email exchange, they listen to other tutors' opinions and observe others' reflection on the changes of teaching materials and pedagogies. Tutors also share different viewpoints with team members to tackle with the newly occurred difficulties caused by pandemic. The frank and open attitude pave the way for academic knowledge transfer and erase the impedance from the pandemic. This validates the finding from Lim, indicating that attitude of the team members influences the effectiveness of collaborative teaching (Lim, 2019).

The knowledge internalization process weighs the extent to which tutors can internalize and apply the collectively prepared teaching materials into individual teaching practice, how they can adopt to facilitate knowledge sharing through learning by doing (Smith & Bereiter, 2002). Course outlines, assessment criteria and teaching material are easy to share among members. By email exchanges and online class preparation, sharing the teaching of art sometimes is difficult. Moving teaching staff to educational receivers is one of the main forms of sharing tacit academic knowledge. Though the pandemic has blocked the moving of teaching staff physical mobility, the networks moving is supported by information technology utilization.

By the identified items in EFA and CFA, this research summarized that transnational higher education partners are motivated by acquiring and transferring knowledge through collaborative teaching. Partnerships are willing to share and create academic knowledge through developing course outlines, teaching materials, assessment criteria collaboratively in explicit knowledge. For tacit knowledge conversion, teaching style-learning by doing has already been impacted a lot by the immobility of tutors and students. Tutors strive to collaborate with others by email exchanges and collaborative class preparation. The more codifiable and transferable knowledge they share during these processes, the more likely their knowledge will be shared and learned. This also verifies the finding from Kogut& Zander (1993). Thus, compared with other two processes, socialization and internalization processes are more interactive and fruitful for tutors. And, due to the inconveniences by pandemic, tutors are reluctant or difficult to share tacit knowledge. Because tacit knowledge can only be displayed and demonstrated face to face. Also, sharing tacit knowledge needs to common socio-cultural scenario. Although information technology utilization aims to eliminate immobility difficulties and achieve information flow, tacit knowledge is still more difficult to share and transfer during the COVID-19, especially in practice courses. Cooperation and collaboration in higher education are negatively affected by lack of physical mobility.

During COVID-19 pandemic, explicit knowledge shared among tutors include slides, notes, outline, online teaching materials, assessment criteria. Tutors also have online communication by weekly video meeting or email exchange on teaching experiences. However, academic knowledge sharing online also have inconvenience during pandemic. Because of Great Wall on Internet, Chinese universities use different teaching software or conference tool from outside partners. The differences in IT support also raise the protection of knowledge as a problem for both sides. Not only the courses delivered by both sides resembles the same features from partners, but there is also a different acknowledgement of the importance of tacit academic knowledge to facilitate the explicit academic knowledge. This made socialization, internalization, externalization or combination cannot guarantee the local tutors interprets knowledge the same as it tends to deliver. This is especially common for the courses with high degree of taciturnity. In this case, explicit knowledge is hard to share without tacit understanding, which means knowledge processes are hard to reach spiral process. Because perspectives on the same academic knowledge may be greatly interpreted differently among tutors within China and around the world.

5. Conclusion and limitations

The results of this empirical research interpret the four processes of SECI model to enhance knowledge transfer and knowledge conversion in the context of transnational higher education. As the theoretical and analytical tool in this research, SECI model provide new perspective for transnational education research in the COVID-19 pandemic. It indicates collaborative teaching can promote knowledge transfer and knowledge conversion, though

pandemic has brought impedance to physical mobility of students and tutors. The findings also highlight the implications for both knowledge management and collaborative teaching quality in transnational higher education in hybrid teaching mode. Tacit knowledge in university courses is difficult to codified, however, with positive attitude, effectiveness of collaborative teaching and information technology utilization, both tacit knowledge and explicit knowledge can be captured in higher education partnerships.

Despite the findings of instrument exploration and validation, there are also some limitations for future research to break through. First, participants are randomly selected from transnational higher education institution in China, which may not symbolize samples from other areas. And this research built the instrument from academic knowledge perspective. Future research can also explore a four-factor instrument from organizational knowledge perspective.

Acknowledgments

References

Annabi, C. A., & Wilkins, S. (2016). The use of MOOCs in transnational higher education for accreditation of prior learning, programme delivery, and professional development. *International Journal of Educational Management*, *30*(6), 959–975. https://doi.org/10.1108/ijem-05-2015-0057

Cameron, D. (2001). *Working with spoken discourse*. London: SAGE.

Caniglia, G., John, B., Bellina, L., Lang, D. J., Wiek, A., Cohmer, S., & Laubichler, M. D. (2018). The glocal curriculum: A model for transnational collaboration in higher education for sustainable development. *Journal of Cleaner Production*, *171*, 368–376. https://doi.org/10.1016/j.jclepro.2017.09.207

Coates, J. (2007). Talk in a play frame: More on laughter and intimacy. *Journal of Pragmatics, 39*, 29-49.

Drew P., & Heritage J. (1992). Analysing talk at work: An introduction. In P. Drew, & J. Heritage (Eds.), *Talk at work* (pp. 3-65). Cambridge: Cambridge University Press.

Eleni, C.-S. (2003). *Knowledge Management in Research Universities: The Process and Strategies* [PhD Dissertation]. Florida Atlantic University.

Hari, A., Nardon, L., & Zhang, H. (2021). A transnational lens into international student experiences of the COVID-19 pandemic. *Global Networks*.
https://doi.org/10.1111/glob.12332

Hautala, J. (2011). International academic knowledge creation and ba. A case study from Finland. *Knowledge Management Research & Practice*, *9*(1), 4–16. https://doi.org/10.1057/kmrp.2010.23

Heffernan, T., Morrison, M., Basu, P., & Sweeney, A. (2010). Cultural differences, learning styles and transnational education. *Journal of Higher Education Policy and Management*, *32*(1), 27–39. https://doi.org/10.1080/13600800903440535

Impact of Covid-19 Pandemic on Higher Education. (2020). *Journal of Xidian University*, *14*(6). https://doi.org/10.37896/jxu14.6/047

Kleibert, J. M., Bobée, A., Rottleb, T., & Schulze, M. (2020). Transnational education zones: Towards an urban political economy of "education cities." *Urban Studies*, *58*(14), 2845–2862. https://doi.org/10.1177/0042098020962418

Li, X., Roberts, J., Yan, Y., & Tan, H. (2014). Knowledge sharing in China–UK higher education alliances. *International Business Review*, *23*(2), 343–355. https://doi.org/10.1016/j.ibusrev.2013.05.001

McGill, M., & McGill, M. (2007). Tapping into the Tacit: Reading Teacher Anecdotes to Tap into Tacit Pedagogical Understandings. *The International Journal of Learning: Annual Review*, *13*(9), 169–186. https://doi.org/10.18848/1447-9494/cgp/v13i09/44614

Mok, K. H. (2021). Education market with the Chinese characteristics: The rise of minban and transnational higher education in China. *Higher Education Quarterly*, *75*(3), 398–417. https://doi.org/10.1111/hequ.12323

Nonaka, I. (1994). A Dynamic Theory of Organizational Knowledge Creation. *Organization Science*, *5*(1), 14–37. https://doi.org/10.1287/orsc.5.1.14

Quarchioni, S., Paternostro, S., & Trovarelli, F. (2020). Knowledge management in higher education: a literature review and further research avenues. *Knowledge Management Research & Practice*, 1–16. https://doi.org/10.1080/14778238.2020.1730717

Sengpoh, L. (2019). The Effectiveness Collaborative Teaching Methods among the Lectures in Academic Institutions. *Journal of Education and Social Sciences,* 13(1), 15–23.

Smith, B., & Bereiter, C. (2002). *Liberal Education in a knowledge society*. Open Court.

Xu, D. (2019). Analysis of the Current Situation of Cross-Border Higher Education in the Background of Internationalization. *Open Journal of Social Sciences*, *07*(02), 132–137. https://doi.org/10.4236/jss.2019.72010

Yeh, Y., Huang, L., & Yeh, Y. (2011). Knowledge management in blended learning: Effects on professional development in creativity instruction. *Computers & Education*, *56*(1), 146–156. https://doi.org/10.1016/j.compedu.2010.08.011

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Design-Based Learning and Constructionist Learning Principles to Promote Artificial Intelligence Literacy and Awareness in K-12, a Pilot Study

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

There is a strong interest in engaging young learners in understanding and using Artificial Intelligence (AI) by providing opportunities to develop skills and competencies both from a technical and ethical perspective. However, how we should teach AI is still to be discussed in-depth. There are relatively few studies that investigate the methodology of learning programmes for K-12 students. The literature has highlighted how Design-Based Learning (DBL) could successfully lead learners to develop their knowledge of AI by engaging in an iterative, creative, and collaborative process underpinned by a constructionist pedagogy that fosters understanding and building connections with the 'real-world'. In this paper, we describe the implementation of a learning programme on AI, based on DBL and constructionism, co-designed with primary school teachers, and piloted with a group of students (10-12 years of age) in Ireland. Students engaged in a series of hands-on activities and then experienced the whole design process of AI working in groups. They conducted some research on health and well-being to identify potential issues they could tackle using AI. Then, they ideated and created a prototype of their solution using Scratch and Machine Learning for Kids. In this paper, we discuss reflections from the teacher and insights on participants' learning experiences. The study illustrates how through DBL it was possible to give students the agency, as creators, to shape technologies for good, and how a programme based on DBL and constructionist learning principles created a felicitous environment to learn and reflect on AI while developing 21st-century skills.

Keywords: Artificial Intelligence, K-12, Design

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Introduction

The use of Artificial Intelligence (AI) and data analytics in education as instruments to enhance teaching and learning are now receiving a lot of attention (Chassignol et al., 2018). However, AI like other emerging technologies is changing our world, challenging us to rethink not only education but also our lives as 21st-century citizens (OECD, 2021). DigComp 2.2 EU framework on digital competencies for citizens outlines the relevance of AI in terms of knowledge (i.e. recognising AI systems and their uses), skills (i.e. enabling a day-to-day interaction with the technology), and attitude (being aware of both negative and positive impact of AI) (Vuorikari, Kluzer, & Punie, 2022). However, only a few studies examine how to teach AI in schools (Kahn and Winters, 2021). In today's world, children should be prepared to take an active role in designing and using AI-enabled technology (UNICEF, 2020). Therefore, we need to provide opportunities for them to develop skills and competencies to be the ethical innovators of the future (NCCA, 2020). Even though AI learning programmes for young students, resources, and activities are available online, there are very few studies that try to share best practices and guidelines to design them (Zhou, Van Brummelen, & Lin, 2020). In this paper, we describe how we aim to engage students through co-designing with teachers a learning programme on AI integrated with curricular subjects. This trial was led by one teacher in Ireland with students from 10 to 12 years of age as part of an extensive study on Education and Public Engagement. We would like therefore to share our methodology, design process, and lessons learnt from the experience in class.

Background

Research suggests that since experts' knowledge is built around core concepts and big ideas, then the curriculum should be organised in the same way (Bransford, Brown, & Cocking, 2000). AI big ideas are framed for K-12 students around five main concepts (Touretzky et al., 2019), Perception, Representation and Reasoning, Learning, Natural interaction, and Societal impact. In other words, how a robot (also called "agent") uses sensors to gather information on the environment, how AI systems analyse data, find patterns and make predictions, how this software relates to humans, and what is the impact of this technology on our lives. Definitions of AI are still evolving though researchers refer to AI literacy as a set of competencies that everyone needs to be able to navigate and question a world (work, school, health...) more and more influenced by emerging technologies (Long & Magerko, 2020). There is a strong interest in engaging young learners in AI providing them opportunities to develop skills and competencies both from a technical and ethical perspective. However, how we should teach AI needs to be discussed in greater depth (Marques, Wangenheim, & Hauck, 2020).

The importance of a constructionist pedagogy in AI is evidenced by research (Kahn & Winters, 2021). Constructionism states that learning can be particularly beneficial if it happens through building and creating artifacts or models that can be shared. Those models or "objects to think with" (Papert, 1980) can be physical or digital, and learners are considered active creators of their knowledge (Papert, 1980). Furthermore, learning situations and activities should be designed and developed connected to/with a meaningful context for the learner i.e. possible real-world problems students can resonate with (Butler, 2007). Engaging children to design AI models that could potentially help others, pedagogically represents a valuable opportunity to deepen their understanding. A Design-Based Learning (DBL) approach, thanks to its iterative and creative process (from research to ideation, from prototype to test and share), facilitates children's AI understanding while at the same time,

encouraging collaboration and critical thinking (often referred to as "21-st century skills") (Tedre et al., 2021).

Guidelines on how to better design learning programme for young students on AI suggest introducing both AI power and limitations, from a technical and ethical perspective, supporting trail-and-error and reflections (Zhou et al., 2020). Moreover, teachers should be engaged as designers (Zhou et al., 2020) of learning activities in order to overcome the challenge of integrating AI into the standard curriculum (Tedre et al., 2021). For this reason, we collaborated with teachers to co-design an integrated learning programme on AI for 9-12 years old students. It is based on constructionist learning principles and DBL as a way to actively engage children while supporting them in their AI learning journey.

Methodology

This study is focused on the implementation of a learning programme for children on AI. The programme activities are focused on AI big ideas and are integrated with curricular subjects. Our programme is underpinned by constructionist learning principles and includes a DBL activity on AI for good, with a focus on health. Activities were co-designed with a small group of teachers together with researchers as part of a professional learning programme for primary school teachers (Amplo & Butler, 2023). In this paper we specifically want to describe the impact of the programme on students (10-12 years old) in a formal setting, therefore our research question is: [RQ 1] How could we design learning opportunities for students to enable them to creatively and collaboratively explore AI key ideas and competencies within the classroom?

We designed bespoke data collection instruments to gather feedback and insights from both the students and the teacher. Qualitative data were collected through an observation framework which was designed to help the teacher to describe the experience in class. A design journal template was designed and provided to students to be used during the design sessions to keep track of their ideas. And lastly, a semi-structured interview was conducted at the end of the programme with the teacher involved.

The observation framework provided to the teacher consisted of a one-page template that the teacher filed in before, during, and after each session of the programme. At the top of the template, the teacher specified the activity title. Then during the workshop, the teacher was asked to note examples of children's questions or reflections shared during the activity. The last part of the template was focused on a reflection from the teacher written after the session. Some prompts were given e.g., any important aspects to highlight (including feedback on the activity, anything that needs to be changed), one thing your children really enjoyed about this activity. Some of the semi-structured interview questions were listed upfront as a support for the researcher. During the interview, conducted online, the researcher tried to create a comfortable space for the teacher to share ideas. Questions were focused on the programme implementation, on the programme itself, on children's perspective and learning, and on teacher experience in leading the programme. Lastly, a printed design journal was provided to students during the design sessions as a scaffold for the design process. Prompts were written as simple tasks from finding ideas to designing a solution, as listed in Table *1*.

DESIGN JOURNAL FIRST PAGE	DESIGN JOURNAL SECOND PAGE
RESEARCH AND DEFINE Brief description of the problem you would like to solve Target (for whom)	**PROTOTYPE** Describe your solution in detail Describe the dataset you need
IDEATION Our solution (brief description, drawings/ sketches)	

Table 1: Description of the Design journal template

Thematic analysis was the approach used to conduct qualitative data analysis (Braun and Clarke as quoted by Maguire and Delahunt, 2017). Researchers started to become familiar with the collected data and defined some initial codes. Codes were then used to label pieces of data throughout the entire qualitative dataset. The database of labeled data was created using Nvivo® which helped researchers to code and retrieve data (Mason, 2002 as quoted by Ritchie and Lewis, 2003). New codes emerged together with themes that we revised to address our research question. Qualitative data collected were interpreted using self-understanding (Kvale, 1996 as quoted by Ritchie and Lewis, 2003) and cross-sectional analysis (Mason, 2002 as quoted by Ritchie and Lewis, 2003) as we tried to interpret meaning and understanding from the teacher's words (both written and transcribed from the interview) collected during and right after the programme.

Programme design

The programme for children on AI was co-created with a small group of primary school teachers during a professional learning development programme on AI, which was part of an Education and Public Engagement study. During a one-day workshop, after an interactive introduction on AI key ideas online, teachers working closely with researchers, designed activities for children (9-12 years of age) on AI integrated with curricular subjects. To lead the design session the researcher first engaged teachers in a brief introduction on AI for good applications. Then teachers brainstorm ideas on possible subject topics that could be covered using AI tools and ideas. Consequently, in pairs teachers worked to develop lesson plans. To support the design of the lesson plan, the researcher provided a template that included headings for the duration of the activity, tools / materials needed, class management, AI big ideas covered (David Touretzky, Gardner-McCune, Martin, & Seehorn, 2019), subject competencies, and a description of the activity (warm-up – activity – wrap-up). After the co-design session with teachers, researchers worked on creating a prototype of a learning programme for children on AI, described in Table 2. The programme was then led by a teacher in a classroom with primary school students. The first three sessions consisted of activities on AI integrated with other subjects underpinned by constructionist learning principles, while the last three sessions were focused on designing AI for good in the health context. Each session lasted around one hour. The last two sessions were led by the teacher together in the same day.

n.	SESSION	TOOL	APPROACH
1	Unplugged introduction "Farmer robot"	Pen and paper	Constructionism
2	Let's train an AI model	Teachable machine	Constructionism
3	Machine Learning with blocks	Machine Learning for Kids	Constructionism
4	Let's design with AI: RESEARCH Define the problem to solve IDEATION	Web Pen and paper	Design Based Learning
5	Concept PROTOTYPE	Machine learning for kids	Design Based Learning
6	TEST/Improve SHARE	Machine learning for kids	Design Based Learning

Table 2: Learning programme outline

The first session was designed to be an unplugged introduction to AI, titled "Farmer robot". For this activity children should create a decision tree to classify vegetables. Specifically, children received cards representing different-looking carrots and other vegetables and had to design with pen and paper a decision tree that could discern "carrots" from "not carrots". The second activity was designed to be a hands-on introduction to the machine learning workflow using Google Teachable Machine (Google, 2022). Children trained different models to classify 2D shapes i.e. circles and squares. During the third session children used Machine Learning for Kids (Lane, 2022). With this platform it was possible to train a machine learning model and then implement it in a Scratch-like platform with coding building blocks (MIT media lab, 2022). Children trained models using different datasets e.g. animal sounds.
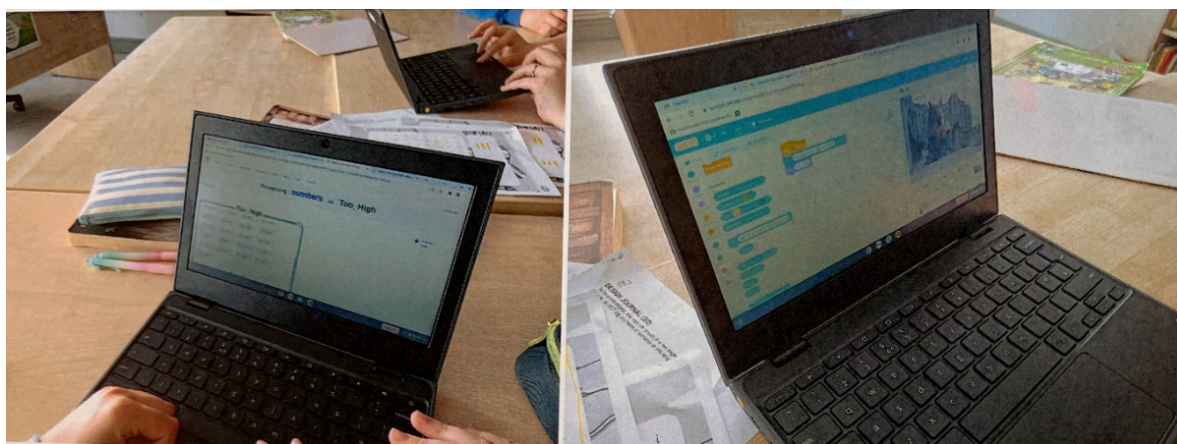

Figure 1: Children working with Machine Learning for Kids training a model during their design sessions

The following three learning experiences aim to engage students in designing a prototype in groups focusing on AI for good to help to solve potential real problems. It was decided to

focus on problems related to health and well-being context. Children went through the entire design process from research to find a problem to solve, from brainstorming ideas to prototyping their solutions using Machine Learning for Kids, Figure 1. Web and video links were provided by teachers to prompt the research phase. Design journal templates were provided to each group of students to guide them through the design process.

Findings and discussion

From the implementation in school emerged that the programme represented an opportunity for children to start to develop their knowledge of AI. Students built their knowledge gradually throughout the sessions. As the teacher told the researcher during the interview while referring to students: *"it just took them a while to think about what they were going to do, you know because they just started, I suppose to think in the AI way"*. It takes time and practice to ignite "AI-thinking". It took a while to start thinking critically about what is behind AI and data and about what could work or not in training machine learning models. It is evident from the teacher's notes in the observation sheets, how students' learning evolved. From the first session, it became apparent that the children started to think about bias meaning and to make connections with their own way of thinking: *"They said they began to see what was involved in AI. They also saw their own biases in terms of orange carrots restricting their results."* Then from session 2 students developed their understanding of machine learning workflow that then led them to reflect on how computers perceive the world, in session 3:

> *They learnt about the stages of training, learning, and testing involved in AI. They also saw the limitations of how a computer sees the world and we talked about how we could so easily distinguish things the computer cannot.*

During the design sessions students develop their critical thinking in relation to AI design: *"There was some discussion about bias in AI and how it could affect health outcomes. There were also further comments on how different our intelligence is from AI"*. Throughout the programme the teacher highlighted how students discussed multiple times how machine "intelligence" and power, up to now, is different from their intelligence and competencies, as humans:

> *The children learnt the stages of developing AI projects. They understood the importance of the data gathering stage. They also saw the ease in which bias was introduced in the training stage. They also realised how different the computer representation of the world was from theirs.*

Knowledge development on AI requires time and practice as AI learning is quite complex. During the programme children developed competencies in terms of AI big ideas from a technical perspective, started to interrogate themselves on ethical issues, and develop skills in terms of new digital tools, as illustrated in Figure 2. As highlighted in the previous paragraph, teachers mentioned how students started to make connections with the real world and to reflect on the meaning of concepts such as intelligence or perception. Therefore, children need more time to build their knowledge with all these new ideas while at the same time becoming familiar with the digital tools. The teacher's notes clearly stated how a longer programme would have been beneficial, *"Possibly have more lead in time to allow students to explore possibilities with AI. They had tasters and were expected to design the whole project."*

Figure 2: Children AI developing knowledge complexity in the context of
learning programme on AI in class

The opportunity to reflect and tinker on AI activities longer could potentially led to less challenging DBL sessions and support the creative aspect children really enjoyed. As indicated by the teacher's reflective observations: *"Overall, they* (students) *said the activities were fun and they enjoyed the creative process, but they did feel that it was a lot to do in designing and building the project in the number of sessions they had".* In particular, having more time to get used to tools, trying different types of datasets, besides having an introduction to coding with visual building blocks, could help to better prepare students for their experience with design, in which the autonomy and freedom in creating might destabilize:

> *I think they've found difficult with the experience that they had in the things, to then make the leap to make something, you know, or to just come up with an idea to the AI to. So if they had a little more time to play around with their products, you know, with the website, like Scratch as well.*

Despite concerns about the balance between the programme content and time to better prepare children for the challenging design sessions, it emerged from the teacher's voice that students overall enjoyed the experience. Students especially appreciated the group work, playing around with tools, and mostly, as highlighted by the teacher during the interview *"They enjoyed that kind of creative responsibility, I suppose of making".* DBL represented both a challenging and formative AI learning opportunity for the children. As reported by the teacher in their observation, students *"Enjoyed the responsibility of creating something themselves. They liked having time to research but found thinking in AI terms difficult".* Design sessions were successful for the three groups of children who worked together to prototype AI for health projects. As mentioned in the teacher's notes *"Eventually they were all able to come up with project ideas"* and *"all the three groups produced ideas they agreed upon".* One group worked on developing AI software that helps know more about the sugar or fat content of a specific food advising if the values are too high for a specific user, the

second group prototyped an AI-powered tool that could tell the user if a food is considered healthy or not, while the last group focused on designing an AI application that could monitor your sight and advise the user in case of bad or worsening sight as shown in Figure 3. All the students worked actively on their projects, as reported by the teacher, some of them focused on the machine learning model, and some of them work on the interface of their prototypes. They then merged the coding works in one unique application using Machine Learning for Kids platform with visual blocks, as pictured in Figure 4.

Figure 3: Design journal of a group of students who decided to prototype
an AI-enhanced system that can tell you if your sight is good or not

Figure 4: Children working on their AI projects, training a machine learning model
on the right and working at a human-machine interface on the left,
which was then used to implement the AI model.

When the teacher was asked about their experience in leading the programme the key aspect that emerged was the preparation before the programme. The teacher mentioned that before starting the programme they prepared at home and tested the activities by practicing with the tools "*so I knew how to how to code it and Scratch, you know, how to deal with the blocks that the machine learning was going to come up with*". The teacher also felt empowered to

twist the programme to better fit their students as highlighted during the interview: *"I thought I'd just get them to do something small for us that would work."*. Since the programme was the first opportunity for the students to explore AI, engaging them in exploring machine learning workflow with simple objects available in class felt more comfortable for the teacher and enjoyable for students as a smooth introduction to more complex dataset related to subjects. Lastly, the teacher also autonomously prepared some cards with examples of algorithms in Scratch to manage different type of data (images, sounds) that could be used to test the AI model trained with Machine Learning for Kids, as visible in Figure 4.

Conclusion

It is paramount to engage with children on AI to enable them to recognise both its impact and implication for our society. Students in K-12 should be engaged in AI key ideas (Touretzky et al., 2019) with a holistic perspective (Long & Magerko, 2020) so that they can develop the competencies to become creative, critical, and ethical designers and innovators but most importantly aware 21st-century citizens (OECD, 2021).

Even though our experience was underpinned by the literature on AI competencies for K-12 and design guidelines on learning programmes (Zhou et al., 2020), we wanted to go a bit further and investigate more about the pedagogy of AI. So we asked ourselves, how should we engage students in AI activities? To tackle the research question, we co-designed with teachers a first draft of a learning programme for children, with AI integrated activities and DBL sessions on AI for good. Both constructionist learning principles and DBL approach supported children in being designers and agents of their own learning of AI. Students showed they enjoyed the responsibility of creating something new and collaborating in groups even if they found at the same time the task slightly challenging. Therefore, despite being creative in AI requested extra effort, on the other hand, DBL fostered the development of knowledge on AI by providing students an opportunity to reflect and think about AI. DBL sessions on AI for good supported students' teamwork and collaboration while encouraging communication, creative and critical thinking.

Our experience in school demonstrates the potential for a more extensive and long-term programme that could engage students in developing an understanding of the big ideas in AI. Not only as part of computer science programme but also integrated with curricular subjects. AI domain allows for many connections with both STEM, non-STEM subjects, and the real-world that are worth trying to investigate further. Moreover, next to the content, we would like to draw attention to the pedagogy of AI that is only starting to be addressed. In this regard, teacher efforts in twisting the programme and preparing supporting material beforehand demonstrated how the teachers' role is key in engaging with students. Therefore, we would like to encourage research groups working on AI, to focus their Education and Public Engagement actions also on teacher learning and to co-design with teachers to better co-create learning programme for children that could promote AI knowledge, and positive and aware use of this technology already part of our lives.

Ethical approval

This study is part of a broader research study that was granted ethical approval by the Dublin City University Research Ethics Committee, reference number DCUREC/2021/043.

Acknowledgments

References

Amplo, E., & Butler, D. (2023). *A learning programme based on TPCK (Technological Pedagogical Content Knowledge), Constructionism, and Design to enhance teacher learning of the key ideas and competencies of Artificial Intelligence (AI)*. in press: SITE 34th international conference.

Bransford, J. D., Brown, A. L., & Cocking, R. R. (2000). How people learn. Brain, Mind, Experience, and School: Expanded Edition. In *The National Academies Press*. https://doi.org/10.17226/9853

Butler, D. (2007). A constructionist view of what it means to be digitally literate. *Digital Kompetanse*, *2*(2), 61–77.

Google. (2022). Teachable Machine.

Kahn, K., & Winters, N. (2021). Constructionism and AI: A history and possible futures. *British Journal of Educational Technology*, *52*(3), 1130–1142. https://doi.org/10.1111/bjet.13088

Lane, D. (2022). Machine Learning for kids. Retrieved from https://machinelearningforkids.co.uk/

Long, D., & Magerko, B. (2020). *What is AI Literacy? Competencies and Design Considerations*. https://doi.org/10.1145/3313831.3376727

Maguire, M., & Delahunt, B. (2017). *Doing a Thematic Analysis: A Practical, Step-by-Step Guide for Learning and Teaching Scholars*. https://doi.org/10.1109/TIA.2014.2306979

Marques, L. S., Wangenheim, C. V, & Hauck, J. C. (2020). *Teaching Machine Learning in School: A Systematic Mapping of the State of the Art*. https://doi.org/10.15388/infedu.2020.14

MIT media lab. (2022). Scratch 3.0.

NCCA. (2020). *Draft Primary Curriculum Framework For consultation*. 1–31. Retrieved from https://ncca.ie/media/4456/ncca-primary-curriculum-framework-2020.pdf

OECD. (2021). *OECD Digital Education Outlook 2021*. Retrieved from https://doi.org/10.1787/589b283f-en.

Papert, S. (1980). *Mindstorm: Children, Computers, and Powerful Ideas* (Vol. 148).

Ritchie, J., & Lewis, J. (2003). Qualitative research practice. *Problems and Perspectives in Management*, *14*(4), 159–169. https://doi.org/10.21511/ppm.14(4-1).2016.04

Tedre, M., Toivonen, T., Kahila, J., Vartiainen, H., Valtonen, T., Jormanainen, I., & Pears, A. (2021). Teaching Machine Learning in K – 12 Computing Education : Potential and Pitfalls. *ArXiv Preprint ArXiv:2106.11034*.

Touretzky, D, Gardner-McCune, C., Martin, F., & Seehorn, D. W. (2019). *Envisioning AI for K-12: What Should Every Child Know about AI?* https://doi.org/10.1609/aaai.v33i01.33019795

Vuorikari, R., Kluzer, S., & Punie, Y. (2022). *DigComp 2.2. The Digital Competence Framework for Citizens. With new examples of knowledge, skills and attitudes.* https://doi.org/10.2760/115376

Zhou, X., Van Brummelen, J., & Lin, P. (2020). *Designing AI Learning Experiences for K-12: Emerging Works, Future Opportunities and a Design Framework.* Retrieved from http://arxiv.org/abs/2009.10228

Providing Accessible Learning Materials for the Diverse Learner: Equitable Learning Opportunities Provided Through School Libraries

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Abstract

Libraries are founded on a philosophy of equal access to information and are concerned about accessibility to all (Tewell, 2019). In the 21st century, technology provides an opportunity for accessing infinite learning materials. Once responsible for housing and dispersing written materials, libraries now meet new challenges of providing materials in various media and multimedia platforms. Making materials accessible to diverse populations offers many challenges. Legal requirements for providing accessible materials vary but exist in both the United States and Canada. Apart from the legal requirements, equitable access to information for diverse people is a matter of human rights and an issue of supporting diversity and social justice. To provide equitable access to materials for all, libraries need to provide both materials and environments that allow people to feel empowered to access information and learning materials, including books, videos, screencasts, and interactive multimedia. In 2021 the University of North Texas received funding through an Institute of Museum and Library Services (#RE-250111-O) grant to determine how to provide school librarians with the critical knowledge set required to serve English language learners (ELLs) and their English Language (EL) teachers. The results of an exploratory forum are presented.

Keywords: Libraries, English Language Learners (ELL), Diversity Education, English Language (EL) Teachers, Students With Special Needs, Academic Language

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Introduction

As the classroom composition of students in the USA changes, the role of school librarians continues to evolve to meet the needs of divergent learners and their teachers. This study investigates the current status of school librarians as they encounter a diverse, ever-changing group of students and teachers who require service. As a result of changing school demographics, ELLs are becoming more prevalent in the classroom. Through focused meetings with key players in the fields of library and information science, education, and diversity, needs are identified and explored through group interaction and survey research. Survey results are compared to the literature.

Diversity

The Merriam-Webster Dictionary (2020) provides a simple definition of diversity. Diversity is the "condition of having or being composed of differing elements; variety, especially the inclusion of people of different races, abilities, cultures, genders, etc. in a group or organization." Diverse learners present unique challenges to both school librarians and teachers. Meeting student challenges is difficult because of issues such as:

- Diverse students need skills to enter the job market
- Issues with external support (families, communities, etc.) may interfere with the diverse student's academic needs
- Budget issues
- Very often, diverse students cannot benefit from existing materials
- Collection issues such as do we serve a few or many?
- IEP (Individual Education Programs) requirements (US Department of Education, 2021)

Diverse students present unique educational challenges. Therefore, it is critical for educational planning to anticipate the needs of diverse learners.

Special Needs Learners

The National Center for Education Statistics states that the number of students aged 3–21 studying under the Individuals with Disabilities Education Act (IDEA) is 7.2 million. This makes up 15% of all public-school students across the US. (National Center for Educational Statistics, 2022). The American Association of School Librarians (AASL) (2018) indicates that materials must be accessible to all users. Technology based on universal design concepts is essential for the effective use of information and other library services by all people. To ensure equal access, AASL indicates that school librarians must be prepared to assist diverse school populations, including students with learning, mobility, sensory, and developmental disabilities. School librarians should be aware of how available technologies address disabilities and know how to assist users with library technology. For example, services provided through school libraries may offer students with disabilities specialized services that include differentiated instruction, scheduled library time, collaboratively instructed lessons, access to curated materials specific to their personal interests, extended loan periods, sensory-based learning experiences, STEM skill training, online library access, and opportunities to volunteer in the library.

Students Identifying as LGBTQIA (Lesbian, Gay, Bisexual, Transgender, Queer, Intersex, Asexual)

The ALA (2023) indicates that libraries should serve LGBTQIA+ people by ensuring that this population is reflected in library collections and provided with services at the library. The LGBTQIA+ population is often the subject of discrimination and harassment. Libraries can provide a safe space and a sense of community. The Library Bill of Rights indicates that libraries should serve as forums for information and ideas for all people and provide access to information for all (ALA, 1939, 1944, 1948, 1961' 1967, 1980, 2019).

Highly Capable Students

Very often, books and materials that are used in the classroom do not provide a challenge for the gifted learner. Haslam-Odoardi (2010) indicates that advanced readers need to be encouraged to read material that may be difficult for most students but engaging and challenging for gifted learners. Not only can librarians select and order books that challenge the gifted student, but often librarians provide an opportunity to engage gifted students in discussion over an advanced topic. Librarians often make needed adjustments to reading assignments so that students who are gifted have appropriate material as well as the time needed to read more difficult selections.

Students of Color

Elteto, Jackson, and Lim (2008) studied whether the library was a "welcoming space" (p. 326) for students of color at a sizeable northwestern university. The researchers used Whitmore's (2005) work as a foundation for their study, in which Whitmore found that:

- White non-Hispanic students used the catalog more than students of Color.
- Students of Color used the library as a place to read or study more than their White counterparts.
- Students of Color asked the librarian for help on par with White Non-Hispanic students.
- Students of color read more basic references and documents more than their White non-Hispanic counterparts.

Elteto et al. (2008) indicate that it is crucial for each library to determine the needs of students from diverse backgrounds at each "library place." Service at individual libraries should strive to understand and meet the needs of all their patrons, including students of color. Creating "places" where students feel safe and welcome is essential.

In today's schools, school librarians play many roles, such as leader, instructional partner, information specialist, and program administrator. According to School Libraries (2021), librarians also play a vital role in student learning, fostering multiple literacies, critical thinking skills, and a lifelong love of reading. Very often, school librarians serve as the community builders. Although it is difficult to determine which role is most critical for librarians in today's 21st-century classroom, meeting the needs of ELLs and EL teachers has become an increasingly demanding role for the school librarian. School librarians are called upon to meet the needs of an ever-increasing number of English Language Learners (ELLs). This paper will focus on this current, ever-increasing challenge for school librarians.

ELLs

The coronavirus pandemic has impacted educators in all countries, with many electing to leave the field (Rand, 2023). EL teachers are experiencing record lows in recruitment and retention, generating a nationwide shortage that has the potential to produce long-standing consequences. In 2018, before the pandemic, the National Center for Education Statistics found that 10.2% of public-school students in the country were ELLs (NCES, 2023). Approximately 7.7% of all students within the public-school system report Spanish as their native language, followed by Arabic and Chinese (NCES, 2023). NCEC indicates that one in 10 children is an ELL in the US. NCEC data indicates that ELLs are less likely to graduate from high school than their non-English learner classmates. NCEC also reports that a lack of English may be misidentified as a disability. Therefore, educating ELLs requires specially trained teachers and librarians which adds an additional expense that schools must address. Still, long term, the ramifications of not serving this population can pose dire consequences to society.

ELL teachers are needed to ensure that students receive the education they deserve in an environment that respects multiculturalism. About 2% of all teachers have a main teaching assignment that consists of working in EL classrooms (NCES, 2023). However, 64% of teachers in the United States have at least one ELL student in their class (NCES, 2023). The pandemic increased the shortage of teachers in general but particularly increased the need for EL teachers. The shortage of EL teachers decreases ELL opportunities to participate equitably in classroom settings. Policy Analysis for California Education (PACE, 2023) indicates that some estimates suggest ELL students will have lost 30% of their annual reading gains and up to 50% of their main gains due to school closures at the start of the pandemic. These data demonstrate the difficulties that EL teachers and ELLs are facing. Supporting ELLs and their teachers is of paramount importance if we support meaningful inclusivity. By providing materials and an accepting environment, school librarians take on a critical role in supporting ELLs and their teachers.

Godbey and Melilli (2021) explore strategies that support ELLs, the educators, and the school librarians who work with them. To benefit ELLs, librarians should assess the current collection, survey the literature and current practices regarding ELL collections, and research the characteristics of the local school district. School libraries should develop a plan to support the continued development of home languages and culture, including materials such as graphic novels and hi-lo (high-interest, low readability) books (Hinton, 2020). When working with ELLs, it is critical to provide an opportunity to read "developmentally appropriate materials with less text intimidation. (Godbey & Melilli, 2021). Suggestions provided by these researchers include identifying curriculum materials libraries associated with teacher education and school library programs. In addition, training programs should modify their collections to better prepare teachers and school librarians for working in increasingly diverse k-12 environments.

Catalano (2025) discusses using "curriculum materials centers" for ELL students. The term "curriculum materials center" (CMC) refers to any physical collection of materials that provide learning experiences for preschool through 2th grade (P-12) students." (Catalano, 2015). Godbey and Melilli (2021) indicate that CMC librarians need to understand reading levels for specific grade ranges. Still, just as important is an understanding of the interest levels of young people at different points in their development. CMCs are important components for successfully serving ELLs in the school library. Although it is critical for

school librarians to develop an operational plan for acquiring a CMC for ELLs, it is just as vital for institutions of higher learning to provide training and experiences for future librarians to acquire the skill set for providing a successful CMC for ELLs.

Possible CMC Materials

Sullivan (2012) indicates that Hi-lo books can play a critical role in educating ELLs. Hi-lo books have high appeal for youth audiences but our written at a reading level at least three grades below the student's chronological age. Hi-lo books are often action rich with limited vocabulary and syntax.

Vásquez, Hansen, and Smith (2013) indicate that librarians need to provide opportunities for ELLs to engage with texts that are culturally relevant and written in the ELLs' first language. These texts serve several purposes:

- They allow the ELL to advance academically in their language.
- They connect the ELL to their own culture.
- They validate the ELL's culture.

Picture books can serve a need in the CMC library. Hansen et al. (2015) indicate that picture books can stimulate language development in young children. If books are selected with high artistic quality and advanced meaning, they can be used with older, more sophisticated learners.

Materials for ELLs must deal with topics that are age-appropriate for the student. Therefore, it is critical for librarians to match their students' reading levels but just as critical to match students' interests and developmental levels (Stewart, 2017; Silverman et al., 2016).

Acquiring Skills for Success

Academic Language

Bielenberg and Fillmore (2005) state that ELLs start their academic career at a disadvantage because they must acquire the skills that native speakers of English usually bring to school just to engage in subject-matter learning. Furthermore, students do not necessarily learn "subject matter language" on their own or even in immersion language environments. Mastering academic English requires planned instructional activities that promote academic language development. Teachers, as well as school librarians, need to ensure that such learning opportunities are available and supported through learning materials.

In the US educational system, few educators know what learning academic English entails (Dutro, Núñez, & Helman, 2016). One method of raising awareness is to work to identify the language used in textbooks and other educational media. Huddleson and Pullam (2001) indicate that reference books can help teachers and librarians talk about the language they find in textbooks (Huddleston & Pullam, 2001). McQuillan (2919) studied effective methods for acquiring new academic words and noted that compared to incidental learning, reading is a more efficient tool for acquiring new academic words.

Reading

The American Association of School Librarians (2018) indicates that "reading is the core of personal and academic competency" (p.13). Reading skills are critical to the academic success of ELL students (Helman et al., 2016). However, it is important to develop language skills before developing reading. Not only is it essential to be able to converse in English, but academic language is also crucial for success in school. The acquisition of academic language is a time-consuming task. Dutro et al. (2016) state that many ELLs struggle to use English in the academic setting. It is difficult to share conceptual thinking within a specific content area without academic language. A lack of academic language can greatly hinder the ELLs' academic progress.

Cultural Impacts on Academic Success

Culture may impact the importance of academics. Good et al. (2010) indicate that some Hispanic families emphasize relationships rather than competition or academic achievement. Academic success is not a critical need for many families. Teachers and school librarians need to understand the culture of ELLs. Having teachers and school librarians that reflect the culture of ELLs and relate to the students helps secure academic success for students (Good et al, 2010). Significant factors impact obtaining and implementing a plan for EL teachers and school librarians. These factors include the following:

- The numbers and types of diverse students are increasing at a significant rate.
- Current teachers and school librarians in the field also need training.
- The actual numbers and increasing diversity of the students make the situation difficult to manage.

Further exploration of the problems surrounding the successful education of ELLs is warranted.

Research Strategy

To further explore the issues surrounding meeting the library needs of ELLs and their teachers, researchers from the University of North Texas obtained funding from the Institute of Museums and Library Services. The overarching goal framing the study was to determine methods for providing accessible learning materials and opportunities for the ELL through school libraries.

The Machine Intelligence Research Institute (MIRI) (2013) defines expository research as an investigation to gather supporting evidence and present a point of view or argument on a topic. Expository research methods include comparing and contrasting evidence. MIRI states that Strategic research aims to "clarify how the future is likely to unfold and what we can do now to nudge the future toward good outcomes." Strategic research involves more novel thought and modeling than expository research." The UNT research team elected to use both expository and strategic research methodologies. The overall goals for the study were to identify key stakeholders and explore the needs and current state of education for ELLs.

Pre-forum

The research team constructed a pre-forum to introduce experts in the field who had experience with the challenges of serving ELLs. A goal of the pre-forum was to gain insight into how school librarians work with ELLs. Insights gained from the pre-forum were used to develop a forum.

Forum

Using a forum platform, the research team sought to host a discussion among key stakeholders to identify best practices for implementing ELL programming using evidence-based practices. Forty-seven individuals self-identified as EL stakeholders. Stakeholders included professors (EL, literacy, and linguistics), school librarians, linguists, educational technologists, and k-12 EL educators. Participants self-identified as 27.33 males and 72.34% female. Participants were asked to respond to the following prompt, "Given the need to understand how to provide ELL training for school librarians, what types of activities do ELL stakeholders design to assist ELLs."

Data

Using content analysis, responses to the open-ended question were analyzed. The chart below depicts the needs identified from the content analysis.

Figure 1: Needs Identified Through Content Analysis

Conclusions

The literature identifies significant problems concerning the education of ELLs. The content analysis reflected issues identified in the literature, such as accommodations, community outreach, collection development, collaboration development, and programming. The

stakeholders also seemed to identify needs from a more global perspective, such as: data collection, fundraising and grant writing, research, and technology implementation. These factors focus more on long-term solutions that need collaboration from more than one site. In addition to problems that might be addressed at the local level, the team of experts identified problems that might need to be addressed at a district or even country-wide level. The plans of the research team include developing a white paper to explore the needs of ELLs, their teachers, and their librarians at a local and national level.

Acknowledgments

References

ALA Council , Library Bill of Rights Adopted June 19, 1939, by the ALA Council; amended October 14, 1944; June 18, 1948; February 2, 1961; June 27, 1967; January 23, 1980; January 29, 2019. Inclusion of "age" reaffirmed January 23, 1996 190328-oif-library-bill-of-rights-and-freedom-to-read-statement-brochure3.indd (ala.org)

ALA Libraries Respond: Services to LGBTQIA+ People | Advocacy, Legislation & Issues (ala.org) https://www.ala.org/advocacy/diversity/librariesrespond/Services-LGBTQ

American Association of School Librarians. (2018). National School Library Standards for Learners. American Library Association.

American Library Association, Library Services for People with Disabilities Policy", American Library Association, December 4, 2006. http://www.ala.org/asgcla/resources/libraryservices (Accessed February 1, 2023) Document ID: d68b681e-3742-a234-9510-034dadaf56bb

Bielenberg, B., & Fillmore, L. W. (2004). The English They Need for the Test. Educational Leadership, 62(4), 45–49.

Catalano, A J. (2015). Collecting for the curriculum: The common core and beyond. Santa Barbara, CA: Libraries Unlimited.

Dutro, S., Núñez, R. M., & Helman, L. (2016). Explicit language instruction: A key to academic success for English learners. In L. Helman (Eds.) Literacy development with English learners: Research-based instruction in grades K-6 (2nd ed., . pp. 44–77). New York: Guilford Press.

Elteto, S., Jackson, R. M., & Lim, A. (2008). Is the Library a "Welcoming Space"? An Urban Academic Library and Diverse Student Experiences. Portal: Libraries & the Academy, 8(3), 325–337.

Good, M. E., Masewicz, S., & Vogel, L. (2010). Latino English language learners: Bridging achievement and cultural gaps between schools and families. Journal of Latinos and Education, 9(4), 321–339.

Godbey, S., & Melilli, A. (2021). Developing a P-12 English language learner collection in an academic library that reflects its community. Collection Management, 46(3/4), 273–290.

Hansen, L E., Auproux, S.B., Giarretto, B., & Worthington. A. (2015). Using 'Perfect Pairs' of picture books to support English learners' academic language. California Reader, 48 (4), 20-26.

Haslam-Odoardi, R. (2010). Gifted readers and libraries: A natural fit. Teacher Librarian, 37(3), 32–36.

Helman, L., Rogers, C., Frederick, A., &, Struck, M. (2016). Inclusive literacy teaching: Differentiating approaches in multilingual elementary classrooms. New York: Teachers College Press.

Hinton, M. (2020). Making great strives: Hi-lo books, graphic novels, and relevant narratives help kids become more confident readers. School Library Journal. Retrieved from https://www.slj.com/story/Making-Great-Strives-Building-Confident-Readers-struggling-readers-librarians-libraries-graphic-novels

Huddleston, R., & Pullani. (2001). The Cambridge grammar of the English language. Cambridge, UK: Cambridge University Press.

Machine Intelligence Research Institute (2013). Retrieved fromhttps://intelligence.org/#

Merriam Webster. (n.d.) Introvert. In Merriam-Webster.com dictionary. Retrieved from https://www.merriam-webster.com/dictionary/introvert

McQuillan, J.. (2019). Where do we get our academic vocabulary? Comparing the efficiency of direct instruction and free voluntary reading. The Reading Matrix: An International Online Journal, 19(1), 129–138.

National Center for Educational Statistics.(2022) NCES (Ed.), Digest of Education Statistics (2009 ed.). Retrieved from http://nces.ed.gov/programs/digest/d09/tables/dt09_151.asp

Silverman, R. D., Barber, A.T., Doyle, C. B., & Templeton, S. (2016). Vocabulary Instruction for English Learners across Elementary Grades. In Literacy Development with English Learners: Research-Based Instruction in Grades K-6, 2nd ed., edited by Lori Helman, 232–57. New York: Guilford Press.

Steiner, E. D., & Woo, A. (2021). Job-related stress threatens the teacher supply. RAND. Retrieved from https://www.rand.org/pubs/research_reports/RRA1108-1.html

Stewart, M. A. (2017). Keep It R.E.A.L.!: Relevant, engaging, and affirming literacy for adolescent English learners. New York, NY: Teachers College Press.

Sugarman, J., & Lazarín, M. (2020). Educating English Learners during the COVID-19 pandemic. Migration Policy Institute. Retrieved from https://www.migrationpolicy.org/research/english-learners-covid-19-pandemic-policy-ideas

Sullivan, M. (2012). Never a Dull Moment: Body piercing? Extreme sports? Teen pregnancy? Welcome to the action-packed world of hi/lo books, School Library Journal. Retrieved from School Library Journal

Tewell, E. (2019). Reframing reference for marginalized students: A participatory visual study. Reference & User Services Quarterly, 58(3), 162–176.

US Department of Education. (2021), Supporting child and student social, emotional, behavioral, and mental health needs. Retrieved from https://www2.ed.gov/documents/students/supporting-child-student-social-emotional-behavioral-mental-health.pdf

Vásquez, A., Hansen, A. L., & Smith, P. C. (2013). Teaching language arts to English language learners (2nd ed.). New York, NY: Routledge.

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Piloting a Design Thinking Based Pedagogy for Teaching Innovation and Co-Creation at a Liberal Arts and Science College in Netherlands

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

This research aims to describe the Design Thinking (DT) based Global Citizenship program and the institutional context at Liberal Arts and Science (LAS) education at Leiden University College (LUC) in Netherlands, with the goal of sharing lessons learned for similar initiatives at LAS around the world. A case study approach was used to examine diverse DT activities conducted at LAS-LUC with undergraduates along with review of institutional mechanisms supporting these activities. Data were collected through literature and document reviews, observations, in-depth interviews, student focus group discussions (FGD) and faculty in-depth interviews. This case study of a DT program implemented at a major LAS college in the Netherlands, illustrates how such a program can be successfully introduced. A qualitative analysis showed a positive association between DT and students' perceptions of their creativity and personal growth in understanding sustainability practices. Students reported that the DT approach was enriching and demonstrated appreciation for multifaceted application of knowledge across disciplines. Nonetheless, results from FGD show that students encounter difficulties in abstracting ideas from real situations to tractable innovative solutions. The findings from our study can inform and support the ongoing transformation in LAS education to go beyond traditional disciplinary ways of teaching. We call for educators to engage students in the complex interactions between social, economic and environmental systems to build students' capacities to address and solve wicked problems in the real world.

Keywords: Design Thinking, Education Innovation, Active Learning, Project Based, Wicked Problem

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Introduction

Liberal Arts Education in Europe

The concept of liberal arts colleges, as they are commonly understood today, began to develop in Europe during the 19th century. At this time, a growing number of institutions were established that were dedicated to providing a comprehensive and well-rounded education in the arts and sciences, rather than focusing solely on vocational training (van der Wende, 2011).

One of the earliest examples of this type of institution was the University of London, which was established in 1826 as a non-denominational institution with a curriculum that included a wide range of subjects in the arts, sciences, and humanities. Other early liberal arts colleges in Europe included the University of Berlin, established in 1810, and the École Normale Supérieure in France, established in 1810.

These early liberal arts colleges were seen as a response to the rapidly changing social and economic conditions of the time, and were designed to provide students with a broad and flexible education that would prepare them for a variety of careers and life paths. Over time, the idea of the liberal arts college spread to other parts of Europe and beyond, and today it remains a cornerstone of higher education in many countries (van der Wende, 2011).

The liberal arts and sciences college model as we understand it today in the Netherlands started to develop in the late 20th century and early 21st century. Prior to that, the Dutch higher education system was largely focused on specialized universities and technical colleges, which offered vocational training in specific fields (Oomen, 2016a; Roberts, 2012).

The first liberal arts and sciences colleges in the Netherlands were established in the 1990s and early 2000s. One of the earliest and most prominent examples is the University College Utrecht, which was established in 1998 and is widely considered to be one of the leading liberal arts and sciences colleges in the country.

These institutions were established with the goal of providing students with a broad and interdisciplinary education that emphasized critical thinking, creativity, and communication skills. The curriculum at these colleges typically includes courses in the natural sciences, social sciences, humanities, and the arts, and students are encouraged to explore a wide range of subjects and pursue their own interests (Sklad et al., 2016; van Klink & de Vries, 2016a).

Today, liberal arts and sciences colleges in the Netherlands are highly regarded and offer a unique and valuable form of higher education for students seeking a broad and well-rounded education (Oomen, 2016b; van der Wende, 2013).

Liberal Arts Education and Design Thinking

Liberal arts and science colleges differ from traditional disciplinary colleges in their approach to education and the skills and knowledge they aim to impart to students. Some of the advantages of a liberal arts and science education include: interdisciplinary learning, critical thinking skills, communication skills, career flexibility.

In comparison, traditional disciplinary colleges often have a more narrow focus on a specific field or subject area, and may not provide the same opportunities for interdisciplinary learning or the development of critical thinking and communication skills. However, they can offer a more in-depth education in a specific field, which can be an advantage for students who have a clear idea of the career they want to pursue (van Klink & de Vries, 2016b).

A global citizenship program at a liberal arts and science college in the Netherlands is a type of educational program that aims to promote a sense of global awareness and responsibility among students. The program typically includes a range of activities and experiences designed to help students develop an understanding of the world and the issues that impact it, and to encourage them to become active and engaged global citizens (Emma Cohen de Lara & Hanke Drop, 2017).

The specific components of a global citizenship program may vary, but some common elements include: interdisciplinary coursework, study abroad opportunities, service learning, and cultural events and activities. The goal of a global citizenship program at a liberal arts and science college in the Netherlands is to equip students with the skills, knowledge, and experiences they need to become informed, engaged, and responsible global citizens who can contribute to creating a better world (Emma Cohen de Lara & Hanke Drop, 2017; van der Wende, 2019).

Design thinking is a problem-solving approach that involves empathy, experimentation, and iteration. It can be integrated into a liberal arts and science college education curriculum as a framework for developing critical thinking skills and preparing students for real-world problem-solving. The steps of a design thinking curricula framework that are applied in education are: empathize, define, ideate, prototype, test, and to refine. It's an iterative cyclic approach where students continue to iterate on their solutions, incorporating feedback and making changes as necessary (Buchanan, 1992; Gerardou et al., 2022).

By incorporating design thinking into a liberal arts and science college education, students can learn to approach complex problems with empathy and creativity, and develop the skills necessary to find innovative solutions. Additionally, the design thinking process can help students develop critical thinking and communication skills, which are essential for success in any field (Gerardou et al., 2022).

Teaching wicked problems of sustainability

Sustainability is a complex and multifaceted issue that requires interdisciplinary approaches to solve. Wicked problems of sustainability, such as climate change, deforestation, and resource depletion, are particularly challenging because they are difficult to define, have multiple causes, and can have far-reaching consequences.

Applying design thinking framework within liberal arts and science education for teaching wicked problems of sustainability could bring several strengths. It allows students to contextualize the problem. It provides students with a comprehensive overview of the problem, including its history, causes, and impacts. This will help students understand the complexity and interconnectedness of the issue. Design thinking framework encourage interdisciplinary approaches. Students are able to explore the problem from multiple perspectives, including science, economics, politics, and ethics given the strength of liberal arts and science education. Students will be challenged to question conventional wisdom and

think critically about the root causes of sustainability problems and potential solutions. Students will understand the complex systems that drive sustainability problems and how they are interrelated. Design thinking also encourages students to work in teams to develop and implement solutions to sustainability problems and encourage students to take concrete steps to address sustainability problems, such as participating in community-based initiatives, conducting research, or advocating for policy change (Buchanan, 1992; Earle & Leyva-de la Hiz, 2020; Gerardou et al., 2022).

By teaching wicked problems of sustainability in a liberal arts and science college, students can develop the skills necessary to tackle complex challenges and make a positive impact on the world. Additionally, interdisciplinary approaches can help students understand the complexity of sustainability issues and develop innovative solutions that address multiple dimensions of the problem (Taimur et al., n.d.).

This research aims to describe the Design Thinking (DT) based Global Citizenship program and the institutional context at Liberal Arts and Science (LAS) education at Leiden University College (LUC) in Netherlands, with the goal of sharing lessons learned for similar initiatives at LAS around the world. More specifically, this research aims to answer the following two questions:
- How can an inter- and multi-disciplinarity approach be promoted in education at LAS when addressing wicked environmental problems?
- How can Design Thinking be applied to promote problem solving, and the ability to operate in new situations when addressing wicked problems in LAS?

Methods

Teaching wicked environmental problems - Design Thinking in curricula

Designing the Future of wicked problems (Research Clinic 2021 semester 2) was taught in hybrid due to Covid-19 with assignments and associated written instructions disseminated via Brightspace during 2020-22 (1,5 years). Total number of enrolled students were 13 students with 16 weeks of project based learning (Table 1). Students worked in three- or four-person teams to explore the intersections of social phenomena critical to wicked problems of waste and sustainability. The course was broken into five stages following the design thinking model that correspond to the course lectures and assigned readings. Each lesson in the module includes comprehension activities and concludes with an 'investigation', a project-based activity where students explore a wicked problem of waste issue in their schools or community. Data collection was done through case study approach including student participant observations, focus group discussion, reflection journals, in-depth interview with instructors involved.

Fig 1. Design Thinking Framework

Table 1. Overview of students enrolled in Research Clinic for Design for the Future program

Research clinic name	Design for the Future: Wicked Environmental Problems in Sustainability and Health
Academic year	Feb - May 2021 (16 weeks)
Length	2 hours per week: (online) classes, lab session, office hours, walk/talk with students, pitch improvement session, fieldtrip, final pitch event.
Student Enrollment	13 Undergraduates
Format	Online / in-person hybrid (based on Covid regulations)

Table 2. Final research clinic structure

	Structure of the research clinic	
Week 1	Overview of the course - what is design thinking	Getting to know the clinic, the instructors and each other
Week 2	Understanding context - household hazardous waste global problem local action	
Week 3	Design thinking - empathy understanding the problem	Students start hands on application process of understanding the problem the community faces
Week 4	Design thinking define the problem within the context	Students start hands on application process of defining and focusing the problem the community faces
Week 5	Understanding context - expert from The Hague municipality waste management and	

	pharmacy association on household hazardous waste and medical waste	
Week 6	Design thinking - Application of knowledge - ideate	Students brainstorm for ideas based on their research/knowledge/context to find solutions for the problem the community faces on household hazardous waste challenge
Week 7	Design thinking - Application of knowledge - prototype	Students create prototype with the use of basic models or examples of the product to test to finetune their solutions on household hazardous waste challenge
Week 8	Spring break	Students keep working on prototype and do initial tests
Week 9	Design thinking - Application of knowledge - prototype	Students keep working on prototype with the use of basic models or examples of the product to test to finetune their solutions on household hazardous waste challenge
Week 10	Design thinking - Application of knowledge - testing	Students engage with the community and experts to rigorously test the prototypes. This involves active research methods including, but not limited to, online survey, qualitative research methods to gather data and finetune their solutions. Teams often use the results to redefine one or more further problems. Some students have returned to previous stages to make further iterations, alterations and refinements – to find or rule out alternative solutions.
Week 11	Fieldtrip to innovation centre of Leiden University	First official practice pitch of prototype and team bonding activities.
Week 12	Design thinking - Application of knowledge - Pressure cooker session	During the pressure cooker session, students are encouraged to revisit all design thinking steps that they have taken, within a limited amount of time. After revisiting all steps the students do a swot analysis on their prototype to find the strengths and weaknesses and to find out which next steps to take.
Week 13	Practice pitch/presentation to the community about their solutions How to communicate your idea	During the last class session, the students receive tips and tricks for their pitch and are given the opportunity to practice their pitch in front of a pitching expert.
Week 14	Final pitch/ presentation to the	Students present their ideas to their fellow-

	community about their solutions	students, instructors and an expert panel.
Week 15	Lessons learned - focus group discussion	During the focus group, students are asked to reflect on the course, steps taking and lessons learned.

Results

After interacting with the content and activities in the modules, the students devised their investigation and implemented it in their schools or communities. The students recorded their results and experiences in various forms (e.g., videos, PowerPoint presentations, art exhibitions). These artefacts were uploaded to course module web platform by the instructors for access by peers. The instructors gave feedback about the artefact through the platform and other design thinking platform applications (e.g. Mural). One group of students investigated waste discarding behavior of their peers in the dormitory setting and held an art workshop of the medical waste during Covid-19. Here they identified various types of medical waste and considered how they were discarded. From their workshop they concluded the awareness efforts in their community were effective(Fig 2).

Fig 2. Art workshop on medical waste

The students applied critical thinking competencies to knowledge gained about the state of wicked problem of hazardous waste in their specific community.

> medical waste is more of a big picture problem… when I signed up for this … thought about it more with like antibiotic resistance…coming from hazardous waste… now I'm more thinking about it with like, there's a lot of different types… like we were talking about birth control. There's a lot of different kinds of medicines, and also like substances. Yeah, I think it's a much more diverse problem than I thought it was. (Student no. 1 FGD May, 2021)

> We're learning, we're engaging with wicked problems or global challenges can actually be fun, because that's what [someone] already said, like, yeah this topic is horrible but I never felt negative in my classes or during my meetings. Whereas in

> other courses, when we discussed all the bad stuff, and there's so much bad stuff, but like at the end of the lecture, you're like, "Oh." (Student no. 9 FGD May, 2021)

Students also gained emotional resilience - overcoming concerns/values about wicked problems of sustainability.

> I also was surprised to discover that "killing your darling" and starting over is not really as scary as it seems (if you do it with the right people maybe). I was very afraid by that at the beginning, but we reached that point in the end and it was actually a change for the better, now looking back at our entire journey. (Student no. 4 FGD May, 2021)

> I am a perfectionist person as well as an indecisive person because I don't want to make the wrong choice. I think that this clinic did not help me overcome this necessarily, because it forced me to be more indecisive and more perfectionistic due to the iterative process. Therefore, a skill I could work on is being confident in my own decisions. (Student no. 11 FGD May, 2021)

> Two very important skills that I got from this research clinic are adaptability and patience. Feedback-giving exercise at the end of the clinic and I think it is very useful. I am definitely going to incorporate the lessons learned in this clinic in my personal life as well, not only in my professional one. (Student no. 9 FGD May, 2021)

Students also experienced proactive engagement (e.g. creativity or innovative solutions) and learning in a time of pandemic, COVID-19.

> How collaborative the classes were and the diversity in the type of material we had to prepare with from podcasts to videos. It allowed for multiple types of learners to be included in the classes and thus be able to comprehend the material beyond just reading. I also liked the activities that were encouraging our creativity and improvisation. (Student no. 6 FGD May, 2021)

While students found hybrid education challenging as well as working in teams students were seeing the benefits of team cooperation (Fig 3).

Fig 3. Students working in groups during hybrid session

I feel that there was also a lot of structure to the clinic and again, the instructors made sure to give us a solid framework within we could elaborate on our process of designing a solution for the problem of HHW. Another very pleasant surprise was to notice how, irrespective of the time point within the clinic, the team that I was part of had always been very pleasant to work with. (Student no. 11 FGD May, 2021)

Overall students expressed the strength of application of research to practice and benefit of engagement of students in wicked environmental local challenges. Students tackling wicked environmental problems demonstrated that they were able to learn and practice empathy from Design Thinking.

Conclusion

What we found from the process was that students experienced collaborative learning and learning-by-doing as effective ways of learning practical skills that are accompanied by close support. As students were applying design thinking with real-life cases about 'wicked problems (WP)' in sustainability it activated the students' own thinking and problem solving. It also demonstrated impact both on the creativity of the processes and responses, as well as the emergent ideas and innovative interdisciplinary knowledge. Moreover, students were able to overcome their fear of failure working as a group to produce a collaborative creative situation. We also saw that students were able to appreciate the creative insight and different

experience of others which facilitated group cohesion as well as allowing diversity of ideas to emerge throughout the process. The students were able to work as equals in a creative process, rather than adversaries in a critical rivalry, and will therefore generate creative responses based on unusual and new combinations of thoughts and thought processes.

Appling Design Thinking into curriculum content does encourage a sense of possibility in students to overcome hopelessness in university classrooms and beyond. We recognize the academic breadth and depth can be at odds, faculty and students are already typically overextended, hence solving wicked problems in sustainability will depend on more than innovative undergraduate training programs. Nevertheless, our own efforts to achieve the vision we propose here is to underpin our optimism that innovative, interdisciplinary undergraduate training programs can be realized.

Acknowledgements

References

Buchanan, R. (1992). Wicked Problems in Design Thinking. *Design Issues*, *8*(2), 5. https://doi.org/10.2307/1511637

Earle, A. G., & Leyva-de la Hiz, D. I. (2020). The wicked problem of teaching about wicked problems: Design thinking and emerging technologies in sustainability education. *Https://Doi.Org/10.1177/1350507620974857*, *52*(5), 581–603. https://doi.org/10.1177/1350507620974857

Emma Cohen de Lara, & Hanke Drop. (2017). *Back to the Core Rethinking Core Texts in Liberal Arts & Sciences Education in Europe* (L. L. P. C. S. Enrico Attila Bruni, Ed.). Vernon Press.

Gerardou, F. S., Meriton, R., Brown, A., Moran, B. V. G., & Bhandal, R. (2022). Advancing a Design Thinking Approach to Challenge-Based Learning. *The Emerald Handbook of Challenge Based Learning*, 93–129. https://doi.org/10.1108/978-1-80117-490-920221005

Oomen, B. (2016a). Orchestrating encounters: Teaching law at a liberal arts and sciences college in the Netherlands. *Academic Learning in Law: Theoretical Positions, Teaching Experiments and Learning Experiences*, 201–222. https://doi.org/10.4337/9781784714895.00021

Oomen, B. (2016b). Orchestrating encounters: Teaching law at a liberal arts and sciences college in the Netherlands. *Academic Learning in Law: Theoretical Positions, Teaching Experiments and Learning Experiences*, 201–222. https://doi.org/10.4337/9781784714895.00021

Roberts, L. L. (2012). Instruments of Science and Citizenship: Science Education for Dutch Orphans During the Late Eighteenth Century. *Science and Education*, *21*(2), 157–177. https://doi.org/10.1007/S11191-010-9269-4/METRICS

Sklad, M., Friedman, J., Park, E., & Oomen, B. (2016). 'Going Glocal': a qualitative and quantitative analysis of global citizenship education at a Dutch liberal arts and sciences college. *Higher Education*, *72*(3), 323–340. https://doi.org/10.1007/S10734-015-9959-6/TABLES/8

Taimur, S., Onuki, M., Review, H. M.-A. P. E., & 2022, undefined. (n.d.). Exploring the transformative potential of design thinking pedagogy in hybrid setting: a case study of field exercise course, Japan. *Springer*. Retrieved February 9, 2023, from https://link.springer.com/article/10.1007/s12564-022-09776-3

van der Wende, M. (2011). The emergence of liberal arts and sciences education in Europe: A comparative perspective. *Higher Education Policy*, *24*(2), 233–253. https://doi.org/10.1057/HEP.2011.3/METRICS

van der Wende, M. (2013). Trends towards Global Excellence in Undergraduate Education: Taking the Liberal Arts Experience into the 21st Century. *International Journal of Chinese Education*, *2*(2), 289–307. https://doi.org/10.1163/22125868-12340025

van der Wende, M. (2019). The emergence of liberal arts and sciences education in Europe 1 , 2. *The Evolution of Liberal Arts in the Global Age*, 106–126. https://doi.org/10.4324/9781315645216-9/EMERGENCE-LIBERAL-ARTS-SCIENCES-EDUCATION-EUROPE-1-2-MARIJK-VAN-DER-WENDE

van Klink, B., & de Vries, U. (2016a). Academic learning in law: Theoretical positions, teaching experiments and learning experiences. *Academic Learning in Law: Theoretical Positions, Teaching Experiments and Learning Experiences*, 1–336. https://doi.org/10.4337/9781784714895

van Klink, B., & de Vries, U. (2016b). Academic learning in law: Theoretical positions, teaching experiments and learning experiences. *Academic Learning in Law: Theoretical Positions, Teaching Experiments and Learning Experiences*, 1–336. https://doi.org/10.4337/9781784714895

Design Thinking in Education as a Catalyst to Discover and Maintain a Sense of Hope, Agency, and Confidence for Students

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

Learning about 'wicked problems (WP)' in sustainability such as pollution, urban waste, and food and water shortages could incur a sense of helplessness among students. WP is complex to understand and challenging to teach. Our experience suggests how these concepts are taught is as important for student learning as is teaching the concepts of WP. The following question guided our research: What pedagogical approaches do we need to ignite creativity and to foster hope of a sustainable future when teaching about WP? This case study explores students' perceptions upon taking the WP Design Thinking (DT) program at Leiden University College (LUC in Netherlands). Students' creativity and desires for a positive change were examined using content analysis of their reflective journals, in-depth interviews and a focus group discussion. We specifically focused on a sense of hope leading to fostered emotional stability, proactive engagement (e.g. creativity or innovative solutions) and learning in a time of pandemic, COVID-19. Based on our findings, students who applied the DT approach to tackling the WP of household urban waste, demonstrated readiness toward team cooperation, emotional resilience, and self-awareness of their own environmental behavior. Students found interdisciplinary and multifaceted approaches to learning helpful in clarifying personal priorities, concerns and values.

Keywords: Design Thinking, Education Innovation, Active Learning, Liberal Arts and Science, Education, Wicked Problem

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Introduction

Wicked environmental problems in sustainability

Many environmental problems that are considered "wicked" due to their complexity and difficulty in finding a solution(Head & Alford, 2013). For instance, the rapidly changing global climate is one of the biggest environmental challenges facing humanity. E-waste, food waste, hazardous waste, plastic pollution, waste management are few of the major examples of sustainability challenge that can have significant environmental impacts. The wicked problem of households is one of the more complex challenges of the sustainability(Defries & Nagendra, 2017; Head, 2019). Household hazardous waste (HHW) refers to potentially toxic or dangerous substances that are generated from everyday household activities. The environmental problems associated with household hazardous waste in sustainability include contamination of soil and groundwater, air pollution, and health hazards. Improper management and disposal of these waste items can result in exposure to toxic substances and other health risks (Turnbull & Hoppe, 2019).

Teaching wicked environmental problems of sustainability are challenging due to several aspects (Cross & Congreve, 2020; Earle et al., 2021). Many environmental problems are complex, involving multiple interrelated factors, and can be difficult to fully understand and explain. This complexity can make it challenging to effectively teach the causes, impacts, and potential solutions for these problems. Moreover, there can be a lack of consensus around the causes and solutions for many environmental problems, particularly in the case of politically charged issues such as environmental pollution. Wicked problems often require an interdisciplinary approach, drawing on knowledge from various fields, such as science, economics, and policy. This interdisciplinary nature can make it difficult for teachers who specialize in one area to effectively teach these complex issues. Sustainability science is a rapidly evolving field, and new information and technologies are constantly being developed. This can make it difficult for teachers to keep up-to-date and to provide students with the most current information and perspectives. Many educational institutions face limited resources, including funding, time, and support, which can make it difficult to effectively teach environmental issues and to provide students with hands-on learning experiences.

Despite these challenges, it is important to teach students about wicked environmental problems of sustainability as they are facing these challenges in the future. A comprehensive and well-rounded education on these issues can help students understand the complexity of these problems, and encourage them to become active citizens who can work towards finding solutions.

Design thinking is a problem-solving approach that involves empathy, experimentation, and iteration. It can be integrated into a liberal arts and science college education curriculum as a framework for developing critical thinking skills and preparing students for real-world problem-solving. The steps of a design thinking curricula framework that are applied in education are: empathize, define, ideate, prototype, test, and to refine. It's an iterative cyclic approach where students continue to iterate on their solutions, incorporating feedback and making changes as necessary (Buchanan, 1992; Gerardou et al., 2022).

By incorporating design thinking into a liberal arts and science college education, students can learn to approach complex problems with empathy and creativity, and develop the skills necessary to find innovative solutions. Additionally, the design thinking process can help

students develop critical thinking and communication skills, which are essential for success in any field (Gerardou et al., 2022). Design thinking emphasizes empathy: Encourage students to understand the perspectives and needs of those affected by environmental problems by conducting field research, conducting interviews, or creating personas (Earle et al., 2021; McCune et al., 2021). This can help students develop a deep understanding of the problem and the people it affects, which is critical to finding innovative and effective solutions. It also enables students to experiment with different approaches and solutions to environmental problems, and to be open to failure and iterating on their ideas. This can help students learn from their mistakes and develop resilience, critical thinking, and problem-solving skills. Most importantly, design thinking framework encourages students to work in teams and to collaborate with experts, community members, and stakeholders to address environmental problems. This can help students learn how to effectively communicate their ideas, understand the perspectives of others, and develop skills in teamwork and collaboration. The agency and sense of hope is an important factor as design thinking encourage students to reflect on what they learned and what they can do differently next time. This can help students develop a growth mindset and maintain motivation to continue working on environmental problems.

By incorporating design thinking into a sustainability curriculum, students can develop the skills and mindset they need to tackle the complex and challenging environmental problems they will face in the future. This research hence aims to explore how Design Thinking can be applied to promote problem solving, and the ability to operate in new situations when addressing wicked problems with further examinations on ways to need to ignite creativity and to foster hope of a sustainable future when teaching about wicked problems.

Teaching wicked environmental problems - Design Thinking in curricula

Designing the Future of wicked problems (Research Clinic 2021 semester 2) was taught in hybrid due to Covid-19 with assignments and associated written instructions disseminated via Brightspace during 2020-22 (1,5 years). Total number of enrolled students were 13 students with 16 weeks of project based learning (Table 1). Students worked in three- or four-person teams to explore the intersections of social phenomena critical to wicked problems of waste and sustainability. The course was broken into five stages following the design thinking model that correspond to the course lectures and assigned readings. Each lesson in the module includes comprehension activities and concludes with an 'investigation', a project-based activity where students explore a wicked problem of waste issue in their schools or community. Data collection was done through case study approach including student participant observations, focus group discussion, reflection journals, in-depth interview with instructors involved.

Fig 1. Design Thinking Framework

Table 1. Overview of students enrolled in Research Clinic for Design for the Future program

Research clinic name	Design for the Future: Wicked Environmental Problems in Sustainability and Health
Academic year	Feb - May 2021 (16 weeks)
Length	2 hours per week: (online) classes, lab session, office hours, walk/talk with students, pitch improvement session, fieldtrip, final pitch event.
Student Enrollment	13 Undergraduates
Format	Online / in-person hybrid (based on Covid regulations)

Table 2. Final research clinic structure

	Structure of the research clinic	
Week 1	Overview of the course - what is design thinking	Getting to know the clinic, the instructors and each other
Week 2	Understanding context - household hazardous waste global problem local action	
Week 3	Design thinking - empathy understanding the problem	Students start hands on application process of understanding the problem the community faces
Week 4	Design thinking define the problem within the context	Students start hands on application process of defining and focusing the problem the community faces
Week 5	Understanding context - expert from The Hague municipality waste management and pharmacy	

	association on household hazardous waste and medical waste	
Week 6	Design thinking - Application of knowledge - ideate	Students brainstorm for ideas based on their research/knowledge/context to find solutions for the problem the community faces on household hazardous waste challenge
Week 7	Design thinking - Application of knowledge - prototype	Students create prototype with the use of basic models or examples of the product to test to finetune their solutions on household hazardous waste challenge
Week 8	Spring break	Students keep working on prototype and do initial tests
Week 9	Design thinking - Application of knowledge - prototype	Students keep working on prototype with the use of basic models or examples of the product to test to finetune their solutions on household hazardous waste challenge
Week 10	Design thinking - Application of knowledge - testing	Students engage with the community and experts to rigorously test the prototypes. This involves active research methods including, but not limited to, online survey, qualitative research methods to gather data and finetune their solutions. Teams often use the results to redefine one or more further problems. Some students have returned to previous stages to make further iterations, alterations and refinements – to find or rule out alternative solutions.
Week 11	Fieldtrip to innovation centre of Leiden University	First official practice pitch of prototype and team bonding activities.
Week 12	Design thinking - Application of knowledge - Pressure cooker session	During the pressure cooker session, students are encouraged to revisit all design thinking steps that they have taken, within a limited amount of time. After revisiting all steps the students do a swot analysis on their prototype to find the strengths and weaknesses and to find out which next steps to take.
Week 13	Practice pitch/presentation to the community about their solutions How to communicate your idea	During the last class session, the students receive tips and tricks for their pitch and are given the opportunity to practice their pitch in front of a pitching expert.

Week 14	Final pitch/ presentation to the community about their solutions	Students present their ideas to their fellow-students, instructors and an expert panel.
Week 15	Lessons learned - focus group discussion	During the focus group, students are asked to reflect on the course, steps taking and lessons learned.

Data Collection And Analysis

We used the case study approach with convenience sampling to explore our research questions. Our selection criteria on selecting students were that they were enrolled at Leiden University College during the time of the research 2020-2021. The data collection involved focus group discussion, in-depth interview with the students, reflection journals, and interview with the instructor team. The interview questions were developed to help participants reflect and share their backgrounds, general interests, and experiences of the course that could embrace their hopes and challenges in addressing wicked challenges. All interviews were audio or video recorded and transcribed for analysis. The researchers reviewed the interview transcripts by coding and came up with themes of the design thinking experience to discuss hopes and creativity. The initial coding was done individually, and later there was a collective discussion to share our interpretation.

Findings

Awareness and recognition of wicked environmental problem

When discussing about wicked problems and environmental issues, the students were quite alarmed at the magnitude of the issues. Some students expressed the shock with extent of the wicked problem.

> *...medical waste is more of a big picture problem... when I signed up for this ... thought about it more with like antibiotic resistance...coming from hazardous waste...now I'm more thinking about it with like, there's a lot of different types... like we were talking about birth control.There's a lot of different kinds of medicines, and also like substances.Yeah, I think it's a much more diverse problem than I thought it was.* (Student no. 1 FGD May, 2021)

> *We're learning, we're engaging with wicked problems or global challenges can actually be fun, because that's what [someone] already said, yeah this topic is horrible but I never felt negative in my classes or during my meetings. Whereas in other courses, when we discussed all the bad stuff, and there's so much bad stuff, but like at the end of the lecture, you're like, "Oh." (Student no. 9 FGD May, 2021)*

Fig 2. Student addressing wicked problems through design thinking education framework

Emotional Resilience - Overcoming Concerns/Values

Students understood the goals and outcomes that need to be achieved; yet, they were at times challenged how they could take the goal-oriented actions for tackling wicked problems. Through experiencing each phase of design thinking students were at times challenged and at times despondent to start over. However, they were still optimistic and hopeful for the outcomes.

> *I also was surprised to discover that "killing your darling" and starting over is not really as scary as it seems (if you do it with the right people maybe). I was very afraid by that at the beginning, but we reached that point in the end and it was actually a change for the better, now looking back at our entire journey. (Student no. 4 FGD May, 2021)*

> *I am a perfectionist person as well as an indecisive person because I don't want to make the wrong choice. I think that this clinic did not help me overcome this necessarily, because it forced me to be more indecisive and more perfectionistic due to the iterative process. Therefore, a skill I could work on is being confident in my own decisions. (Student no. 11 FGD May, 2021)*

> *Two very important skills that I got from this research clinic are adaptability and patience. Feedback-giving exercise at the end of the clinic and I think it is very useful. I am definitely going to incorporate the lessons learned in this clinic in my personal life as well, not only in my professional one. (Student no. 9 FGD May, 2021)*

Proactive engagement (e.g. creativity or innovative solutions) and learning in a time of pandemic, COVID-19.

The COVID-19 pandemic forced a rather dramatic digital transformation in education. Students were forced to move all their learning from in-person to digital realm which led to disruptions in their learning and motivations alike. Students were faced with both positive and negative outcomes as great burden was placed on students who suddenly had to possess a variety of skills, competencies, and resources. The design thinking curricula, even in its hybrid form, provided positive influence on students' engagement in leading to better learning outcomes.

> *How collaborative the classes were and the diversity in the type of material we had to prepare with from podcasts to videos. It allowed for multiple types of learners to be included in the classes and thus be able to comprehend the material beyond just reading. I also liked the activities that were encouraging our creativity and improvisation. (Student no. 6 FGD May, 2021)*

> *I feel that there was also a lot of structure to the clinic and again, the instructors made sure to give us a solid framework within we could elaborate on our process of designing a solution for the problem of HHW. Another very pleasant surprise was to notice how, irrespective of the time point within the clinic, the team that I was part of had always been very pleasant to work with. (Student no. 11 FGD May, 2021)*

Conclusion

Appling Design Thinking into curriculum content does encourage a sense of possibility (and agency) in students to overcome hopelessness in university classrooms and beyond. We recognize the academic breadth and depth can be at odds, faculty and students are already typically overextended, hence solving wicked problems in sustainability will depend on more than innovative undergraduate training programs. Nevertheless, our own efforts to achieve the vision we propose here is to underpin our optimism that innovative, interdisciplinary undergraduate training programs can be realized.

Acknowledgements

References

Buchanan, R. (1992). Wicked Problems in Design Thinking. *Design Issues*, *8*(2), 5. https://doi.org/10.2307/1511637

Cross, I. D., & Congreve, A. (2020). Teaching (super) wicked problems: authentic learning about climate change. *Https://Doi.Org/10.1080/03098265.2020.1849066*, *45*(4), 491–516. https://doi.org/10.1080/03098265.2020.1849066

Defries, R., & Nagendra, H. (2017). Ecosystem management as a wicked problem. *Science*, *356*(6335), 265–270. https://doi.org/10.1126/SCIENCE.AAL1950

Earle, A., Learning, D. L. la H.-M., & 2021, undefined. (2021). The wicked problem of teaching about wicked problems: Design thinking and emerging technologies in sustainability education. *Journals.Sagepub.Com*, *52*(5), 581–603. https://doi.org/10.1177/1350507620974857

Gerardou, F. S., Meriton, R., Brown, A., Moran, B. V. G., & Bhandal, R. (2022). Advancing a Design Thinking Approach to Challenge-Based Learning. *The Emerald Handbook of Challenge Based Learning*, 93–129. https://doi.org/10.1108/978-1-80117-490-920221005

Head, B. W. (2019). Forty years of wicked problems literature: forging closer links to policy studies. *Policy and Society*, *38*(2), 180–197. https://doi.org/10.1080/14494035.2018.1488797

Head, B. W., & Alford, J. (2013). Wicked Problems. *Http://Dx.Doi.Org/10.1177/0095399713481601*, *47*(6), 711–739. https://doi.org/10.1177/0095399713481601

McCune, V., Tauritz, R., Boyd, S., Cross, A., Higgins, P., & Scoles, J. (2021). Teaching wicked problems in higher education: ways of thinking and practising. *Https://Doi.Org/10.1080/13562517.2021.1911986*. https://doi.org/10.1080/13562517.2021.1911986

Turnbull, N., & Hoppe, R. (2019). Problematizing 'wickedness': a critique of the wicked problems concept, from philosophy to practice. *Policy and Society*, *38*(2). https://doi.org/10.1080/14494035.2018.1488796

Social Presence and Engagement:
A Design-Based Research Study to Incorporate Web 2.0 Protocols

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

Increased social presence in asynchronous courses has shown to lead to student success and improved learning experiences. However, many students still lack social presence in asynchronous courses. This study utilizes educational design research (EDR) methods to frame an investigation into the issues and potential solutions for the lack of social presence in asynchronous online courses. EDR methodological framework is used to suggest a process for change via a social negotiating process drawing upon theoretical resources and practitioner participation. This study aims to explore how social presence can be established through an initial personal learning network activity to build trust and interaction among peers to address student and teacher connections, engagement, and the development of social presence. It describes the initial stage of EDR with an analysis and exploration of literature potential use of computer-supported collaborative concept map Web 2.0 found in a literature review. The Community of Inquiry framework is used as a theoretical basis to understand social presence, which consists of emotional expression, open communication, and group cohesion. Group cohesion, where trust and interaction occur by setting up the learning environment with opportunities for interaction and collaboration, is considered to potentially enhance student satisfaction and learning outcomes. The results of this study contribute to the understanding of how social presence can be established in online learning environments and inform the design of online courses to enhance student engagement and satisfaction.

Keywords: Education Design-Based Research, EL, PLN, Social Presence, Icebreaker

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Introduction

Online e-learning is increasing in higher education as it provides an alternative to traditional in-person instruction by using technology to deliver learning resources (Abou El-Seoud, et al., 2014). In online courses, participant interaction and activity are important in online learning effectiveness (Richardson, et al. 2012). However, online course effectiveness has been in question (Sung & Mayer, 2012) and its quality considered disadvantaged (Johnson & Aragon, 2003). A major challenge of online learning, in particular asynchronous learning environments, is the difference in learning experience compared to in-person learning, such as lack of synchronicity, non-verbal cues (Akcaoglu & Lee, 2016), and interactional difficulties (Alqahtan & Rajkhan, 2020).

A sense of connection to others online is an important factor for a learner's learning experience and performance (Yoon & Leem, 2021). Research has shown that social presence is positively linked with learning outcomes and student satisfaction (Akcaoglu & Lee, 2016). Learners' perception of interaction and social connection with the teacher and other students in a learning environment can be described as social presence (Richardson, et al. 2017). Social presence is defined as "the ability of people to present themselves as 'real people'... online" (Lowenthal & Lowenthal, 2010, p. 1). Social presence promotes comfort and emotional connections (Aragon, 2003).While traditionally, trust is assumed to build gradually within teams over time after evaluating others behavior (Robert et al., 2009), however, initial course introduction activities (e.g., ice breakers) can encourage the development of swift trust (Peacock et al., 2016). Moreover, dedicated discussion for course introductions can help build a sense of community (Rovai, 2002).

This study investigates how instructors might establish connections and relationships with students via initial activities (icebreakers/ introductions), to help develop social presence, trust and interactions among peers, before beginning academic course content. It looks into the social negotiating process.

Research Questions

1. What is the impact of social presence as a factor on the student experience in an online learning course?
2. How can social presence inform the application of Web 2.0 tools in building student trust, communication, and group cohesion?
3. What instructional design elements can be incorporated into designing an initial social activity?

Literature Review

The Community of Inquiry (CoI) theoretical framework is a popular social constructivist approach for building communities (Flock, 2020). Garrison et al. (2000) determined three categories of social presence. These categories are: (1) emotional expression, where learners share personal opinions and values; (2) open communication, where learners develop mutual acknowledgement, awareness, and recognition; and (3) group cohesion, where learners build and sustain trust and connection between members. Group cohesion in an online setting may take time, shared social context, personal purposeful interaction, and open communication (Tseng & Yeh, 2013). Moreover, sociability, the degree of association in an online environment, can be designed into a course to promote needed social connections and

interactions to form interpersonal relation affordances (Akcaoglu & Lee, 2016). This study focuses on the overlap of social and teacher presence, where setting the climate of a course occurs.

Figure 1: Community of Inquiry (Adapted from Garrison, Anderson, and Archer, 2000).

Teaching presence is believed to be a necessary prerequisite for the development of social and cognitive presence (Shea & Bidjerano, 2008). Anderson et al. (2001) conceptualized teaching presence as having three components: (1) instructional design and organization; (2) facilitating discourse; and (3) direct instruction. Firstly, instructional design principles, such as those by Garrison in 2009, can guide course design development, they include: 1) design for open communication and trust; 2) design for critical reflection and discourse; 3) create and sustain a sense of community; 4) support purposeful inquiry, 5) ensure that students sustain collaboration; 6) ensure that inquiry moves to resolution; and 7) ensure assessment is congruent with intended learning outcomes. Instructors can provide opportunities for student and teacher profiles within the learning management system (Lowenthal & Parscal, 2008). Secondly, for discourse, instructors can design interpersonal interaction within an online course by implementing a collaborative learning instructional strategy (Brindley et. al, 2009), where students participate in group work with members who have the same goals, which can affect student attitudes and performance (Richardson et. al, 2012). Moreover, interactive activities that encourage social presence can enhance learner's satisfaction with online education (Arbaugh & Benbunan-Fich, 2006). Lastly, for direct instruction, instructors may use backward design for mapping of curriculum and instructional practices that are aligned to observable and measurable goals (Wiggins & McTighe, 2005).

Methods

This study uses educational design research (EDR) to frame the scope of the research. EDR can be defined "as a genre of research in which the iterative development of solutions to practical and complex educational problems also provides the context for empirical investigation, which yields theoretical understanding that can inform the work of others" (McKenney & Reeves, 2018, p 6). EDR is based on a family of similar approaches: DBR, action research, participatory design research, etc. Its aim is to create practical interventions by designing solutions that will be utilized in the real world; yet go through an iterative cycle process of inquiry that is theory oriented. It is collaborative and responsively grounded by involving practitioners in context (Plomp, 2013). The current project being presented is the initial and first stages of the EDR project, which starts with analysis and exploration of the topic (See Figure 2). The analysis identifies and orients educational problems in context, which in this case is online asynchronous courses in higher education. The problem was

based on researcher experience as students and teachers and a literature review, which confirmed that online classes lack interaction with peers and instructors.

The following sections of this paper move on to describe the initial stage of this EDR project with an analysis and exploration of Web 2.0 tools found in the literature. The paper then discusses the development of one particular approach and provides an example to address student and teacher connections, engagement, and the development of social presence before moving on to the conclusion.

Figure 2. EDR Project Process Sub-cycles
(Adapted from McKenney & Reeves, 2018, p. 241).

E-learning

Technological means have made it possible to generate new learning environments and methodologies that have emerged and evolved into various resources that serve to enhance and improve teaching and learning processes. These technologies are referred to as information and communication technologies (ICTs), defined as "the varied collection of technological gear and resources which are made use of to communicate... generate, distribute, collect and administer information" (Sarkar, 2012). ICT used in education is a method or approach called E-learning, which is "the use of electronic media, educational technology and information and communication technologies (ICT) in education" (Pavel, et al., 2015). ICTs can enhance learning to be more efficient, interactive, and productive (Akram et al., 2022). ICTs can influence learning by allowing a more proactive environment where teachers can integrate technology into their pedagogical approaches for more interactive and productive practices (Sekhri, 2021). ICT Web 2.0 media may be leveraged as an affordance to share ideas digitally (Robinson, Kilgore, & Bozkurt, 2020). Bloom's digital taxonomy (Churches, 2008) may be used to guide web 2.0 integration alignment and the Padagogy Wheel (Carrington, 2016) can help guide teachers in the selection and use of ICT. However, ICT are often underutilized by instructors due to limits in digital literacy skills and time to choose tools and for creating authentic and engaging learning interventions (Conole& Wills, 2013; Washington, 2019).

Concept Maps

According to active theory, "the selection and design of adequate communication tools is an important factor for collaboration support systems" (Komis et al, 2002; p. 182). One frequently used instructional and collaborative learning approach for social constructive student learning is the concept map technique (Komis et al, 2007). A concept map is a tool for sense-making through meaningful learning "by constructing conceptual nodes and interconnecting them with well described links results in producing concept maps that possibly reflect internal semantic networks" (Komis et al, 2007, p. 993). It is a probing strategy to organize and represent new and old knowledge into a graphic representation for meaning making (Greene & Azevedo, 2010). These mental models can be used to share reasoning, problem solving, and mediating student collaborative activity. Additionally, a computer-supported collaborative concept map (CSCCM), uses ICT to create concept maps, which can support conceptual understanding, collaboration, cognitive group awareness, performance, and digital construction (Farrokhnia et al., 2019). Moreover, CSCCM allows for quicker and easier concept map revision and sharing (Liu et al., 2021).

PLN

As the internet provides a means for connectivism (Siemens, 2005) where students can learn informally, they are also able to leverage participant selected and moderated online spaces in Web 2.0 technologies to facilitate knowledge network connections. One online collaborative task that students might engage in is to make and share a CSCCM of their personal/professional learning network (PLN). PLNs "consist of formal and informal networks of individuals with similar goals and interests who interact using digital tools to share information, learn from each other, problem solve and collaborate" (Green, 2020). PLN provides ongoing opportunities for interaction, connection, self-directed learning, and engagement (Krutka et al., 2017). A digital PLN encourages participants to use web 2.0 social media (See Figure 3), for self-organized learning by accessing resource information, dialogue and constructing and resources created by other members. PLN spaces have been implemented for teachers, pre-service teachers, and older adults (Krutka et al., 2017; Poortman, et al., 2022; Luo et al., 2017; Morrison & McCutheon, 2019). This paper suggests more research on students creating and sharing their PLN virtually, particularly for non-educator specific networks as an icebreaker activity.

What a PLN Might Look Like

Informal Learning	Formal Learning	Social Networking
• Blogs • Pinterest • Youtube • RSS Feeds	• Udemy • Podcasts • Online Book clubs/groups • Khan Academy	• Facebook • Twitter • Instagram • snapchat

Figure 3. Categories of learning for a personal learning network (Green, 2017).

Figure 4. Personal Learning Network Example.

Discussion

The study of social presence and engagement in online learning environments is crucial to the development of effective and meaningful learning experiences. The use of design-based research, drawing on the Community of Inquiry framework, and incorporating Web 2.0 protocols provides a process for instructors to design social activities, such as icebreakers, that foster trust and interaction among peers and with the instructor. This can be achieved through the implementation of instructional design principles, fostering critical reflection and discourse, and supporting purposeful inquiry.

Technology has afforded new ways to participate in new learning communities. While PLNs are currently used for teacher professional development (Krutka et al., 2017), they could be used more by students to improve theirs. PLN's offer access to a variety of information and resources that may be curated or evaluated by other professionals allowing quickly handling of expanding and growing data information through communication, collaboration, and support among participants. PLN may establish an appropriate social climate for in-group and cross-group communication that contributes to cultivating social presence and learning experiences (Stephens & Roberts, 2017; Szeto, 2015). PLN might help students find common interests with their peers to develop trust for collaborative projects, if they support small group discussion, activities, and collaborative projects (Richardson et al., 2009; Peacock et al., 2020).

Social presence can be facilitated through the use of personal learning network concept maps. The findings of this study have the potential to inform the design and implementation of

online courses, and contribute to the development of effective and meaningful e-learning environments.

Further research can look into the negotiation process including social activities, membership, moderation, roles, and credibility of participants that may affect legitimacy in student experience. Additional research might look into how instructors might create course rules (i.e., netiquette) or guidelines that encourage or require participation, via self-assessment (honor pledge /statements/ rubric checklist) in discussions (e.g., journals, blogs, forms), which allow increased social presence with opportunities for connections and communication between both peers and the instructor. Future guides can be adapted to align with online content and instructional framework, research, and best practices.

Conclusion

In conclusion, a strong social presence can improve the learning experience by promoting trust, communication, and group cohesion among students. The Community of Inquiry (CoI) theoretical framework provides a popular social constructivist approach for building online communities, highlighting the importance of emotional expression, open communication, and group cohesion. Instructional design elements can also play a crucial role in promoting social presence in an online course, including implementing collaborative learning strategies, designing for open communication and trust, and providing opportunities for student and teacher interaction. Additionally, educational design research can be used to address the challenges faced in online asynchronous courses by creating practical solutions that can improve student interaction with peers and instructors. Concept maps can be a useful tool for promoting social presence by encouraging meaningful learning and collaboration among students. By sharing their personal learning network with other students, students can expand their network, learn from others, and build their reputation in their field, which is their real-life social presence.

References

Abou El-Seoud, M. S., Taj-Eddin, I. A., Seddiek, N., El-Khouly, M. M., & Nosseir, A. (2014). E-learning and students' motivation: A research study on the effect of e-learning on higher education. *International journal of emerging technologies in learning (iJET), 9(*4), 20-26.

Akcaoglu, M., & Lee, E. (2016). Increasing social presence in online learning through small group discussions. *International Review of Research in Open and Distributed Learning, 17*(3), 1-17.

Akram, H., Abdelrady, A. H., Al-Adwan, A. S., & Ramzan, M. (2022). Teachers' perceptions of technology integration in teaching-learning practices: A systematic review. *Frontiers in Psychology*, 13.

Alqahtani, A.Y.; Rajkhan, A.A. E-learning critical success factors during the covid-19 pandemic: A comprehensive analysis of e-learning managerial perspectives. *Educ. Sci.* 2020, 10, 216.

Anderson, T., Rourke, L., Garrison, D. R., & Archer, W. (2001). Assessing teaching presence in a computer conferencing context. J*ournal of Asynchronous Learning Networks, 5*(2). from http://www.aln.org/publications/jaln/v5n2/v5n2_anderson.asp

Aragon, S. R. (2003). Creating social presence in online environments. *New Directions for Adult and Continuing Education*, 100, 57–68.

Arbaugh, J. B., & Benbunan-Fich, R. (2006). An investigation of epistemological and social dimensions of teaching in online learning environments. *Academy of Management Learning & Education, 5*, 435−447.

Brindley, J. E., Blaschke, L. M., & Walti, C. (2009). Creating effective collaborative learning groups in an online environment. *International Review of Research in Open and Distributed Learning, 10*(3).

Carrington, A. (2016). The Padagogy Wheel – It's Not About The Apps, It's About The Pedagogy. Retrieve from: https://wegrowteachers.com/the-padagogy-wheel-its-not-about-the-apps-its-about-the-pedagogy/

Churches, Andrew. (2008). Bloom's Digital Taxonomy. https://www.researchgate.net/publication/228381038_Bloom's_Digital_Taxonomy

Conole, G., & Wills, S. (2013). Representing learning designs–making design explicit and shareable. *Educational Media International*, 50(1), 24-38.

Farrokhnia, M., Pijeira-Díaz, H. J., Noroozi, O., & Hatami, J. (2019). Computer-supported collaborative concept mapping: The effects of different instructional designs on conceptual understanding and knowledge co-construction. *Computers & Education,* 142, 103640.

Fiock, H. (2020). Designing a community of inquiry in online courses. *The International Review of Research in Open and Distributed Learning, 21*(1), 135-153.

Garrison, D. R. (2009). Roles of authentic activities for online learning. 2009 Conference on Distance Teaching & Learning: Madison, WI.

Green, C. L. (2020). Personal learning networks: Defining and building a PLN. Learning in the Digital Age.

Greene, J. A., & Azevedo, R. (2010). The measurement of learners' self-regulated cognitive and metacognitive processes while using computer-based learning environments. *Educational psychologist, 45*(4), 203-209.

Johnson, S. D., & Aragon, S. R. (2003). An instructional strategy framework for online learning environments. In S. R. Aragon (Ed.), *Facilitating learning in online environments* (pp. 31–43). San Francisco, CA: Jossey-Bass.

Komis, V., Avouris, N., & Fidas, C. (2002). Computer-supported collaborative concept mapping: Study of synchronous peer interaction. *Education and Information Technologies*, 7, 169-188.

Komis, V., Ergazaki, M., & Zogza, V. (2007). Comparing computer-supported dynamic modeling and 'paper & pencil'concept mapping technique in students' collaborative activity. *Computers & Education, 49*(4), 991-1017.

Krutka, D. G., Carpenter, J. P., & Trust, T. (2017). Enriching professional learning networks: A framework for identification, reflection, and intention. *TechTrends*, 61, 246-252.

Liu, S., Kang, L., Liu, Z., Fang, J., Yang, Z., Sun, J., ... & Hu, M. (2021). Computer-supported collaborative concept mapping: the impact of students' perceptions of collaboration on their knowledge understanding and behavioral patterns. *Interactive Learning Environments*, 1-20.

Lowenthal, P., & Parscal, T. (2008). Teaching presence online facilitates meaningful learning. *The Learning Curve*, 3(4), 1-2.

Lowenthal, D. A., & Lowenthal, P. R. (2010, April). A mixed methods examination of instructor social presence in accelerated online courses. Paper presented at the annual meeting of the American Educational Research Association, Denver, CO.

Luo, T., Sickel, J., & Cheng, L. (2017). Preservice teachers' participation and perceptions of Twitter live chats as personal learning networks. *TechTrends*, 61, 226-235.

McKenney, S., & Reeves, T.C. (2012). Conducting educational design research. London: Routledge.

McKenney, S., & Reeves, T.C. (2018). Conducting Educational Design Research. Routledge.

McKenney, S., & Reeves, T. C. (2021). Educational design research: portraying, conducting, and enhancing productive scholarship. *Medical Education, 55*(1), 82-92.

Morrison, D., & McCutheon, J. (2019). Empowering older adults' informal, self-directed learning: harnessing the potential of online personal learning networks. *Research and Practice in Technology Enhanced Learning*, 14, 1-16.

Pavel, A. P., Fruth, A., & Neacsu, M. N. (2015). ICT and e-learning–catalysts for innovation and quality in higher education. *Procedia economics and finance*, 23, 704-711.

Peacock, Susi & Cowan, John. (2016). From Presences to Linked Influences Within Communities of Inquiry. *The International Review of Research in Open and Distributed Learning*. 17. 267-283.

Peacock, S., Cowan, J., Irvine, L., & Williams, J. (2020). An exploration into the importance of a sense of belonging for online learners. *International Review of Research in Open and Distributed Learning*, 21(2), 18-35.

Plomp, T. (2013). Educational design research: An introduction. Educational design research, 11-50.

Poortman, C. L., Brown, C., & Schildkamp, K. (2022). Professional learning networks: a conceptual model and research opportunities. *Educational research*, 64(1), 95-112.

Richardson, J. C., Arbaugh, J. B., Cleveland-Innes, M., Ice, P., Swan, K. P., & Garrison, D. R. (2012). Using the community of inquiry framework to inform effective instructional design. In *The next generation of distance education* (pp. 97-125). Springer, Boston, MA.

Richardson, J. C., Maeda, Y., Lv, J., & Caskurlu, S. (2017). Social presence in relation to students' satisfaction and learning in the online environment: A meta-analysis. Computers in Human Behavior, 71, 402-417.

Robert, L. P., Denis, A. R., & Hung, Y. T. C. (2009). Individual swift trust and knowledge-based trust in face-to-face and virtual team members. *Journal of management information systems*, 26(2), 241-279.

Robinson, H., Kilgore, W., & Bozkurt, A. (2020). Learning communities: Theory and practice of leveraging social media for learning. In *Managing and Designing Online Courses in Ubiquitous Learning Environments* (pp. 72-91). IGI Global.

Rovai, A. P. (2002). Building sense of community at a distance. *International Review of Research in Open and Distributed Learning*, 3(1), 1-16.

Sekhri, Anuradha. "Information and Communication Technology Emerges as a Beacon of Hope in Online Teaching." *Shanlax International Journal of Education* 9.4 (2021): 294-299.

Shea, P., & Bidjerano, T. (2008). Measures of quality in online education: An investigation of the community of inquiry model and the net generation. *Journal of Educational Computing Research, 39*(4), 339-361.

Siemens, G. E. O. R. G. E. (2005). Connectivism: A learning theory for the digital age. *International Journal of Instructional Technology and Distance Learning*. Online] retrieved from: http://www. idtl. org/Journal/Jam _05/article01. Html.

Stephens, G. E., & Roberts, K. L. (2017). Facilitating collaboration in online groups. *Journal of Educators Online*, 14(1), 1-16.

Sung, E., & Mayer, R. E. (2012). Five facets of social presence in online distance education. *Computers in human behavior*, 28(5), 1738-1747.

Szeto, E. (2015). Community of inquiry as an instructional approach: What effects of teaching, social, and cognitive presences are there in blended synchronous learning and teaching? *Computers and Education*, 81, 191-201.

Tseng, H. W., & Yeh, H. T. (2013). Team members' perceptions of online teamwork learning experiences and building teamwork trust: A qualitative study. *Computers & Education*, 63, 1-9.

Washington, G. Y. (2019). The learning management system matters in face-to-face higher education courses. *Journal of Educational Technology Systems*, 48(2), 255-275.

Wiggins, G., Wiggins, G. P., & McTighe, J. (2005). Understanding by design. Ascd.

Yoon, P., & Leem, J. (2021). The influence of social presence in online classes using virtual conferencing: Relationships between group cohesion, group efficacy, and academic performance. *Sustainability*, 13(4), 1988.

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Teacher Preparedness for Human Rights Education – Curriculum Assessment in Higher Education Programmes in Albania

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

The pre-service training of teachers is the first important stage in the professional journey of the teacher toward his or her main mission. It lays the foundation for professional thinking and provides the new teacher with a set of basic skills to make classroom learning truly effective. Initial teacher training is a key factor in increasing the quality of teaching to improve student outcomes and make school highly successful. The assessment was conducted during the period April - September 2021.The methodology included a detailed review of the study programmes and course syllabuses was conducted in three Education Faculties in Albania. The research methodology used mixed methods involving mainly desk-based research, complemented by interviews with key stakeholders. The study programmes and course syllabuses were analysed using content analysis methods. Content review prioritised university subjects that are the most relevant to EDC/HRE. Curricula alignment in initial teacher's education is not achieved because of different approaches taken by higher education institutions. Programmes for preparation of teachers in higher education institutions involved in the study have different courses with various timeline and specific weight in the study programmes. Based on the analysis of the syllabuses of the reviewed courses the curricular approach is mainly knowledge based and partly, objective and competence based. Student-teachers, university professors and teacher mentors should form a learning triangle which in turn will increase the quality of teaching practice in line with EDC. There is a need to consider and approach EDC/HRE concepts with a more cross-curricular and inter-disciplinary lens.

Keywords: Teacher Preparedness, Education for Human Rights, Higher Education Curricula

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Introduction

The pre-service training of teachers is the first important stage in the professional journey of the teacher toward his or her main mission. It lays the foundation for professional thinking and provides the new teacher with a set of basic skills to make classroom learning truly effective. Initial teacher training is a key factor in increasing the quality of teaching to improve student outcomes and make school highly successful. Early intervention in the teacher training process employing the EDC/HRE approach is a necessary condition for fulfilling the mission of education as a public good, the wider functioning of society and the advancement of democracy.

During the last decade no similar studies have been carried out in Albania, making this document a baseline study that can be further developed and enriched. The detailed analysis presents a comprehensive review of EDC/HRE integration in higher education curricula in initial teacher education of Teaching Faculties in Tirana, Elbasan and Durrës. The study aims to identify opportunities and challenges that could lead to the alignment of the official curriculum, teaching practices and policy development processes with EDC principles. The review is both descriptive and analytical.

Methodology

In the first instance, teacher's faculties and their programmes were selected for further analysis. The process covered an online review of all Education/Teaching Faculties in Albania in order to gain possible insight into curricular details with regard to EDC/HRE.

A detailed review of the study programmes and course syllabuses was conducted in three teaching Faculties in Tirana, Elbasan and Durrës. Tirana was chosen as the central biggest university in Albania; Elbasan as the main university that has historically prepared teachers; and Durrës, as one of the most recently established universities. In the second instance, a methodology was developed for analysing pre-service teacher programmes including content, learning objectives, hours of teaching and methods of teaching. The assessment was conducted during the period April - September 2021.

The research methodology aimed to respond to the following main research question: **"Based on the written curricula, does pre-service education prepare teachers to understand and implement EDC/HRE principles in schools"?** The research methodology used mixed methods involving mainly desk-based research, complemented by interviews with key stakeholders. The study programmes and course syllabuses were analysed using content analysis methods. Content review prioritised university subject that are the most relevant to EDC/HRE.

The desk research consisted of a review of previous studies, relevant strategic and legal documents and the written curricula and selected course syllabuses of the three selected faculties. The study of the CoE documents, which provide the required standards for assessing the level of teachers' preparedness but also the vision to strengthening teacher's professional competences, attitudes and practices, served to draw the standards and practices towards which the HE curriculum and learning objectives have been assessed. The assessment is mainly restricted to the field of official written curricula. Delivered and applied curricula were not part of the assessment, even though some information about them was

obtained through interviews. Direct information was collected from 10 interviews with heads of teaching departments and professors in the selected faculties.

There were no serious limitations in conducting the assessment. In order to get access to documents, e-mails, phone calls and face to face meetings with university pedagogues were applied.

Results and Discussions

Study programmes in faculties that prepare teachers have undergone thorough reforms, but yet reviewed curricula are different from each other. Curricula alignment in initial teacher's education is not achieved because of different approaches taken by higher education institutions. Programmes for preparation of teachers in higher education institutions involved in the study have different courses with various timeline and specific weight in the study programmes.

Based on the analysis of the syllabuses of the reviewed courses the curricular approach is mainly knowledge based and partly, objective and competence based. The term "competence" is vaguely and sporadically mentioned. On the whole, there are course objectives expressed in terms of knowledge and some cases, in terms of skills. Competence based curricula that forms the basis of the pre-university education system in Albania, is not the reality in the higher education setting. Universities have not yet reflected into their programmes plans reform issues raised by pre-university education. These issues deal with the concept of key competences in education, learning environments, structure and content of new programmes and courses, planning of teaching based in competences, student assessment, reporting of student's achievements, levels of achievements, etc.

Officially written curricula for both study cycles at the knowledge level is highly relevant to EDC standards and principles. Throughout their years of study student-teachers acquire deep knowledge about democratic competences related to human rights, democracy, citizenship, participation, inclusiveness, diversity, non-violent conflict resolution, critical thinking, etc. Based on the written curricula, at methods level, curriculum design and approach provide abundant information as to how to apply theoretical knowledge into EDC/HRE practice. Despite the differences between universities, written curricula respond to child-centred teaching methodologies, child-centred approach, interactive and inclusive methodologies, all fundamental to EDC/HRE implementation.

The main problems lie in the field of pedagogy (teaching instruction), which, in most general terms, is not in alignment with the EDC standards. Most of the teaching instruction in universities is formal, traditional, with lecturing professors speaking at the podium and students passively listening to them. Lectures that leave students space to engage, reflect and think are rare and this varies largely from one professor to another.

The Professional Practice (Teaching Practicum) needs to be further organised, updated and reformed by establishing a healthy partnership between professors, student-teachers and mentor teachers. Given the importance of practicing knowledge and skills within the EDC/HRE framework, it is of utmost importance to reform and improve this process.

The highest relevance to EDC standards is found in two study cycles: pre-school teaching; and basic education teaching (1-5th grade).

Written curricula are designed based on the gender equality principle. Courses present opportunities for discussion on issues such as women's rights, gender roles, gender discrimination, sexism and gender equity. Critical thinking is widely encouraged, and the students are expected to play a significant role at governance and structural level of the decision-making process. The Education Department's approach is widely based upon critical thinking as essential to developing competencies for democratic culture.

Written university curricula respond to contemporary sensitive-debatable issues at local, regional and global levels. Reviewed courses are led by the principles of opening and entering into dialogue with student-teachers on complex debatable issues. They nurture sensitivity towards the local contexts and encouraging flexibility in reactions. They also create opportunities for student-teachers' for personal self-reflection on their own values, and beliefs.

Conclusions

The research which involved a wide range of actors, helped to draw the following conclusions:

- ✓ The development of an academic curriculum compliant with EDC/HRE in Albania is encouraged by a) A continuous demand of pre-university education for qualified teachers with EDC competences; b) Global priorities in education: CoE, UNESCO, etc; c) A gap created in the faculties since the massification of higher education did not respond to the needs of pre-university education.
- ✓ Education faculties pay special attention to the acquisition of the citizenship competency, as a key competency for lifelong learning.
- ✓ Curricular content is conducive to EDC-related policy development.
- ✓ Professional practice is considered as an essential and integrated part of the programme in initial teacher education in Albania.

Recommendations

The unification of curricula should continue and be completed, with special emphasis on its content to better serve the needs of pre-university education. According to the Law on Higher Education in Albania it is necessary that curricula of programmes of the second cycle for the preparation of teachers, maintain unification at national level based on the respective science discipline, at 80%. Successful teaching practice calls for successful teacher mentors. Their role is important. Student-teachers, university professors and teacher mentors should form a learning triangle which in turn will increase the quality of teaching practice in line with EDC. There is a need to consider and approach EDC/HRE concepts with a more cross-curricular and inter-disciplinary lens.

References

Bäckman, E & Trafford, B (2007). "Democratic Governance of Schools"Council of Europe, January 2007.

Bîrzea, C; Cecchini, M; Harrison, C; Krek, J &Spajić-Vrkaš, V (2005). "Tool for Quality Assurance of Education for Democratic Citizenship in schools" UNESCO, Council of Europe, CEPS.

Commission for Higher Education and Scientific Research (2014). "Report on the Reform of Higher Education in Albania".

Council of Europe (2018). "Reference Framework of Competences for Democratic Culture" (3 Volumes) CoE.

Council of Europe Charter on Education for Democratic Citizenship and Human Rights Education, Adopted in the framework of Recommendation CM/Rec (2010). 7 of the Committee of Minister.

European Commission (2013). "Supporting teacher competence development for better learning outcome" EC July 2013.

Hahn, C (2015). "Teachers' perceptions of education for democratic citizenship in schools with transnational youth: A comparative study in the UK and Denmark", March 2015.

Institute of Education Development of Albania (2016). "Reporton pre-service teacher's education in higher education institutions in Albania" IDE, 2016.

Effects of Perceived Discrimination on Mexican-Origin Adolescent Outcomes: A Parallel Mediation Analysis

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Abstract

This study used Hayes Process Macro for SPSS version 29 to conduct a parallel mediation regression analysis examining the direct and indirect influence of adolescent perceptions of discrimination on academic outcomes and socio-emotional adjustment through teacher and peer relationships in a sample of Mexican-origin adolescents (N=674, M_age=14.27), when controlling for acculturation, English, family income, and gender. The results of our study indicate that perceptions of discrimination significantly and negatively predicted the quality of relationships with teachers (β=-0.343, p<0.009), and peers (β=-0.208, p<0.004). Teacher-child relationships, however, did not significantly predict academic performance. Interestingly, acculturation had a negative and significant relationship with all study variables, indicating that as acculturation increased, the quality of teacher and peer relationships, academic outcomes, and socio-emotional adjustment decreased, suggesting possible individual-, cultural-, school, or community-level protective factors. Perceptions of discrimination both directly (c'=-0.277,p<0.00) and indirectly affected socio-emotional adjustment through teacher relationships (a_1 b_1=-0.025, c=-.31), and peer relationships (a_2 b_2=-0.034). Our model explained 15% of variation in socioemotional adjustment and 5% variation in academic outcomes for Mexican-origin adolescents.

Keywords: Hispanic, Mexican, Discrimination, Academic, Socioemotional, Development, Adolescent, Teacher, Peer, Relationships, School

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Introduction

The current study tests hypotheses guided by Bronfenbrenner's bioecological theory of proximal processes which hypothesizes that variation in developmental outcomes is jointly shaped by characteristics of the developing person and the learning environment (Bronfenbrenner & Ceci, 1993, p. 317). Traditionally, public schools represent the primary learning environment for school-aged youth in the U.S. As children approach adolescence, there is a tendency to prioritize relationships with peers and adults beyond the family unit. So at this developmental stage, school contexts exerts greater influence on key developmental outcomes of interest than parent and family relationships (Somerville, et al., 2019; Telzer, et al., 2017). Positive relationships with teachers and peers provide youth the social support needed to adjust to the many challenges of adolescence. However, establishing these social supports can be dampened by hostile school environments, especially for racially or ethnically diverse students (Ortega-Williams, et al., 2022). This study investigates the degree to which perceptions of discrimination influence academic and socioemotional outcomes both directly and indirectly through teacher and peer relationships. As described in Figure 1, study hypotheses predict:

H_1: Perceptions of discrimination will negatively influence academic and socioemotional outcomes directly;

H_2: Perceptions of discrimination will negatively influence teacher and peer relationships directly;

H_3: Relationships with teachers and peers will mediate the relationship between perceptions of discrimination and developmental outcomes of interest;

H_4: Perceptions of discrimination will exert greater influence on peer relationships compared to teacher relationships.

The independent variable (perceptions of discrimination) is modeled as directly influencing important adolescent outcomes (i.e., academic performance and socioemotional adjustment) directly (path c) as well as indirectly through child-teacher attachment (a_1b_1) and peer relationships (a_2b_2). All study hypotheses will be tested with Hayes' PROCESS macro for SPSS (2017).

Figure 1: Conceptual Model.

Methods

Participants and Procedures

The participant sample data for this cross-sectional study are taken from Wave 5 of the California Families Project (CFP), an on-going longitudinal study on 674 Mexican-origin youth and their families living in Northern California, conducted by researchers from the University of California-Davis. CFP was designed to examine the health, development and well-being of Mexican-origin youth, as well as to identify unique cultural values, beliefs, and traditions influencing development. Data collection began in 2006 when the youth were 10 years old and conducted annually thereafter, with additional assessments at age 21 and 23.

Participants were randomly selected from the Woodland and Sacramento, California school rosters from the 2006-2007 and 2007-2008 school years. Participants were recruited by telephone or in-person if no phone number was listed. 674 Mexican-origin adolescents and their families agreed to participate in the study and parents were compensated $100 and focal child $50 for Wave 5. Eligible families were of Mexican-origin, living with the biological mother and if living in a two-parent household, the father had to be the biological father. Single parents were allowed to participate if no other adult was living in the household. 72.6% of the eligible families agreed to participate. Wave 5 interviews were conducted in 2010 when participants were 14-15 years old. Interviewers were bilingual and most were of Mexican heritage. Due to the length of the interviews (4-6 hours) full assessments were conducted in 2 visits, and family members were interviewed separately to protect privacy. Data was downloaded from interviewer laptops to the server at UC-Davis.

Measures

Perceived discrimination

Perceived discrimination was measured using the Adolescents Perception of Discrimination Scale, a scale developed from two separate measurement scales: Hughes and Dodge's Racism in the Workplace Scale, and Klonoff and Landrine's Schedule of Sexist Events (validated by

Johnston & Delgado, 2004). The 19-item scale consists of two sub-scales: Perceptions of general racism and personal experiences with prejudice and discrimination. Each sub-scale has four domains designed to assess adolescents' perceptions of prejudice and discrimination directed at them by specific perpetrators: teachers, peers at school, neighbors and strangers. The current study will only be examining the domains related to the school context. Participants were asked to assess the truthfulness of statements like "Your teachers think all (Mexicans/Mexican/Americans) are alike" and "If you get bad grades it is blamed on your family not valuing education." Response categories include 1=Not at all true to 4=Very true. When necessary, items were reverse-coded to so that higher values indicate elevated perceptions of discrimination. The measure obtained a Cronbach's alpha of .716 with the current sample of Mexican-origin adolescent participants.

Child-Teacher Attachment

The Child-Teacher Attachment Scale was used to assess the degree to which students experienced attachment (positive bonds) with teachers. The 9-items were scored on a 4-point Likert scale adapted from the original 25-item parent and peer attachment scale developed by Armsden and Greenberg (1987) ranging from (1) never true to (4) Always true. Items included statements like: "You trusted a teacher. You could count on a teacher when you needed to talk." The measure obtained a Cronbach's alpha of .927 with adolescents in the current study.

Peer relationships

Socioemotional adjustment. The Weinberger Adjustment Inventory was used to assess adolescent socioemotional adjustment. This scale consists of 23 items comprised of 4 scales, however, only 2 scales will be included: impulse control (seven items) and consideration of others (seven items). This measure asks respondents to match their behavior (1=False to 5=True) to a series of statements like "Before you do something, you think about how it will affect the people around you" and "You become wild and crazy and do things other people might not like." The Cronbach's alpha for this wave 5 sample was 0.783.

Control variables

Control variables included in the current study are acculturation, English fluency, family income, and gender.

Results

We first conducted a bivariate correlation analysis to measure the associations between all study variables (see Table 1 for means, standard deviations, and correlations for all variables in the model). Results indicated moderate correlations between child-teacher attachment and peer relationships $(r = 0.361, p \leq 0.001)$ Child teacher attachment was positively correlated to a lesser degree with socioemotional adjustment $(r = 0.267, p \leq 0.001)$ and academic performance $(r = 0.177, p \leq 0.001)$. Perceptions of discrimination were negatively correlated with child-teacher attachment $(r = -0.149, p \leq 0.001)$, peer relationships $(r = -0.171, p \leq 0.001)$, socioemotional adjustment $(r = -0.196, p \leq 0.001)$, acculturation $(r = .102, p \leq 0.012)$, and English fluency $(r = -0.142, p \leq 0.001)$. Adolescents' English fluency was positively correlated with peer relationships $(r = 0.184, p \leq 0.001)$, family income $(r = 0.183, p \leq 0.001)$, socioemotional adjustment

$(r = 0.09, p \leq 0.027)$, and academic performance $(r = 0.097, p \leq 0.018)$. Other variables correlated with academic performance include socioemotional adjustment $(r = 0.248, p \leq 0.001)$, peer relationships $(r = 0.206, p \leq 0.001)$, gender $(r = -0.127, p \leq 0.002)$, and family income $(r = 0.101, p \leq 0.017)$. Gender was negatively correlated with socioemotional adjustment $(r = -0.117, p \leq 0.004)$ and peer relationships $(r = -0.152, p \leq 0.001)$. Though conservative, the correlations among all study variables confirmed the justification for further analyses.

	M(SD)	1	2	3	4	5	6	7	8	9
1 Perceptions of Discrimination	1.319(.24)	1								
2 Child-Teacher Attachment	2.484(.797)	-.149**	1							
3 Peer Relationships	3.227(.449)	-.171**	.361**	1						
4 Socioemotional Adjustment	3.567(.556)	-.196**	.262**	.270**	1					
5 Academic Performance	3.876(.903)	-.065	.177**	.206**	.248**	1				
6 Acculturation	2.001(.242)	.102*	-.323**	-.257**	-.331**	-.076	1			
7 English Fluency	3.720(.399)	-.142**	.032	.184**	.090*	.097*	.038	1		
8 Family Income	7.263(4.433)	-.034	.064	.064	.025	.101*	-.026	.183**	1	
9 Gender	.5(.5)	.047	-.072	-.152**	-.117**	-.127	-.007	-.036	.038	1

Table 1: Descriptive statistics and correlations among study variables.

We tested the hypothesized model with the PROCESS macro (version 4.1) for SPSS (version 29) using parallel mediation analysis (model 4) to assess the direct and indirect influence of perceptions of discrimination on academic performance and socioemotional adjustment, when controlling for acculturation, English fluency, family income, and gender. Process Macro allows for simultaneous analysis of both the direct and indirect effects of perceptions of discrimination on adolescent developmental outcomes through multiple mediators $(M_1, M_2, M_3, ...)$, in an integrated model that allows for formal comparison of the indirect effects of perceptions of discrimination through each pathway, which will determine which effect is stronger (Hayes, 2017).

As pictured in Figure 2, parallel mediation analysis demonstrated that perceptions of discrimination had both direct (β = - 0.277, $p \leq$ 0.002) and indirect negative effects on socioemotional adjustment through child-teacher attachment (β = - 0.025, [-0.064, -0.005]) and peer relationships (β = - 0.034, [-0.077, -0.005]) when controlling for acculturation, English fluency, family income, and gender. Results indicate that perceptions of discrimination exert more influence on socioemotional adjustment directly, than they do indirectly through teacher and peer relationships. Teacher and peer relationships partially mediated the effects of discrimination on socioemotional adjustment. The current study model explained 15% of variation in socioemotional adjustment.
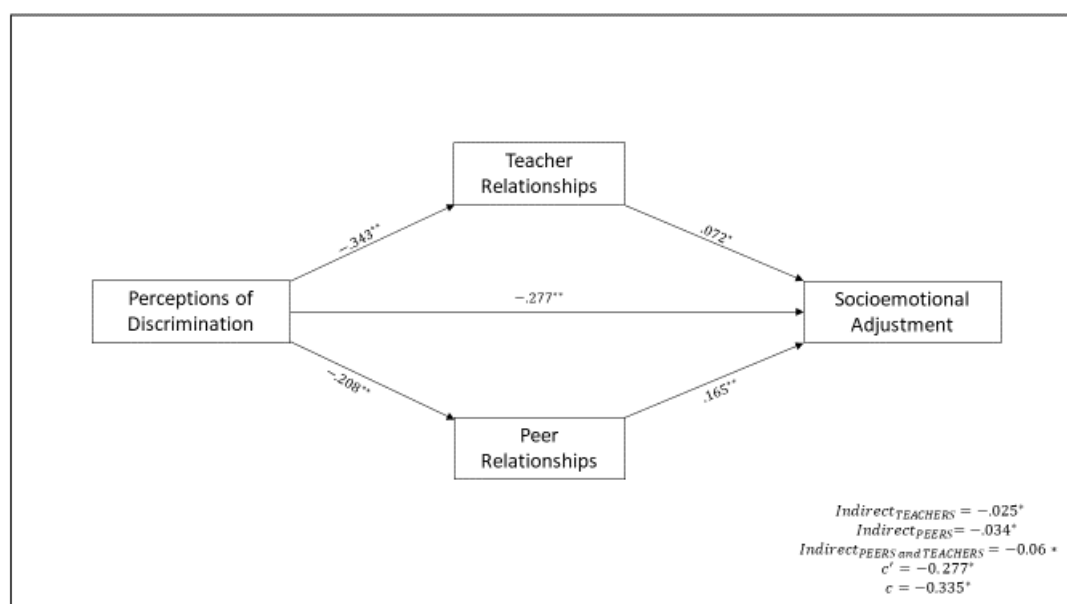
Figure 2: Direct and indirect effects of discrimination on socioemotional adjustment.

Although not a primary variable of the study, the most significant predictor of socioemotional adjustment was acculturation (β = - 0.576, [-0.760, -0.391]). This scale was measured by Knight et al., to fill the gaps of currently available measures of acculturation with American values. This 50-item scale asks adolescents to match their agreement with statements relating to cultural beliefs like "Children should be taught that it is their duty to care for their parents when their parents get old" and "People should learn to take care of themselves and not depend on others." Items related to Mexican cultural values were reverse-coded so that higher values indicated higher levels of acculturation.

Gender also significantly and negatively influenced socioemotional adjustment (β = - 0.11, [-.195, -0.025]). Among the study sample, greater perceptions of discrimination were associated with greater deficits in socioemotional adjustment for females but not males. Perceptions of discrimination also had a significant indirect effect on socioemotional adjustment through its dual impact on child-teacher attachment (β = - 0.025, [-0.064, -0.001]) and peer relationships (β = - 0.034, [-0.077, -0.005]), so that greater discrimination predicted poorer quality relationships with teachers and peers. The total effect of perceptions of discrimination on socioemotional adjustment *both* directly *and* indirectly via child-teacher attachment *and* peer relationships was negative and significant (β = - 0.335, [-.514, -0.157]). For Mexican-origin adolescents, perceptions of discrimination accounted for 15% of variation in socioemotional adjustment (p<0.000), when controlling for acculturation, English fluency, family income, and gender.

As described in Figure 3, perceptions of discrimination also negatively influenced academic performance, but only indirectly through peer relationships (β = - 0.046, [-0.1169, -0.004]) and to a lesser degree than socioemotional adjustment (β = - 0.034, [-0.077, -0.005]). These findings indicate that although perceptions of discrimination negatively influence student-teacher relationships to a greater degree than peer relationships, peer relationships exert greater influence on adolescent outcomes than student-teacher relationships. For Mexican-origin adolescents, perceptions of discrimination accounted for 4% of variation in academic performance ($p < 0.001$).

Figure 3: Direct and indirect effects of discrimination on academic performance.

The strongest predictor of negative school relationships was again, acculturation with American values. Acculturation was three times as influential as discrimination in predicting child-teacher attachment (β = - 0.997, $p \leq$ 0.000), and twice as influential on peer relationships (β = - 0.426, $p \leq$ 0.000). So, greater levels of acculturation directly predicted poorer quality relationships with teachers and peers, which significantly predicted lower socioemotional adjustment.

However, the sample participants lived in Northern California, a state with a Hispanic majority population. It would seem that for Mexican-origin youth living in a Hispanic majority population, acculturation represents a developmental risk. This finding provides further evidence for what is referred to by social scientists as the immigrant paradox (Coll & Marks, 2012), a counterintuitive phenomenon in which newly arrived immigrant youth (first-generation) experience higher socioemotional adjustment and functional outcomes than more integrated Mexican-origin youth (second- and third- generation). Extensions of the current study will employ multiple group longitudinal analysis to examine variation between first- and second-generation youth from early to late adolescence. Further examination extent to which acculturation influences other key developmental outcomes of interest (i.e. educational aspirations and attainment, risk-taking behavior, etc.) with longitudinal panel models be worthwhile to examine the bidirectional influence of acculturation and discrimination over time. It would also allow for within-group comparisons of native- and foreign-born Mexican-origin youth.

Discussion and Conclusion

Current study results suggest that perceptions of discrimination have significant impacts on the socioemotional adjustment and academic performance of Mexican-origin adolescents *both* directly and indirectly through teacher and peer relationships. When adolescents perceive greater discrimination in school, they experience less social support from teachers and peers which negatively influences socioemotional adjustment and academic performance to a lesser degree. Students with greater perceptions of discrimination had poorer school relationships, academic performance, and socioemotional adjustment.

As predicted, the negative indirect effects were more influential when operating through peer relationships than through teacher relationships despite the stronger influence of discrimination on teacher-student relationships. One possible explanation might be the increased importance of peer approval and social acceptance that drives adolescents at this developmental stage. This confirms previous research identifying the hypersensitivity adolescents have towards the negative consequences of social exclusion (Blakemore & Mills, 2014).

Adolescents who experienced perceptions of discrimination performed more poorly academically and suffered more socioemotional adjustment challenges. These findings can inform future diversity, equity, and inclusion school initiatives. While study results confirm the positive influence of teacher and peer relationships on developmental outcomes, the parallel analytical method allowed for close comparison of the mediated effects, which revealed a stronger negative association between discrimination and adolescent outcomes when operating through peer relationships. Overall, study results confirmed the hypotheses that perceptions of discrimination negatively predict school relationships and Mexican-origin adolescent outcomes.

References

Armsden, G. C., & Greenberg, M. T. (1987). The inventory of parent and peer attachment: individual differences and their relationship to psychological well-being in adolescence. *Journal of Youth and Adolescence,* 16, 427-454.

Benner, A. D., Crosnoe, R., & Eccles, J. S. (2015). Schools, peers, and prejudice in adolescence. *Journal of Research on Adolescence, 25,* 173-188. http://dx.doi.org/10.1111/jora.12106

Blakemore, S.-J., Mills, K. L. (2014). Is Adolescence a Sensitive Period for Sociocultural Processing? *Annual Review of Psychology, 65*, 187-207.

García Coll, C. T. & Marks, A. K. (2012). *The immigrant paradox in children and adolescents : is becoming American a developmental risk?* (First edition). American Psychological Association.

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis.* (2nd ed.). The Guilford Press.

Johnston, K.E. & Delgado, M.Y. (2004). Mexican American adolescents' experiences with ethnic discrimination. Poster presentation at the Biennial Conference of the Society for Research on Adolescence, Baltimore, Maryland.

Nakhaie, R. (2022). Discrimination, Psychological Isolation, and Flight from School. *Journal of International Migration and Integration, 23*(3), 1515–1541. DOI: 10.1007/s12134-021-00901-6

Roeser, R.W., Lord S. E., & Eccles, J. (1994). A portrait of academic alienation in adolescence: Motivation, mental health, and family experience. Paper presented at the Biennial Meeting of the Society for Research on Adolescence, San Diego, CA.

Somerville, L. H., Haddara, N., Moran, J. M., Figner, B. (2019). Dissecting "Peer Presence" and "Decisions" to Deepen Understanding of Peer Influence on Adolescent Risky Choice. *Child Development, 90*(6), 2086-2103.

Stinnett, T.A., Oheler-Stinnett, J., & Stout, L.J. (1991). Development of the teacher rating of academic achievement motivation: TRAAM. *School Psychology Review* (20), 609-622.

Stinnett, T.A., & Oheler-Stinnett, J. (1992). Validation of the teacher rating of academic achievement motivation. *Journal of Psychoeducational Assessment* (10), 276-290.

Weinberger, D. A., Feldman, S. S., Ford, M. E., & Chastain, R. L. (1987). (1989). Construct validity of the Weinberger Adjustment Inventory. Unpublished manuscript. Other Reference(s): Farrell, A. D., Danish, S. J., & Howard, C. W. (1992). Risk factors for drug use in urban adolescents: Identification and cross-validation. *American Journal of Community Psychology, 20*(3), 263-286.

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The Effects of Social Media Use on School Learning: Evidence From PISA 2018

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

It is shown that younger users are more active on social media (Colleen Mcclain, Emily A. Vogels, Andrew Perrin, 2021). The frequent use of social media is changing the manner in which a new generation of students communicate, learn, and think. As a result, the discussion on the impact of social media on learning achievement has taken on a new urgency. In this paper, we have employed data from OECD's Programme for International Student Assessment (PISA) 2018 database to investigate the effect of using social media for school learning on academic performance. In order to eliminate selection bias and assess the causal effect of using social media on learning, this research used propensity score matching (PSM) as an approach. By running the analyses in each participating country, we were able to see whether the effect of social media use on school learning manifests itself differently in various social, cultural, and political contexts. According to the results measured based on test scores in the PISA assessment, more frequent use of social media as a tool of learning related to schoolwork is detrimental to academic performance in most countries. However, the results regarding the impact of social media on academic performance were highly varied, with some showing a positive relationship and others showing a negative relationship. Although it is beyond the scope of this paper to discuss the causes behind the negative correlation between social media use and academic achievement in most cases, conclusions and limitations are cautiously presented.

Keywords: PISA, Propensity Score Matching, Social Media, School Learning

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Introduction

Most Internet users regularly access well-known social media sites such as Facebook, Snapchat, and Instagram; younger users (aged 18-29) are even more active on social media (Brooke Auxier & Anderson, 2021). In addition, global reports show that the average daily time spent on social media is more than two hours (*Global Social Media Stats*, n.d.). These results come as no surprise to academics and educators familiar with today's teens and college students' social media use habits. In recent years, the use of social media has expanded beyond social software and entertainment tools for college students. Social media has even become an important part of the daily learning of college students, participating in both classroom and extracurricular learning. In line with the number of recent research articles examining the relationship between social media and education, it is clear that scholars are increasingly interested in how social media is changing teaching, learning, and students' lives (Gikas & Grant, 2013; Selwyn & Stirling, 2016). As a result, the discussion on the impact of social media on education has taken on a new urgency. This study, using large-scale international assessment data, aimed to investigate the impact of social media use on academic performance among students in various countries.

Literature Review

Social media use and academic performance

The impact of social media use on academic performance has been a topic of much discussion and research in recent years. The results of these studies have been mixed, with some indicating a negative relationship between social media use and academic performance, while others suggest that social media use can actually have a positive impact. One study by Skiera et al. (2017) found that Facebook activities during class were negatively related to academic performance. The researchers suggest that this may be because Facebook activities during class distract students from paying attention to the lecture and taking notes. Another study by (Habes et al., 2018) found that a large number of university students use social media, with a focus on Facebook, which can negatively impact their academic results. The authors suggest that students need to approach their use of social media with ultimate responsibility to ensure that it does not have a negative impact on their academic performance.

On the other hand, it was found that communication with peers through social media can help students socialize, find new friends, and discuss issues related to their studies, which can ultimately have a positive impact on their academic performance (M. Talaue et al., 2018).

In addition, many studies have identified individual and contextual factors that may moderate the relationship between social media use and academic performance (Al-Azawei, 2019; Hitchcock & Young, 2016; Piki, n.d.; van den Beemt et al., 2020), but there is a need for more research to examine the interplay between these factors and how they may influence the relationship.

Existing theories

-Theory of Social Comparison

The social comparison theory, proposed by psychologist Leon Festinger (1954), suggests that individuals engage in social comparisons with others in order to evaluate their own abilities and opinions. This can be especially relevant in the context of social media, where people are constantly exposed to highly curated and idealized versions of others' lives and achievements. High school students, who are at a critical stage in their development, are particularly vulnerable to the negative effects of such comparisons.

Studies have found that social media use is associated with increased feelings of social comparison and decreased self-esteem, especially among high school students (Mann & Blumberg, 2022). For instance, students who spend more time on social media may compare themselves to their peers who seem to have more friends, better grades, and more interesting lives, leading to feelings of inadequacy and decreased academic motivation.

-Theory of Multitasking

Social media use has been a topic of interest in recent years, particularly with regard to its impact on student's academic performance. The theory of multitasking suggests that students who engage in simultaneous use of social media while studying are likely to experience a decrease in their ability to focus on a single task, leading to a reduction in their academic performance. This phenomenon, commonly referred to as multitasking, has been found to have a negative effect on student's cognitive ability, academic performance, and overall self-efficacy. When students engage in social media use while studying, they are likely to experience a decrease in their ability to focus on a single task. This can lead to lower academic performance, as seen in studies that have found a negative correlation between social media use for non-academic purposes (such as video gaming) and academic performance as measured by cumulative grade point average (Lau, 2017). Additionally, research has shown that social media usage and multitasking are associated with students' self-efficacy and academic performance (Mohammed et al., 2021). This theory highlights the importance of understanding the impact of social media use on students' academic performance, and the need for responsible and mindful usage of these technologies.

-Theory of Information Overload

The Theory of Information Overload posits that the excessive use of mobile social networking sites can result in individuals feeling overwhelmed by the amount of information they are exposed to, leading to negative impacts on their well-being. Research has found that perceptions of information overload are a significant predictor of depressive symptoms and can negatively affect an individual's well-being over time (Matthes et al., 2020). This theory is further supported by the Cognitive Overload Theory, which states that the human mind has a limited capacity for processing new knowledge and that excessive cognitive load or a flood of complicated information can exceed this capacity (de Jong, 2010; Isaksen & Oslo, 2014). Information overload can take on three forms: too much information, not enough time, and poor quality information (Agnew & Szykman, 2010).

The impact of social media use on students can be related to the theory of information overload. Mobile social networking sites (SNS) or social media are frequently considered a

source of perceived information overload, leading to negative effects on well-being. This theory suggests that constant exposure to vast amounts of information through SNS can lead to cognitive overload, as students struggle to process the large volume of information they are exposed to.

-Theory of Social Support

The theory of social support posits that individuals receive emotional, informational, and instrumental support from their social network, which can influence their well-being and psychological adjustment (Lakey & Cohen, 2015). This theory has been applied to explain the effects of social media use on students' academic performance and well-being. Emotional support, for example, can help students feel connected to others and cope with stress and anxiety, which can positively impact their academic performance. Informational support can help students access resources, knowledge, and information related to their academic and personal lives, which can also enhance their academic performance. Instrumental support refers to tangible help or resources, such as providing students with access to technology or academic materials. Social media can provide students with opportunities to connect with others and receive social support, which can contribute to their academic and personal well-being. Research has shown that students who receive more social support, including through social media, tend to have better academic performance and well-being outcomes.

The Buffer Social Support theory, proposed by Alloway and Bebbington (1987), suggests that social support acts as a buffer against stress, protecting individuals from its negative effects and promoting well-being. In the context of student social media use, this theory suggests that social support received through social media can help mitigate stress and promote positive outcomes such as improved academic performance. This may include emotional support, encouragement, and guidance from peers, family, and teachers, which can help students cope with academic challenges and increase their motivation and engagement in their studies. Moreover, the use of social media to connect with others who share similar interests and experiences can also provide a sense of belonging and community, further boosting well-being and academic success.

Cultural Differences

The previous studies indicate that the impact of social media on education and academic performance can differ greatly depending on various cultural, social, and political factors. In countries like China, South Korea, and Taiwan, the use of social media in education is widely accepted and encouraged as a means to facilitate learning and collaboration (Athukorala, 2018; Tang et al., 2021). In these countries, there are specialized platforms and services that are specifically designed for educational purposes.

In countries like the United States and the United Kingdom, the use of social media in education is more controversial (Krutka et al., 2019; Taylor et al., 2012). While some educators and institutions embrace its potential to enhance student engagement and facilitate collaboration, others are concerned about its potential to distract students and undermine academic integrity.

In developing countries, access to technology and the Internet remains a major barrier to the widespread adoption of social media in education. However, some initiatives have been undertaken to bring technology and internet access to schools and communities, so that

students and teachers can benefit from the educational potential of social media. In countries with strict censorship laws and limited internet freedom, the use of social media in education may be limited or banned altogether (Wu & Alaimo, 2018). In these countries, it is important for educators and policymakers to carefully consider the potential benefits and risks of social media use in the classroom and to balance academic freedom with the need for security and stability.

In conclusion, the relationship between social media use and academic performance is complex and can be influenced by a variety of individual and contextual factors. Some studies suggest a negative relationship between social media use and academic performance, while others indicate a positive impact. The theories of social comparison, multitasking, information overload, and social support help to explain the potential effects of social media use on students' academic performance and well-being. More research is needed to fully understand the relationship between social media use and academic performance, as well as the role of individual and contextual factors in moderating this relationship. It is important for students to approach their use of social media in a responsible and mindful manner to ensure that it does not have a negative impact on their academic performance.

Methodology

The primary aim of this study was to explore the relationship between social media use and academic performance among students as measured by the Programme for International Student Assessment (PISA) 2018. The research question specifically addressed in this study was:

"What is the impact of social media use on students' academic performance as measured by PISA 2018?"

In addition to examining the overall effect of social media use on academic performance, this study also sought to address a secondary research question:

"Does the impact of social media use on academic performance vary across nations and cultures?"

By exploring this question, the study aimed to gain a deeper understanding of the potential cultural and national differences in the relationship between social media use and academic performance. This multi-faceted approach to the research question allows for a more comprehensive examination of the topic and provides a nuanced understanding of the relationship between social media use and academic performance.

As the data used in this study was obtained from a non-experimental assessment, in order to answer these questions, propensity score analysis was used to establish a valid causal inference. Propensity score matching (PSM) is used to control for potential confounding factors and examine the causal effect of social media use on students' PISA scores.

Data

The present study utilizes data from the 2018 Program for International Student Assessment (PISA), a globally recognized evaluation of the academic abilities of 15-year-old students. A total of 79 countries and economies participated in PISA 2018. PISA 2018 assessed students'

knowledge and skills in mathematics, reading, and science, providing a comprehensive measure of their educational achievement. In addition, PISA collects a wealth of information on students and schools through its student and school questionnaires. The information gathered covers various aspects of students' home and family backgrounds, as well as the school environment, across all participating countries. One of the unique features of PISA 2018 is its provision of interesting variables related to Information and Communication Technology (ICT) at the student level.

While all countries and partners that participated in PISA 2018 provided assessment scores on mathematics, reading, and science achievement, only 31 OECD countries and 19 partners provided survey data on students' use of information and communication technologies (ICT), including social media. Therefore, our analysis is based on data from these countries and partners only. The administration of the ICT Familiarity Questionnaire was not universal among participating countries, which determined the selection of countries to be examined in the empirical analysis. The countries and economies are listed below in Table 1 with the participant number of students.

OECD	Participants No.	Partners	Participants No.
Australia	14273	Albania	6359
Austria	6802	Brazil	10690
Belgium	8475	Brunei Darussalam	6828
Chile	7621	Bulgaria	5294
Czech Republic	7019	Chinese Taipei	7243
Denmark	7657	Costa Rica	7221
Estonia	5316	Croatia	6609
Finland	5649	Dominican Republic	5674
France	6308	Georgia	5572
Greece	6403	Hong Kong (China)	6037
Hungary	5132	Kazakhstan	19507
Iceland	3296	Macao (China)	3775
Ireland	5577	Malta	3363
Israel	6623	Morocco	6814
Italy	11785	Russian Federation	7608
Japan	6109	Serbia	6609
Korea	6650	Singapore	6676
Latvia	5303	Thailand	8633
Lithuania	6885	Uruguay	5263
Luxembourg	5230		
Mexico	7299		
New Zealand	6173		
Poland	5625		
Slovak Republic	5965		
Slovenia	6401		
Spain	35943		
Sweden	5504		
Switzerland	5822		
Turkey	6890		
United Kingdom	13818		
United States	4838		

Table 1: OECD countries and patterners participating ICT questionnaire.

Measurement

This study makes use of three distinct sets of variables in its analysis. The primary outcome variables are the scores of 15-year-old students in mathematics, reading, and science, as assessed by PISA 2018. These scores serve as an indicator of academic performance and are used to evaluate the impact of social media use on students' academic outcomes.

The treatment variable in this study is the frequency with which 15-year-old students use social media for communication with their peers regarding schoolwork. This variable is

measured through the IC010Q05NA item in the information and communication technologies (ICT) questionnaire of PISA 2018. The question specifically asks students about their use of social media platforms, such as Facebook and MySpace, for communication with other students about school-related matters.

In order to control for potential confounding factors, the study employs a group of ten covariates, which include demographic information and an ICT use index. These covariates are used in propensity score matching to balance the treatment and control groups and to ensure that the observed effect of social media use on academic performance is not biased by other variables.

By utilizing these three sets of variables, the study provides a comprehensive examination of the relationship between social media use and academic performance, while taking into account the potential impact of other relevant factors. The careful consideration and use of these variables are crucial in ensuring the validity and reliability of the study's findings. All the variables and their definitions are listed in the table below.

	Variable	Definition
Outcome Variable	Science_w	*Weighted Science Score*
	Reading_w	*Weighted Reading Score*
	Maths_w	*Weighted Math Score*
Treatment Variable	IC010Q05NA	*how often use social networks such as Facebook and MySpace for communication with other students about school-related matters*
Covariates	ST004D01T	*Student (Standardized) Gender*
	MISCED	*Mother's Education*
	FISCED	*Father's Education*
	IMMIG	*Index Immigration status*
	ESCS	*Economic, Social and Cultural Status*
	PERCOOP	*Perception of cooperation at school*
	ICTHOME	*ICT available at home*
	ICTSCH	*ICT available at school*
	INTICT	*Interest in ICT*
	COMPICT	*Perceived ICT competence*

Table 2: Variable category, name, and definition.

Propensity score matching is a statistical technique that allows researchers to estimate the causal effect of a treatment on an outcome by controlling for a range of confounding factors (Rosenbaum & Rubin, 1983). It involves estimating the probability that a subject will receive a particular treatment, based on their characteristics as measured by a set of covariates. By matching or weighting subjects based on their propensity scores, researchers can reduce selection bias and obtain more valid estimates of the treatment's causal effect. In this study, propensity score matching is used to control for potential confounders and examine the relationship between students' use of social media for communication about schoolwork and their performance on the mathematics, reading, and science assessments of PISA 2018.

Analysis

Based on the suggestions outlined in recent literature (Jiang & Mccomas, 2015; Agasisti et al., 2020; Hogrebe & Strietholt, 2016), the causal analysis in this study consisted of the following major steps:

(1) Selection of the covariates

The first step in the causal analysis in this study was the selection of covariates. This involved identifying the relevant variables that could potentially affect the outcome of interest and serve as confounding factors. The outcome variables and the treatment variables were selected from the PISA 2018 questionnaire based on the research questions of this study. The covariate variables were selected based on the literature and the researchers' own experience.

(2) Estimation of the propensity scores

In this study, propensity score matching (PSM) was used to create comparable treatment and control groups of students based on their propensity scores. The matching method employed was nearest neighbor matching with a caliper, which involves finding the nearest untreated subject to each treated subject and forming a pair, as long as the difference in their propensity scores is within a specified range known as the caliper. The caliper is typically set at a small value (e.g., 0.2 or 0.5 of the standard deviation of the propensity scores) to ensure that the treatment and control groups are well-matched on the covariates. In this study, the caliper was set at 2.5 to allow for a larger pool of matched subjects and increase the statistical power of the analysis. This method helps to control for potential confounders and reduce the influence of selection bias on the estimates of the treatment effect.

(3) Matching or weighting of treatment and control groups based on propensity scores

The next step in the causal analysis was to match or weigh the treatment and control groups based on their propensity scores. This was achieved through propensity score matching (PSM) using the nearest neighbor matching method with a caliper of 2.5. The aim of this step was to create comparable treatment and control groups of students based on their propensity scores, which helps control for potential confounders and reduce the influence of selection bias on the estimates of the treatment effect.

(4) Estimation of the treatment effect on the outcome variable

The final step in the causal analysis was the estimation of the treatment effect on the outcome variable. This involved comparing the outcomes of the treated and untreated groups after controlling for potential confounding factors through the matching or weighting process. The outcome of this analysis provides insight into the causal effect of the treatment on the outcome of interest.

Results

The study employed a meticulous approach to data analysis by conducting separate propensity score analyses for each country involved. This strategy allowed for a comprehensive evaluation of the data from each country and facilitated the identification of

country-specific patterns and trends. The detailed analysis of the data from the United States serves as an example, providing in-depth insights into the results obtained from this particular country. Following this, a summary of the results from all participating countries is presented, enabling a comparison of the findings across different countries. This multi-faceted approach to data analysis provides a comprehensive understanding of the results and sheds light on the nuances and complexities of the data. By examining the results at both the country-specific and global levels, the study offers a more robust understanding of the patterns and trends at play.

Results of the US

The regression outcome for the data from the United States (see Table 3) shows that the model has 11 independent variables (IC010Q05NA_T, ST004D01T, MISCED, FISCED, IMMIG, ESCS, ICTHOME, ICTSCH, PERCOOP, INTICT, COMPICT) and has a total of 3980 observations. The F-statistic for the model is 81.38 and the p-value is less than 0.0000, which means that the overall model is significant at the 5% level. The R-squared value is 0.1841, which indicates that 18.41% of the variation in the outcome variable is explained by the independent variables in the model. However, although the results of the regression operation showed a correlation between social media use and students' academic performance, no causal relationship could be drawn. Therefore, after the regression analysis of the variables, this study continued with the PSM analysis.

Table 4 shows the results of a propensity score matching (PSM) analysis. After running logistic regression with the nearest neighbor matching with caliper 2.5, the number of observations was assigned to "Treated" and "Untreated" based on each matching score. The "Common Support" column shows the number of observations in the overlapping region of the two groups, which is defined by the propensity score. This is the number of observations that can be compared between the two groups, as they have similar observed characteristics. In this case, there are 2,568 observations in the "Untreated" group and 1,412 observations in the "Treated" group that are part of the common support. The total number of observations in the study is 3,980.

After matching the treated and untreated groups based on each individual's propensity score, the difference in the average treatment effect (ATT) between the groups can be seen. Table 5 presents the difference in the mean values of three variables: Science_w, Reading_w, and Maths_w, between the treated and untreated groups both before and after matching. The t-statistic provides information on the statistical significance of the difference in means between the groups. It can be seen that after matching, the difference between the means of the treated and untreated groups has increased and is statistically significant for all three variables, as indicated by the t-values.

Source	SS	df	MS			
				Number of obs	=	3,980
				F(11, 3968)	=	81.38
Model	6053325.24	11	550302.295	Prob > F	=	0.0000
Residual	26831109.6	3,968	6761.87238	R-squared	=	0.1841
				Adj R-squared	=	0.1818
Total	32884434.8	3,979	8264.49732	Root MSE	=	82.231

Science_w	Coefficient	Std. err.	t	P>|t|	[95% conf. interval]	
IC010Q05NA_T	-13.99878	2.830384	-4.95	0.000	-19.54792	-8.449635
ST004D01T	5.64468	2.662433	2.12	0.034	.4248142	10.86455
MISCED	-6.670316	1.38199	-4.83	0.000	-9.379793	-3.960838
FISCED	.5750589	1.238196	0.46	0.642	-1.852501	3.002619
IMMIG	5.052847	2.525259	2.00	0.045	.1019203	10.00377
ESCS	46.01657	2.290007	20.09	0.000	41.52686	50.50627
ICTHOME	-6.555831	.7644094	-8.58	0.000	-8.054503	-5.057159
ICTSCH	-4.252677	.6844399	-6.21	0.000	-5.594564	-2.91079
PERCOOP	1.179425	1.408755	0.84	0.403	-1.582528	3.941377
INTICT	6.167916	1.618173	3.81	0.000	2.995387	9.340445
COMPICT	6.273487	1.673673	3.75	0.000	2.992148	9.554825
_cons	606.8115	11.99632	50.58	0.000	583.292	630.331

Table 3: Regression outcome of the US data.

psmatch2: Treatment assignment	psmatch2: Common support On suppor	Total
Untreated	2,568	2,568
Treated	1,412	1,412
Total	3,980	3,980

Table 4: The outcome of PSM.

Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
Science_w	Unmatched	504.769245	510.079227	-5.3099825	3.01106261	-1.76
	ATT	504.769245	520.106762	-15.3375177	4.32714495	-3.54
Reading_w	Unmatched	511.481747	513.83122	-2.34947268	3.33721547	-0.70
	ATT	511.481747	529.513957	-18.0322093	4.72687916	-3.81
Maths_w	Unmatched	481.961657	482.915976	-.954318753	2.76246607	-0.35
	ATT	481.961657	493.468144	-11.506487	3.97282207	-2.90

Table 5: The outcome of Average Treatment Effect on Treated (ATT).

Results of All the Countries and Partners

As with the US data, we also analyzed data from 49 other countries. The outcome altogether showed that the use of social media for learning outside of class is significantly related to students' academic performance in 39 out of the 50 OECD countries and economies that provided data on information and communication technologies (ICT) use. Of these 39 countries, 20 showed a positive causal relationship, meaning that the use of social media was positively associated with improved academic performance. These countries include Belgium, Czech Republic, Estonia, Hungary, Luxembourg, Mexico, Poland, Slovak Republic, Slovenia, Turkey, Albania, Brazil, Brunei Darussalam, Bulgaria, Croatia, Kazakhstan, Russian Federation, Serbia, and Singapore. In contrast, the remaining 19 countries showed a negative causal relationship, with the use of social media being negatively associated with academic performance. These countries include Australia, Chile, Denmark,

Finland, Greece, Ireland, Israel, Italy, Japan, Korea, Latvia, New Zealand, Spain, Sweden, the UK, the US, Costa Rica, Hong Kong, and Uruguay.

It is important to note that these results were found after conducting separate PSM analyses for each of the 50 OECD countries and economies, highlighting the variability in the relationship between social media use and academic performance across different countries and education systems. These results provide insight into the potential impact of social media use on students' academic performance and can inform future research and policy efforts in the field of education technology and media use in schools. It is also worth exploring the reasons behind the positive and negative causal relationships observed in different countries and economies to further understand the role of social media in student learning.

Conclusions

Our study aimed to investigate the impact of social media use on academic performance among students. Using the data from PISA 2018, we analyzed the relationship between social media use for learning and academic performance using a propensity score matching (PSM) approach. Using Propensity Score Matching as a research method, we intended to explore the causal relationship between social media use and students' academic performance. In our results, outcome data from the majority of participating countries and partners show that social media use has a significant effect on students' performance in math, science, and reading. Certainly, the effects are inconsistent across countries in different subjects, and even vary significantly. However, it is worth noting that for students in some countries, social media use in learning has a positive impact on achievement, while for students in other countries, it has a negative impact.

Our findings are consistent with other mixed result of previous studies. When discussing the impact of social media on student learning, contrasting results are obtained across countries, regions, and education systems. Our results showed that in 39 out of the 50 countries analyzed, there was a significant relationship between social media use for learning and academic performance. Of these 39 countries, 20 showed a positive relationship, while 19 showed a negative relationship. This highlights the variability in the relationship between social media use and academic performance across different countries and education systems. Despite these findings, it is important to continue exploring the reasons behind the positive and negative relationships observed in different countries. Since we analyzed each of the 50 countries and economies, further research can be conducted to explore whether different country characteristics significantly affect the impact of social media on students in that country.

This study is limited to the scope, within-country variation, and lack of explanation of causes. First, the study analyzed data from 50 countries and economies, but this sample is not representative of the entire world. The results obtained from the OECD's PISA data may not be applicable to countries outside of the organization, particularly African countries, which are not represented in the data. Second, the results of this study revealed differences in the impact of social media use on learning across countries, but it is important to note that the differences within a particular country can often be greater than the differences between countries. This means that the results obtained in this study may not be generalizable to specific countries. Third, while the study found a significant relationship between social media use and academic performance, it failed to examine the reasons behind these

differences. Further research is needed to explore the reasons why the impact of social media use on learning varies across countries.

In conclusion, it is important to acknowledge the limitations of the study when interpreting the results. The findings should be interpreted with caution, and future studies should aim to address the limitations of this research to build a more comprehensive understanding of the impact of social media on academic performance.

References

Agnew, J. R., & Szykman, L. R. (2010). Asset Allocation and Information Overload: The Influence of Information Display, Asset Choice, and Investor Experience. Http://Dx.Doi.Org/10.1207/S15427579jpfm0602_2, 6(2), 57–70. https://doi.org/10.1207/S15427579JPFM0602_2

Al-Azawei, A. (2019). What drives successful social media in education and e-learning? A comparative study on Facebook and moodle. Journal of Information Technology Education: Research, 18, 253–274. https://doi.org/10.28945/4360

Alloway, R., & Bebbington, P. (1987). The buffer theory of social support – a review of the literature. Psychological Medicine, 17(1), 91–108. https://doi.org/10.1017/S0033291700013015

Athukorala, A. W. v. (2018). Factors Affecting Use of Social Media by University Students: a Study at Wuhan University of China. Journal of the University Librarians Association of Sri Lanka, 21(2), 44. https://doi.org/10.4038/jula.v21i2.7917

Brooke Auxier, B., & Anderson, M. (2021). Social Media Use in 2021 FOR MEDIA OR OTHER INQUIRIES. 7(April), 2021. www.pewresearch.org

Colleen Mcclain, Emily A. Vogels, Andrew Perrin, S. S. A. L. R. (2021). The Internet and the Pandemic _ Pew Research Center. In Pew Research Center. https://www.pewresearch.org/internet/2021/09/01/the-internet-and-the-pandemic/

de Jong, T. (2010). Cognitive load theory, educational research, and instructional design: Some food for thought. Instructional Science, 38(2), 105–134. https://doi.org/10.1007/S11251-009-9110-0/METRICS

Festinger, L. (1954). A Theory of Social Comparison Processes. Human Relations, 7(2), 117–140. https://doi.org/10.1177/001872675400700202

Gikas, J., & Grant, M. M. (2013). Mobile computing devices in higher education: Student perspectives on learning with cellphones, smartphones & social media. Internet and Higher Education, 19, 18–26. https://doi.org/10.1016/j.iheduc.2013.06.002

Global Social Media Stats. (n.d.). DataReportal. Retrieved April 19, 2022, from https://datareportal.com/social-media-users

Habes, M., Alghizzawi, M., Khalaf, R., Salloum, S. A., & Ghani, M. A. (2018). The Relationship between Social Media and Academic Performance: Facebook Perspective. In International Journal of Information Technology and Language Studies (IJITLS) (Vol. 2, Issue 1). http://journals.sfu.ca/ijitls

Hitchcock, L. I., & Young, J. A. (2016). Tweet, Tweet!: Using Live Twitter Chats in Social Work Education. Social Work Education, 35(4), 457–468. https://doi.org/10.1080/02615479.2015.1136273

Isaksen, G., & Oslo, A. (2014). Hey, Your e-learning Courses are Giving me a Cognitive Overload.

Krutka, D. G., Manca, S., Galvin, S. M., Greenhow, C., Koehler, M. J., & Askari, E. (2019). Teaching "Against" Social Media: Confronting Problems of Profit in the Curriculum. Teachers College Record, 121.

Lau, W. W. F. (2017). Effects of social media usage and social media multitasking on the academic performance of university students. Computers in Human Behavior, 68, 286–291. https://doi.org/10.1016/J.CHB.2016.11.043

M. Talaue, G., AlSaad, A., AlRushaidan, N., AlHugail, A., & AlFahhad, S. (2018). The Impact of Social Media on Academic Performance of Selected College Students. International Journal of Advanced Information Technology, 8(4/5), 27–35. https://doi.org/10.5121/ijait.2018.8503

Mann, R. B., & Blumberg, F. (2022). Adolescents and social media: The effects of frequency of use, self-presentation, social comparison, and self esteem on possible self imagery. Acta Psychologica, 228. https://doi.org/10.1016/j.actpsy.2022.103629

Matthes, J., Karsay, K., Schmuck, D., & Stevic, A. (2020). "Too much to handle": Impact of mobile social networking sites on information overload, depressive symptoms, and well-being. Computers in Human Behavior, 105, 106217. https://doi.org/10.1016/J.CHB.2019.106217

Mohammed, M. T. S., Ibrahim, F., & Yunus, N. (2021). Exploring the relationship of social media usage and multitasking of social media on self-efficacy and academic performance. Jurnal Komunikasi: Malaysian Journal of Communication, 37(1), 227–243. https://doi.org/10.17576/JKMJC-2021-3701-13

Piki, A. (n.d.). An exploration of student experiences with social media and mobile technologies during emergency transition to remote education.

Selwyn, N., & Stirling, E. (2016). Social media and education … now the dust has settled. Learning, Media and Technology, 41(1), 1–5. https://doi.org/10.1080/17439884.2015.1115769

Skiera, B., Hinz, O., & Spann, M. (2017). Social Media and Academic Performance: Does The Intensity of Facebook Activity Relate to Good Grades? Schmalenbach Business Review 2015 67:1, 67(1), 54–72. https://doi.org/10.1007/BF03396923

Tang, L., Omar, S. Z., Bolong, J., & Mohd Zawawi, J. W. (2021). Social Media Use Among Young People in China: A Systematic Literature Review. SAGE Open, 11(2). https://doi.org/10.1177/21582440211016421

Taylor, R., King, Dr. F., & Nelson, Dr. G. (2012). Student Learning Through Social Media. Journal of Sociological Research, 3(2), 29–35. https://doi.org/10.5296/jsr.v3i2.2136

van den Beemt, A., Thurlings, M., & Willems, M. (2020). Towards an understanding of social media use in the classroom: a literature review. Technology, Pedagogy and Education, 29(1), 35–55. https://doi.org/10.1080/1475939X.2019.1695657

Wu, J. C., & Alaimo, K. S. (2018). Social Media in Mainland China: Weak Democracy, Emergent Civil Society. In Oxford Research Encyclopedia of Communication. Oxford University Press. https://doi.org/10.1093/acrefore/9780190228613.013.509

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Prioritizing the Margin: Developing Intentional Strategies to Retain Diverse Students, Faculty, and Staff

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

As the college student population in the United States continues to become more diverse it is imperative that colleges and universities work to recruit and retain faculty and staff that are equally as diverse. While some institutions have created strategies for recruiting minority populations there is still a gap in the research on best practices to successfully retain racial and ethnic minorities, specifically those serving at predominantly White Research 1 Institutions. At Virginia Tech, diversity retention has become a campus-wide priority seeking to improve and maintain representation at the faculty, staff, undergraduate student and graduate student levels. This paper features five administrators from various offices across campus who bring their expertise on retaining underrepresented minority (URM) and underserved populations. The five panelists describe how their work has positively contributed to URM retention through intentional initiatives and policies including but not limited to building sustainable communities, creating inclusive environments, and advocating for the needs of diverse populations. Authors also highlight challenges they have faced with diversity retention as well as possible implications for the field.

Keywords: Diversity, Retention, Inclusion

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Introduction

Universities are composed of several stakeholders involved in the design, implementation, and evaluation of diversity, equity, and inclusion (DEI) efforts. DEI is a priority topic for many institutions to address and combat the evolving times around themes such as social justice, advocacy, and equality. Due to the institutional size, budget constraints, and unit capacity, the priorities are divided and ranked among several units to prioritize and fulfill institutional goals. Those goals are often strategic in nature, yet, disjoint in their planning and execution due to the focus variation.

Often times, the various populations deemed as underrepresented or underserved, are the foci areas. The institutional policies and barriers in place limit their access to resources and other opportunities that historically were beneficial for the white majority. Furthermore, upon examination of the multiple roles within an institution, other challenges arise. This article aims to share effective initiatives at a public, land-grant institution to serve as a transferrable model for other institutions. It explores efforts for faculty and staff, community members, undergraduates, and graduate students. In addition, other underrepresented and underserved populations are incorporated to improve overall institutional retention goals.

Why Does Diversity Retention Matter?

As the United States population continues to shift to a majority-minority demographic many campuses are recognizing the importance of diversity retention. Although numerical representation is one way to demonstrate a commitment to diversity; it is not enough. A diverse college campus is beneficial to everyone (Piercy et.al, 2005). For example, Students who learn from and interact with those from diverse backgrounds build skills and competencies that are desirable to future employers and professional organizations and critical to the success of a global citizen. Similarly, Faculty and staff benefit by having space to develop and use non-traditional approaches for knowledge production in research and practice, making more positive contributions to society at large. In this article, we refer to those from traditionally underrepresented populations (in higher education) in the United States, including race, ethnicities, and gender along with familial educational background, veteran's status, and socioeconomic status. This is not exhaustive of the intersectionality of identities whether visible or invisible for faculty, staff, student, and community populations.

As the population of the United States continues to shift to a majority-minority demographic (more similar to the global majority), many campuses are exploring and engaging in recruitment practices that involve searching for those who bring diverse talent, perspectives, and backgrounds. However, once our colleges and universities hire and enroll diverse undergraduate & graduate students, faculty and staff, we have to ask the question "what happens next?" at these institutions that were not established with marginalized people in mind. As examples are shared of effective efforts, details are also given on the challenges faced in pursuing this important work along with transferrable lessons and strategies.

First Generation Student Support

First-Generation Student Support is a centralized program and resource at Virginia Tech for students, faculty, and staff that promotes first-generation student success. Being the first in their family to go to college, first-generation students often struggle with the transition. First-generation students arrive to the university with a competitive academic profile but often

struggle with navigating the complexity of the higher education system. The terminology, policies, and processes can be daunting and First-Generation Student Support exists as a resource to help students be successful.

First-Generation Student Support is led by the Assistant Dean for First-Generation Student Support within the Dean of Students office in the Division of Student Affairs. The Assistant Dean also leads the GenerationOne Living Learning Community, which is an on-campus residential space specifically designed for first-generation students. The mission of First-Generation Student Support is to raise awareness about the needs and experiences of first-generation college students, connect first-generation students with one another and with faculty and staff to build community, and create an environment for first-generation students that welcomes diverse ideas and cultures, promotes lifelong learning, instills values, and cultivates a strong academic identity.

In the practical day to day, the Assistant Dean:
1) consults with faculty and staff on ways to support our first-generation population,
2) provides academic and professional development programming and support for the GenerationOne Living Learning Community,
3) hosts workshops and events that promote community building/sense of belonging and highlights key resources available on campus,
4) supports the personal and professional development of our peer mentors and student leaders,
5) and provides care, advocacy, and support to first-generation students that are referred to the Dean of Students' office.

At Virginia Tech, a student is identified as a first-generation college student if neither parent/guardian has earned a bachelor's degree at a four-year college or university.

2022-2023
First-Generation Student Profile

Total: 6060
Undergraduate Students: 5569
Associate: 18
Graduate Students: 463
Master: 380
Doctoral: 83
Vet Med: 26
MD: 2

Transfer: 255
Fulltime: 5597
Parttime: 363
Instate: 4884
Out-of-state: 1176

Race/Ethnicity
White: 2693
Asian: 1064
Hispanics of any race: 995
Black or African American: 669
American Indian or Alaska Native: 8
Native Hawaiian or Other Pacific Islander: 6
Two or more races: 326

International: 212

Veteran: 103
Pell Eligible: 2341

Cadet: 150
Honors: 282

FIRST-GENERATION STUDENT SUPPORT

Source: https://udc.vt.edu/irdata/data/students/

Figure 1: Demographic breakdown of the first-generation students enrolled at Virginia Tech between August 2022-January 2023.

The university's strategic plan included a goal to achieve 40% representation of underrepresented minority or underserved students (first-generation, Pell-eligible, and Veterans) in the entering class (freshmen and transfers) by 2022. When I started in this role, First-Generation Student Support was still a relatively new program. It launched in Fall 2019 and was immediately impacted by COVID-19. Ezarik (2022) reported that first-generation students made their college selection based on affordability and the existence of a first-generation program.

I launched a grassroots campaign on campus called #firstgenready. The goal of #firstgenready was to ensure the university was positioned to support current and incoming first-generation students appropriately. My goal was to make sure that everyone was clear on the definition of a first-generation college student at Virginia Tech, ensure that colleges understood and had access to tools to track their first-generation student population, assess how current first-generation students were experiencing Virginia Tech, make sure colleges, programs, and departments had the structure and resources in place to support first-generation student success, and build capacity for the growing number of students by increasing collaborations with colleges and departments campus-wide.

As educators, it is important to recognize the talents first-generation students bring to our campus and make sure that we have the tools and resources available when they need them. That can be providing clear guidance on how certain processes work, offering early insight to the materials and software they may need for their academic program, and removing structural barriers that unnecessarily hinder their success when they are working so hard to figure college out on their own. Retention efforts are successful when the commitment to serve students goes beyond student affairs and encompasses faculty and other staff (Longwell-Grice & Longwell-Grice, 2021).

As a result of the #firstgenready initiative, First-Generation Student Support has increased first-generation student engagement over the past year. There was no tracking tool used for attendance prior to August 2021 but First-Generation Student Support peer mentors reported little to no engagement prior to this time. The total attendance for all events during the 2021-2022 academic year was 165 students. As of December 15, 2022, the total number of attendees for all events in Fall 2022 semester was 627. Factors include an increased number of sponsored events offered by campus partners and increased interest of students.

First-Generation Student Support Programming

Event Attendance Comparison

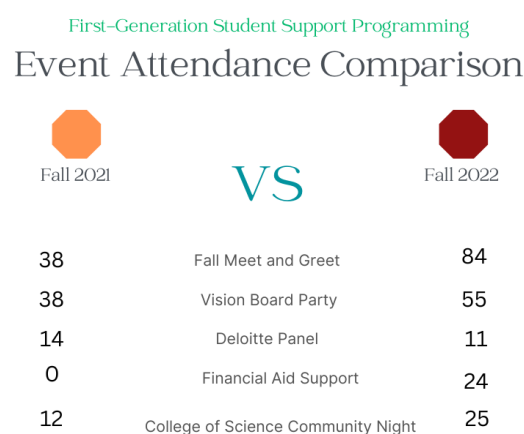| Fall 2021		Fall 2022
	VS	
38	Fall Meet and Greet	84
38	Vision Board Party	55
14	Deloitte Panel	11
0	Financial Aid Support	24
12	College of Science Community Night	25

Figure 2: Events and attendance number comparison for Fall 2021 and Fall 2022 semesters.

Challenges with leading First-Generation Student Support is the lack of staffing support. The program sometimes has the support of a graduate assistant or part-time temporary staff but would benefit from having another full-time staff member to help support the case management load and programming needs. Limited staffing can limit the program's capacity to offer effective programming and support.

Lessons learned after year one is to plan ahead and reach out to new students early. Sharing resources early and letting students know your program exists gives students something to get excited about and to look forward to. In July, campus partners joined First-Generation

Student Support in reaching out to all of its incoming students expected to arrive in August 2022. Students were advised on resources including our program and advised on getting final steps completed with orientation, advising, financial aid, housing, and dining. Providing a list of first-generation welcome events that would be happening when they arrived, likely contributed to the early and increased engagement this year.

Diversity Retention in the College of Science

The College of Science is one of nine academic colleges at Virginia Tech, with 4,877 undergraduates. Within the College, we have an Assistant Dean of Inclusion and Diversity, who focuses on faculty and graduate students, and myself, the Director of Inclusion and Diversity, who focuses on undergraduate students. For our undergraduate student population, we are especially concerned about the retention of our underrepresented minority (Black, Hispanic/Latinx, and Native American) students and our underserved (low-income, veteran, and first generation) students. Figure 3 shows the breakdown of our undergraduate student population.

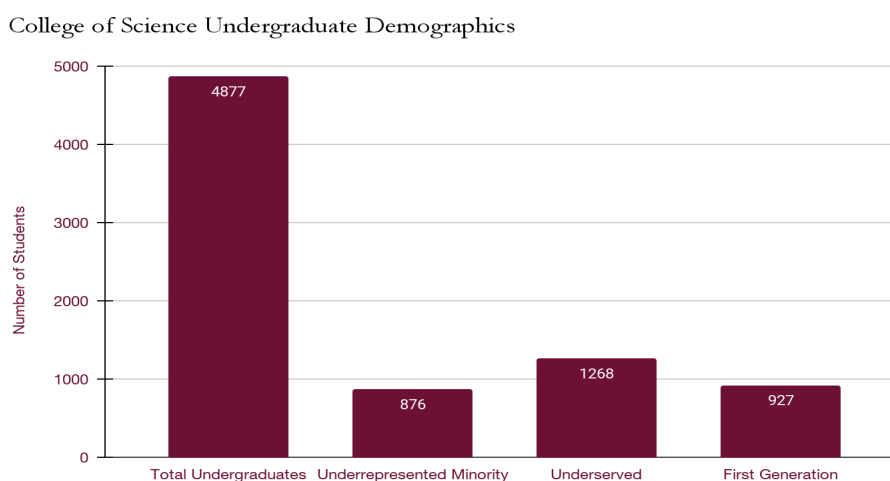College of Science Undergraduate Demographics

Figure 3: Demographic breakdown of undergraduate students within
the College of Science at Virginia Tech.

We have four key goals for our Inclusion and Diversity team in the College of Science:
1) Develop the science identity of underrepresented minority and underserved students;
2) Build community for underrepresented minority and underserved students;
3) Educate all science students about inclusion and diversity, and opportunities available to them;
4) And create a line of communication between the Dean's office and undergraduate students.

To support the science identity development of students, we begin early with three key initiatives for students' first semester on campus.

Students can opt into the Diversifying Science Peer Mentoring Program, which places freshmen students in a "pod" of one upperclassmen mentor and two other freshmen students. They meet weekly to discuss belonging on campus, academic skills, and professional development. The program is open to all incoming underrepresented minority and underserved students with a focus on our first-generation college students. We also have the

First Scholars Success Program, which is a list of asynchronous and optional activities to boost academic performance for first generation college students. Those that complete ten beneficial academic activities earn a College of Science sweatshirt and a certificate of completion. Finally, I (Jess Hoopengardner) visit each one of our "First Year Experience" courses within the College. These courses are 1-credit seminars that students take with their fellow majors. The seminars discuss course selection, study skills, and resume building. I visit each course to do an activity on inclusion and belonging in the sciences to communicate the values of the College of Science to freshmen students.

The key challenge for our first semester student support is student engagement. With a large campus like Virginia Tech, how do we compete with all of the options available? To maximize student engagement, we employ three strategies: variety of modalities, being open to feedback, and going where the students are. Not all students are the same and therefore, not all students want to participate in the same ways. By offering support via small group mentoring, larger workshops, and asynchronous activities, students can choose a way that allows them to learn material in ways that benefit them. We also utilize student feedback to plan events, making sure we are offering what students need and when it's convenient for them. For example, we figure out what courses are common among our majors and plan around common exam times. Finally, we go to where students already are. Most students are required to go to their First Year Experience seminars, so we are more likely to have an audience for those seminars. We also partner with Living Learning Communities to do workshops, visiting the place where students live. We will continue to refine our techniques in order to maximize student engagement for our initiatives.

Diversity and Inclusion within Graduate Education

Virginia Tech has over 150 graduate programs and over 6000 graduate students. With this growing population and the need to incorporate inclusion and diversity not at a standalone but instead integral part of the graduate student experience, an Inclusion and Diversity (I/D) Requirement was created through a university policy (https://graduateschool.vt.edu/academics/programs/inclusion-diversity-req.html). This policy was approved in April of 2018 and effective as of Fall 2019. Since it was decided to roll out the policy, graduate departments had until Spring 2022 to create and plan and have it approved by the Graduate School.

The I/D plan has four required topics: 1. The Virginia Tech Principles of Community as they apply to the valuing of human diversity and inclusion. 2. The impact that personal actions and words have on self, others, and the communities—university, national, and global—in which we live; issues of privilege, bias, power, prejudice, and discrimination; concepts of multiple personal, social, and cultural identities. 3. Available avenues of redress and our shared responsibilities as active by-standers. 4. The process of individual introspection required both to understand one's own forms of implicit or unconscious bias and to create inclusive environments.

A few challenges related to the I/D requirement was the need to demystify the policy components and reassure departments of their ability to create an effective plan. Ways to counteract this challenge was getting student buy-in (acknowledge the requirements' importance) and provide departmental consultations with decision makers. Another challenge is best framed as "What do I do?" When a policy is new, there is uncertainty. To address this challenge, it was important to strategize with others, remember the big picture. The last

challenge was the variability in submissions. Because the policy allowed flexibility in structure and composition, time was needed to learn about and share about resources.

There were several lessons learned through this novel effort. The first is the importance of finding allies and supporters. Those individuals were key to empowering other units to develop and implement a plan. The next lesson is to be prepared for public challenges. A clear and concise understanding of the policy is needed to help combat negativity, doubter, and others that hinder overall progress. Another lesson is to keep the larger goal in mind. The motivation for the policy is the lever to help one remain actively engaged. Since the plan was rolled out over several years, the momentum varied.

Since the creation of the first I/D requirement for graduate students, other graduate communities are exploring the design and implementation for their institution. Since Virginia Tech was a pioneer in this policy, it frequently discusses the structure and organization of the plan with other universities to ensure that they can overcome barriers and roadblocks to such an effort. To date, one other university has an active requirement and others are being considered. Thus far, feedback from students have been positive and we anticipate that the I/D requirement will be useful for their future professional endeavors.

Student Affairs Socially Just and Inclusive Assessment Practices

In the division of Student Affairs at Virginia Tech, there is a robust assessment culture. These continuous improvement efforts are focused on serving students and employees. There is an office of Assessment and Professional Development (APD) dedicated to serving employees and their growth in assessment skills and as a professional. One of the aims of the office is to support Student Affairs employees to conduct socially just and inclusive practices in their assessment projects, including ways to support underrepresented minority employees. This office supports diverse employees through focus groups, wellness surveys, and having monthly professional development opportunities that include social justice, diversity, inclusion, and belonging (DEIB) strategies into the assessment work being conducted.

The APD team offers professional development opportunities to the division to ensure assessment practices are incorporating DEIB strategies. There is content offered on focus groups, surveys, inclusive language, and reducing overextending of certain groups, like URM employees. When focus groups are conducted, reflexivity and bias-checking strategies are utilized (Creswell, 2009). These include facilitator reflections, bias-checking discussions among facilitators throughout data collection and analysis, and allowing participants to review reports and provide input before sharing (Creswell, 2009). When building surveys, we train users to incorporate inclusive language free from microaggressions that can occur in their survey items, like using terms of "Not listed, please specify", with a text box instead of using "other" type of verbiage (APA, 2021). Another instance of providing equitable and inclusive practice for data collection occurs with the employee wellness surveys. The APD office coordinates to have surveys translated into needed languages of participants whenever possible (Li et al., 2001; Pope, Reynolds, & Mueller, 2004). In fall 2021, the office translated the employee wellness survey into four languages, in addition to English, so these participants had the option to respond in their preferred language. Lastly, assessment professionals are encouraged to look to existing data that might be available to answer their questions or data needs before potentially overextending their URM populations and seeking additional or repetitive feedback. While existing data alone may not give a complete picture to your URM experiences, assessment professionals should educate themselves on what data

exists and then look to data collection methods that would effectively expand and triangulate your data collection efforts (Creswell, 2009; Pope et al., 2004). These are a few strategies the division of student affairs utilizes in the assessment efforts centered around supporting URM employees in the division.

One example of supporting URM employees was an assessment focus group project conducted in Summer 2022. At that time, the facilitators of this project were provided a list of employees from which they could recruit underrepresented minority Administrative and Professional (AP) faculty members in Student Affairs. In this list, approximately 16% were URM and 84% were non-URM AP faculty, out of close to 200 people in the list. However, there were a few lessons learned based on some challenges that occurred during this project.

The first lesson learned is to clearly define your variables and population of interest (Pope et al., 2004). In the list that was received, the facilitators realized there were employee classification codes we needed defined. Additionally, the facilitators needed to define the scope of who would be classified as underrepresented minorities for the focus group (Pope et al., 2004). The facilitators discussed these definitions and were able to identify participants that were of racial and/or ethnic minorities and had the employee classification codes that encompassed AP faculty members in Student Affairs. However, these took more time than anticipated.

The second lesson learned is to account for the recruitment list to change while you are in your recruitment phase. As facilitators sent messages recruiting participants, the facilitators realized some of the target sample of URM AP faculty were leaving and some were being added to our list during the time of this focus group project. This posed a challenge for recruiting because we wanted to capture the insights of those that might be leaving, and new employees may give insight into their recruitment experiences as URM AP faculty. These challenges required the facilitators to keep in communication with each other and remain flexible to allow changes to occur in the recruitment phase.

A final lesson is to incorporate inclusive and bias-checking strategies through the process, including your reporting phase (Henning and Roberts, 2016). For example, the facilitators of the focus groups determined that because recording was not desired for this project, having two facilitators, one to engage participants and ask questions and one to take notes, would allow participants to feel comfortable sharing their experiences as URM AP faculty. Then, after each session, the facilitators de-briefed and reflected together on the session, they also reviewed the detailed notes taken individually and made comments about disparities, and then would discuss any concerns or biases that could be influencing these analyses (Creswell, 2009; Henning and Roberts, 2016). After the findings were coded and the report was created, participants were asked to review the report before it was shared with senior leaders. This strategy allows participants to dispute or confirm the overall sentiments and themes found before the report was shared (Creswell, 2009; Henning and Roberts, 2016). While they were given time to respond, the facilitators would have liked to give them more time to reflect than the timeline allowed.

A mechanism to support your assessment professionals is through regular professional development opportunities offered to assessment colleagues (Henning and Roberts, 2016). One example is APD has hosted sessions to help employees create assessment reports that meet accessibility needs. Strategies like adding alt text to images, using color contrast checkers, and planning for accessibility strategies are taught in these sessions to equip users

to incorporate these strategies into their assessment projects and reports (W3c Web Accessibility Initiative, n.d.). Professional development opportunities that cover a range of support mechanisms to assessment professionals is a tangible way to incorporate diversity, equity, and inclusion into assessment work.

Overall, there are strategies that can be implemented when working with URM employees and supporting those in these populations through assessment efforts. The APD office has found that providing assessment professionals with professional development, resources, and support for including diversity practices, the more confident your employees can be in starting with a few strategies in their work. And as mentioned with the focus group example, taking time to plan and incorporate diversity, equity, inclusion, belonging, and accessibility strategies on the forefront allow for greater opportunities to have these practices woven into all phases of your assessment projects.

Retention Initiative for Diverse Faculty & Staff Through Community Engagement

As the nation started to understand the impacts of the COVID-19 global pandemic in 2020 many employees across campus were starting to evaluate and reimagine the concept of the workplace. As this reimagination of a "new normal" continued there was a noticeable number of departures happening, and the staff of the Office for Inclusion and Diversity (OID) began to look at data related to employee attrition disaggregated by race and ethnicity. As a result of this research we learned that not only did White identified students greatly outnumber our students of color but White employees heavily outnumbered our collective number of employees of color (Asian and Pacific Islander, African-American, Hispanic, and Native American). When we looked at employee racial and ethnic demographics across all of our campuses the numbers were astounding. When only accounting for full-time teaching and administrative faculty as well as staff, the total number of White employees was over five times higher than the total number of all non-White employees. When we started to look at specific racial categories in addition to position description such as tenured versus non-tenured professors, or senior level administrators versus entry to mid-level administrators the racial disparities were even wider.

For geographical context, Virginia Tech's main campus is located in Blacksburg, Virginia which is a small college town situated in the heart of Appalachia in the Southwestern region of Virginia. For the context of university size and scope, Virginia Tech offers more than 150 majors from nine academic colleges across five regional campuses throughout the Commonwealth. If you are a Virginia Tech employee who identifies as Native American or Indigenous, for example, you would be one of less than 55 employees who identify with that community. It would not be surprising or difficult to believe that if you were a Native faculty or staff member, that you might be the only Native person working in your department, the physical building, or even in your entire division. If your racial and ethnic identities were salient it could be challenging to know where to start finding and building community.

Piercy et al. (2005) posit that while it is important for colleges and universities to create strategic diversity plans that include the recruitment of diverse faculty it is "equally important [to] organize efforts to support and retain underrepresented faculty once they come to campus" (p.54). One way that Virginia Tech has created an intentional effort to retain diverse faculty and staff is through the creation of the Diverse Professionals Network. The Diverse Professionals Network (DPN) is a retention initiative that aims to connect underrepresented minority (URM) colleagues at Virginia Tech with each other as well as to those in the

surrounding New River Valley region. The DPN originally started in 2017 in the home of the Virginia Tech Chief Diversity Officer, Dr. Pratt, when she saw the need to provide a space for URM employees to meet and connect with each other. Once these biannual events outgrew her personal space she brought forth the idea to university leadership in an attempt to gain legitimacy and institutional support.

I was then recruited to join the Office for Inclusion and Diversity (OID) in 2019 to support our signature diversity programs and community engagement, including the expansion of the DPN. When I started, the DPN events occurred somewhat randomly without much variety and there was hardly any assessment data collected. Before I began to expand the offerings of the DPN I reviewed literature about diverse faculty retention (Olmedo, 1990; Piercy et al., 2005), challenges of minority faculty and staff working at predominantly White institutions (Thomas & Asunka, 1995; Whitfield-Harris, 2016), and even student engagement (Kuh, 2001; Astin, 1984) and belonging (Strayhorn, 2018). Even though the latter scholars' research focuses on college student success I found there to be a lot of conceptual overlap in what we hoped to accomplish with faculty and staff. We wanted to help foster a sense of belonging amongst URM faculty and staff through high quality, community engagement programming. We believed that providing diverse colleagues with an opportunity to network and build community with their peers could help increase workplace satisfaction and enhance personal development and success.

Olmedo (1990) recommends that institutions demonstrate their commitment to faculty diversity through proactive programs and initiatives that support racial diversity such as the development of a supportive and collegial community. Since revamping the Diverse Professionals Network by prioritizing the interests and social engagement needs of URM faculty and staff we have seen the success of our efforts, even in spite of the global pandemic. In multiple surveys, focus groups, and other data collection initiatives, URM faculty and staff have cited the DPN as a major factor in their ability to make connections within the regional community, as well as an important factor in their overall sense of belonging at Virginia Tech.

As with any initiative there are always challenges and the development of the DPN is not exempt from this reality. Our biggest challenge in expanding the DPN is lack of capacity and human resources as well as a very limited budget. As the Director of Faculty Diversity and Community Engagement I work primarily as a unit of one and coordinating this network is only about 30% of my job. DPN event attendees often share great ideas on the post-event evaluation form for how they want to see this initiative grow but I can only dedicate a small number of hours each week to this initiative. On top of my limited capacity when I am operating as the sole coordinator, it can feel extremely overwhelming to try to address the vast needs of hundreds of underrepresented minority faculty and staff who are single, married, community leaders, parents, commuters with an array of personal and professional interests. Thankfully this challenge also doubles as one of the biggest lessons learned which is the importance of coalition building and stakeholder engagement. Now that people on campus and within the larger surrounding region know what the purpose of the Diverse Professionals Network is, it is easier to develop partnerships. Partnering with other colleges and universities in the region as well as community organizations to host networking events, meet-ups, and other activities has had positive outcomes including more events that offer more variety.

Conclusion

The work that is happening with diversity retention at Virginia Tech should be seen as a model for how other Research 1, predominantly White institutions can begin to address the inevitable shifts in the demographic makeup of their student, faculty, and staff populations. While the efforts selected for this panel were intentional to showcase with the wider audience the variety of offerings, these examples are not exhaustive of the existing priorities of the panelists.

The panelists challenge others to evaluate the DEI efforts at their institutions and reflect on which areas need improvement. By also sharing lessons learned and challenges, we hope others can learn from them and avoid our mistakes. Use them as learning moments while remembering the power of DEI efforts. The efforts are transformative in the lives of so many and have longstanding influence for years to come.

References

American Psychological Association. (2021). Inclusive language guidelines. Retrieved from https://www.apa.org/about/apa/equitydiversity-inclusion/language-guidelines.pdf

Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of college student personnel*, *25(4),* 297-308.

Creswell, J.W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* [3rd Ed]. SAGE Publications.

Ezarik, M. (2022, July 19).*First in the family make their mark in college*. Inside Higher Ed. First-generation students describe paths to college success (insidehighered.com).

Henning, G.W. and Roberts, D. (2016). *Student Affairs Assessment: Theory to Practice.* Stylus Publishing, Inc.

Kuh, G. D. (2001). The National Survey of Student Engagement: Conceptual framework and overview of psychometric properties.

Li, R.M., McCardle, P., Clark, R.L., Kinsella, K., and Berch, D. (Eds) (2001). Diverse voices: The inclusion of language-minority populations in national studies: challenges and opportunities. Retrieved February 8, 2023 from https://files.eric.ed.gov/fulltext/ED467683.pdf

Longwell-Grice, R. & Longwell-Garice, H. 2021. *At the intersection: Understanding and supporting first-generation students*. Sterling, VA: Stylus Publishing.

Olmedo, E. L. (1990). Minority faculty development: Issues in retention and promotion. In G. Stricker & E. Davis-Russell (Eds.), Toward ethnic diversification in psychology education and training (pp. 99–104). Washington, DC: American Psychological Association.

Piercy, F., Giddings, V., Allen, K. et al. (2005). Improving Campus Climate to Support Faculty Diversity and Retention: A Pilot Program for New Faculty. *Innovative Higher Education* 30, 53–66 https://doi.org/10.1007/s10755-005-3297-z

Pope, R.L., Reynolds, A.L., and Mueller, J.A. (2004). *Multicultural competence in student affairs*. Jossey-Bass.

Strayhorn, T.L. (2018). College Students' Sense of Belonging: A Key to Educational Success for All Students (2nd ed.). Routledge. https://doi.org/10.4324/9781315297293

Thomas, G., & Asunka, K. (1995). Employment and quality of life of minority and women faculty in a predominantly White institution. In G. E. Thomas (Ed.), *Race and ethnicity in America: Meeting the challenge in the 21st century* (pp. 295–308). Philadelphia, PA: Taylor and Francis.

Whitfield-Harris, L. (2016). The Workplace Environment for African-American Faculty Employed in Predominantly White Institutions. *ABNF Journal, 27*(2), 28–38.

W3C Web Accessibility Initiative. (n.d.) Accessibility Principles. Retrieved February 8, 2023 from https://www.w3.org/WAI/fundamentals/accessibility-principles/

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Developing a Digital Game Teaching Refugee Students English With Science Topic

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The IAFOR International Conference on Education in Hawaii 2023
Official Conference Proceedings

Abstract

A digital game-based learning platform has been developed to help refugee students to learn English using science topics. The aim of the project is to verify the potential of digital games as a valuable tool for refugee students and highlight the significance of game-based language education more broadly. The game-based learning platform prototype is introduced in this paper, including the design process, the flow of the game, and educational content embedded in the game, with a focus on overcoming the challenges encountered during its development. The game will supplement the middle school science curriculum, incorporating the Kansas Science Standards and the Next Generation Science Standards. In the game, the content will be presented in the form of subtitles having both the refugee students' native language and English. We expect the game will become a free and accessible educational tool for refugee students and will contribute to the improvement of their opportunities for education, thereby alleviating the level of their lives and helping them integrate into U.S. society. The long-term benefits of this project include a safe social setting for learning, freeing up time for parents, and reducing emotional trauma.

Keywords: Digital Game-Based Learning, English Language Learners, Refugee Students

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Introduction

For refugees' successful resettlement, one of the required conditions for them is to acquire the language of the host country/community where they newly joined. It is because acquiring the host language plays a key role in their social and economic integration into their new environment. Using digital games has been gaining attention as one of the effective ways for the purpose of learning new languages. Recent research studies (e.g., Aydın & Çakır, 2022; Xu et al., 2020) have shown that digital games can provide engaging and interactive learning experiences that can foster language development.

Recognizing the importance of refugees' language acquisition and the potential of digital games in language education, we have been developing a digital game-based learning platform where refugee students, who are in the resettlement process in the midwestern area of the United States, can learn English in fun ways with science topics. In addition, the digital game-based learning platform supplements middle school science curriculum, thereby ensuring that refugee children have additional resources in catching up with their American peers.

In this paper, a prototype of the game module, which is the current stage of the game platform development process, will be introduced with the challenges we encountered and the solutions we took while developing the prototype. In addition, we will describe the prototype in terms of its design, the flow of the game, and the educational content embedded in it. Through this project, we show that digital games could be a valuable tool for refugee learners to learn English while also highlighting the potential of such games in language education more broadly.

Background of the study: About Project Education for All

Refugees are defined as individuals fleeing violent conflict or persecution by the United Nations High Commissioner for Refugees (UNHCR). Over 2000 refugees have been resettled in Wichita, Kansas. Refugees are often underserved in their host countries due to a variety of reasons, including language barriers, exclusion in the host society, and inadequate educational opportunities. Most of the refugees resettled in Wichita are from the Democratic Republic of the Congo, Eritrea, and Afghanistan.

Refugees experience disruptions in schooling. In addition, English is not their first language, and this is a significant barrier when enrolling refugee children in U.S. school districts. It is estimated that more than half of school-age refugee children (3.7 million out of 7.1 million) are out of school (UNHCR, 2018). It has been demonstrated that once refugees meet the basic needs of food, water, and shelter, their primary concern is to ensure their children can go to school (UNHCR, 2001). The percentage of refugee children who are likely to be out of school is five times higher than children who are not refugees. Regarding higher education, refugees, on average, attend college at a rate of one percent, with the international average being 34% (UNHCR, 2016). These dire statistics show the need to create easier access to education.

Traditional educational systems in the U.S. are based on a "one-size-fits-all" philosophy. Recently there have been advances in designing personalized systems, addressing the needs of individual students (Gordon et al., 2016; Andallaza et al., 2012). However, these systems are currently being tested on people from western, educated, industrialized, rich, and

democratic (WEIRD) populations who represent only 12% of the world's population. We know very little about the effectiveness of these models and systems on special populations such as refugee learners. Education is a fundamental human right, and there are many refugee children who are unable to attend elementary and middle school, thereby leading to an increase in world poverty.

With the goal of providing equitable educational access to all, Wichita State University launched a project called 'Project Education for All' by creating a 'Center for Educational Technologies to Assist Refugee Learners' in October 2020. Working together with resettlement agencies in Wichita, community members and organizations, and providers of English as second language classes (ESL), the Center works to create accessible and free educational opportunities and technologies for refugee learners. This project addresses the issue of "providing inclusive and equitable quality education" (Sustainable development goal 4, UNESCO 2030) for refugee and asylee learners in the United States.

The entire project proceeds in four phases. The first phase of the project involved the creation of the 'Refugee Learning and Resettlement Team,' a memorandum of understanding signed between Wichita State University and local resettlement agencies in Wichita. Currently, stakeholders in this team include the City of Wichita, Breakthrough Community Church, the International Rescue Committee of Wichita, the Kansas Leadership Center, KMUW, and the Community Engagement Institute at Wichita State University. In the second phase of the project, we conducted a survey to assess the needs and requirements of the African refugee community (Menon et al., 2023). With the information collected through the needs-assessment survey, in phase three of this project, we developed an innovative, digital game-based learning platform called "Gorilla Bay," which will be introduced in the following sections of this paper, for refugee students in Wichita Public Schools. The project is currently in phase four. The game will be beta tested in Wichita school districts, as well as sent out to refugee children who are not enrolled in the school districts with the help of the City of Wichita.

Digital Game-Based Learning

Simply speaking, it could be said that digital game-based learning (DGBL) is a learning/instructional approach incorporating digital games into the instructional practice and/or learning process. Since Prensky (2001) coined the term DGBL with a broad definition which is any learning activity using digital games, DGBL has gained increasing attention from educational practitioners and researchers as an effective learning method. However, the use of games in education is not new. According to Hellerstedt and Mozelius (2019), the concept of using games has a long history, and some board games like Xiangxi, Chess have been used for thousands of years for educational purposes, such as training strategic and tactical thinking, language skills, mathematics, etc. However, it is also undeniable that the various digital technology advancements have made it possible and opened opportunities to use digital games in a more sophisticated and effective way. Nowadays, the use of digital games for educational purposes is growing, with more and more schools, colleges, universities, and professional development institutions adopting this approach to teaching.

One of the reasons why the interest in the use of digital games has been growing is because DGBL has several advantages as a learning method. Games are engaging and fun, and this can help students stay motivated and focused on learning. They also provide a more immersive learning experience, allowing students to interact with the content in a way that is

not possible with more traditional teaching methods. Regarding the advantages of DGBL, research has shown that digital games are a useful educational tool for improving students' motivation, attitude, and performance (Bai et al., 2012; Beserra et al., 2014; Byun & Joung, 2018; Chen et al., 2012; Lin et al., 2013; Rayya & Hamdi, 2001; Vogel et al., 2006).

Language learning is one of the areas where DGBL has been found to have positive effects on students' learning outcomes since digital games can provide students with an interactive and engaging environment to learn a new language. In this regard, Xu et al. (2020) asserted that many studies reported that DGBL was effective for English language learning in vocabulary, pragmatics, grammar, writing, and speaking by reviewing and summarizing previous research studies. Also, Nitisakunwut et al. (2022) found that the genres, availability, and platforms of games influence the effectiveness of digital game-based language teaching.

In sum, DGBL is an effective and engaging method for learning not only in general but in the context of language learning and provides many advantages that students cannot take through traditional teaching/learning methods. It has been shown to have positive effects on students' learning outcomes, particularly in the area of language learning. As technology continues to evolve and improve, it is likely that DGBL will become even more popular and widely used in the future. Due to such benefits for the language learning that DGBL has, we have been developing a digital game titled 'Gorilla Bay' to help refugee students learn English. In the following section, the game development process will be explained briefly, followed by an explanation of the game.

Game Development

As mentioned earlier, the main purpose of this study was to develop a digital game for refugee students to learn English using science concepts. In order to decide the best game engine for the project, the game development team compared two game engines, Unity and Unreal Engine. After examining the functions and capabilities that each engine has and the skills of the game development team, the Unreal game engine was selected. Figure 1 shows the screenshots of the game editor, Unreal, when using it to design the game environment and the sequence of the game scenes.
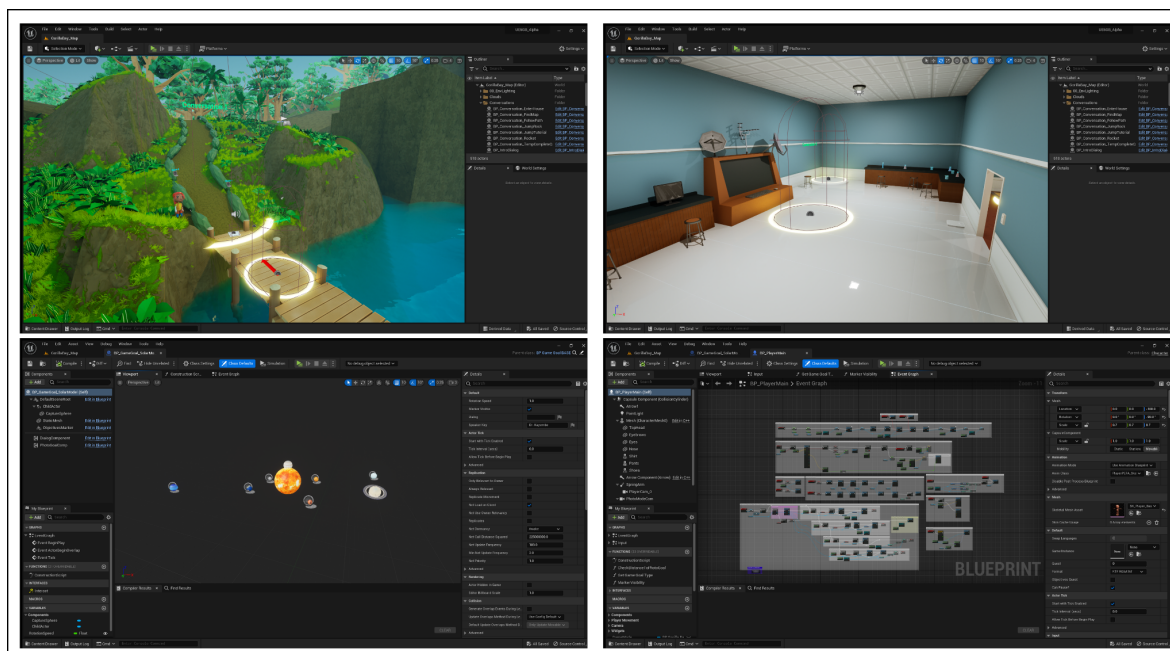
Figure 1. Screenshots of the game engine, Unreal

To maximize the learning effectiveness, the role-playing game (RPG) genre was chosen as the type of game because, compared to other game genres, RPG-type games can provide students with more opportunities to learn through solving problems and completing quests within the game environment. Previous DGBL studies pointed out the same advantage of RPG-type games. For example, Hussein et al. (2019) found that RPG is the most popular game genre for DGBL studies because learning and immersion often occur via exploration of the learning environment, interaction with Non-Player Character (NPC), customization, and controlling the game avatar while students are playing RPG type games. Therefore we expect that in the game, refugee students would interact with (NPCs) through dialogues to learn English, with the aim of being able to explain key science concepts.

After the decisions on the game engine were made and the genre that the game would adopt for the project was decided, the next task was to design the content of the game. The topics of the game content were determined through collaboration with local school teachers who teach refugee students in their classes and chosen carefully based on the Kansas Science Standards, the Next Generation Science Standards (NGSS), and the Kansas State Department of Education's English Language Arts and Literacy Common Core Standards. Since it was found that refugee students lack the opportunities to learn in the formal educational system before they arrive in the United States, unlike immigrant students, the topics were selected with caution so that the level of the content is not too difficult. Eventually, four main topics were selected, and each topic became one module. The four topics, which came from the middle school curriculum, are the solar system, the human body, states in the U.S., and life and echo systems underwater.

The game development process followed a typical game development process, as shown in Figure 2.
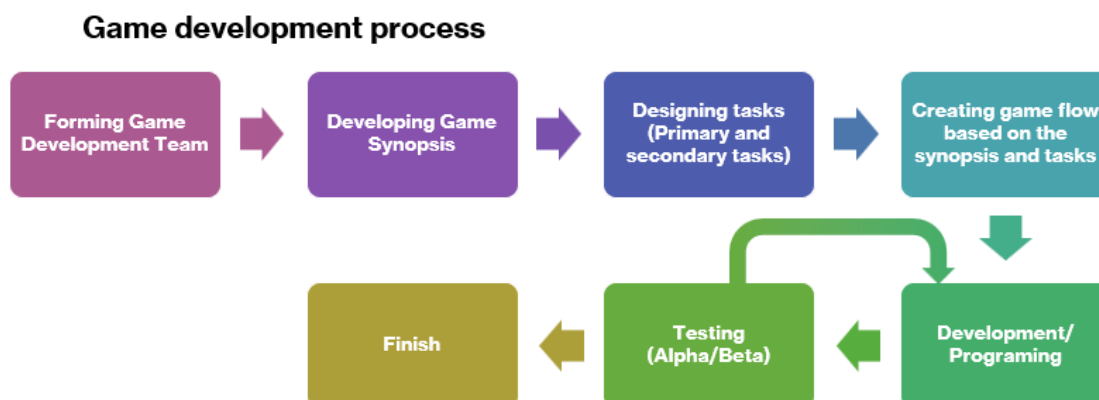
Game development process

Figure 2. Game development process

First, a game development team was formed. The team members consist of the project leader, an educational technologist who has expertise in DGBL, two professionals in game design and development, and two graduate assistants. And then, through collaboration, the team tried to develop the synopsis of the game. Initially, the team made attempts to develop the synopsis by incorporating elements of the refugees' lives to make an authentic game for the refugee students because learning can occur more easily in the context relevant to learners. However, the team faced several challenges in doing so, as follows. First, the game development team had no background knowledge about the refugees' previous or current lives that could be utilized to make the game more meaningful for them. Second, the materials/resources showing refugees' lives that the game development team could use were limited. Third, it was difficult to find a good person who could write a good game synopsis/story based on the refugees' lives. To overcome those challenges, the team tried a couple of strategic plans, including a game story-making competition in which the refugee students or parents could participate, a game design workshop with refugee students, changing the game genre from RPG to puzzle-type checking vocabulary, and creating our own storyline (by the game development team). Among those strategies, the game development team tried to hold a game story-making competition for the refugee students and parents. Due to the tight time schedule, however, there were not many entries, and the quality of the work was not satisfactory. Although the competition wasn't successful as we hoped, we think the outcome would be different and meaningful if we had a longer time frame for them. After an entire project team-level consideration, the development team eventually decided to create the storyline by themselves, resulting in a synopsis for the solar system module.

Once the synopsis was created, the tasks for players (refugee students) were designed using a flow chart, followed by making NPC dialogues. And then, the game was developed through programming and coding. When a module was developed, it was tested and revised as many times as needed.

Prototype

Currently, the solar system module is the first prototype that has been developed in this project. Figure 3 briefly shows the flow of the game module. As shown in Figure 3, after starting the game, players will navigate the game area, meet NPC (in this prototype, the NPC is a scientist), receive tasks/missions/problems from NPCs, take a journey to perform the tasks or to solve problems, and then come back to the NPC, mission giver to get rewards. While playing the game, the players get the information necessary to play the game through

dialogue with the NPCs, a scientist in this module, that is presented in the form of subtitles, and the subtitles are provided in two languages, English and the refugees' mother language. In the case of the prototype, the second language was Kiswahili (Figure 4).
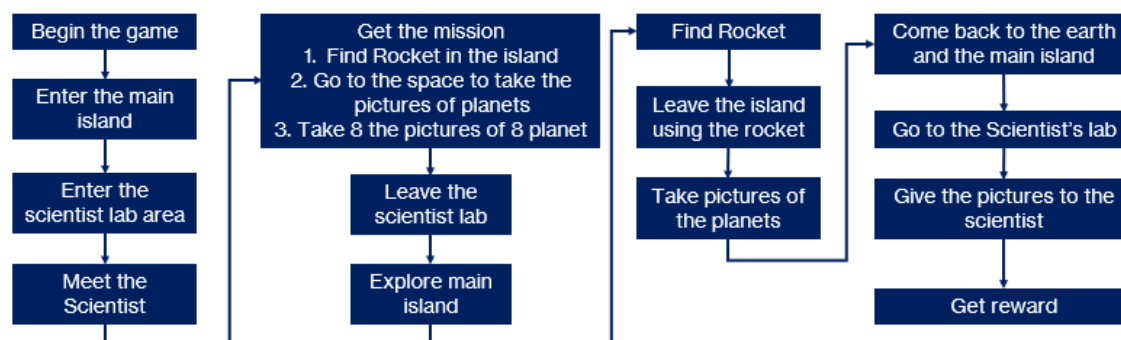

Figure 3. Game flow

Specifically, as players start this prototype game module, they are presented with the title screen first, where they can save and load the game. This feature made it possible for multiple students to play the same game. After selecting one of the save slots, once they entered their names, the game scene changed to the bay area, where an NPC, Dr. Kayembe, greets players. After a short greeting conversation between Dr. Kayembe and the players, the module starts tutorial mode. In the tutorial, through dialogue with Dr. Kayembe, players get informed about how to control their game character using a keyboard and mouse and the ways to navigate the game world, including the use of waypoints which will help players keep on track during play.
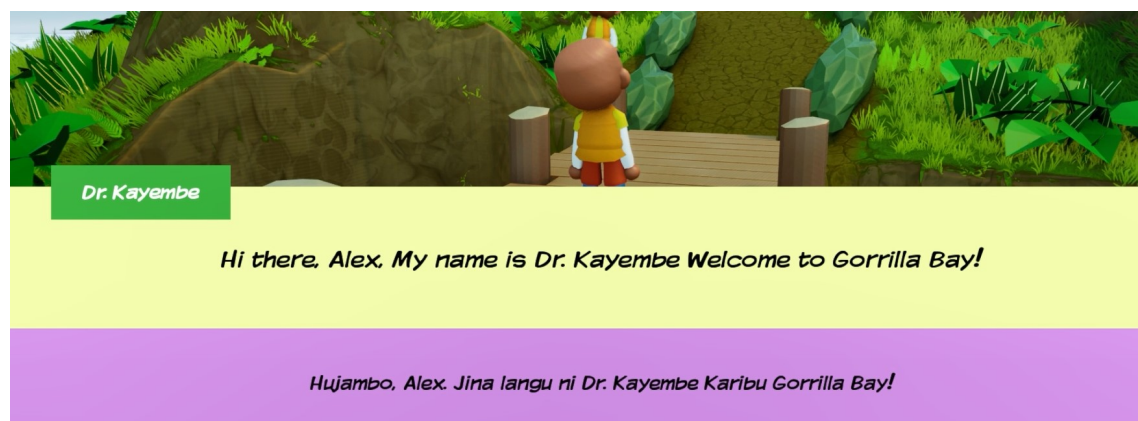

Figure 4. Subtitles in the game presented simultaneously in English and Kiswahili

Once players complete the tutorial part at the beginning of the game successfully, they start exploring the bay area to find Dr. Kayembe's science lab (Figure 5), where the players receive the first mission, which is to travel to outer space using a rocket ship and take pictures of the sun and all 8 planets. To do this, players must obtain the key first to get inside the rocket ship. Before leaving, players have the option to modify their character's look, including hairstyles, eyebrows, eyes, noses, shirts, pants, and shoes. This customization feature for changing the playing character's look will be updated with more options in the future.

Figure 5. Dr. Kayembe's Science Lab

After finding and launching the rocket, the game scene changes, showing space. In space, players play a kind of hide-and-seek game with the planets. When they see a planet, they take a picture of the planet starting with the Sun and move on until they take all the rest of the 8 planets. Players learn about the sun and each planet by taking pictures and resources stored in the library located inside the rocket ship. In the library, players also can interact with a solar system model that shows the planets orbiting around the sun (Figure 6). Once taken pictures of all the planets, players come back to Dr. Kayembe's lab and complete a test about what they have learned throughout the journey in space. If the players pass the test, they will get a token to move to the next module exploring the human body, which the development team is currently working on.
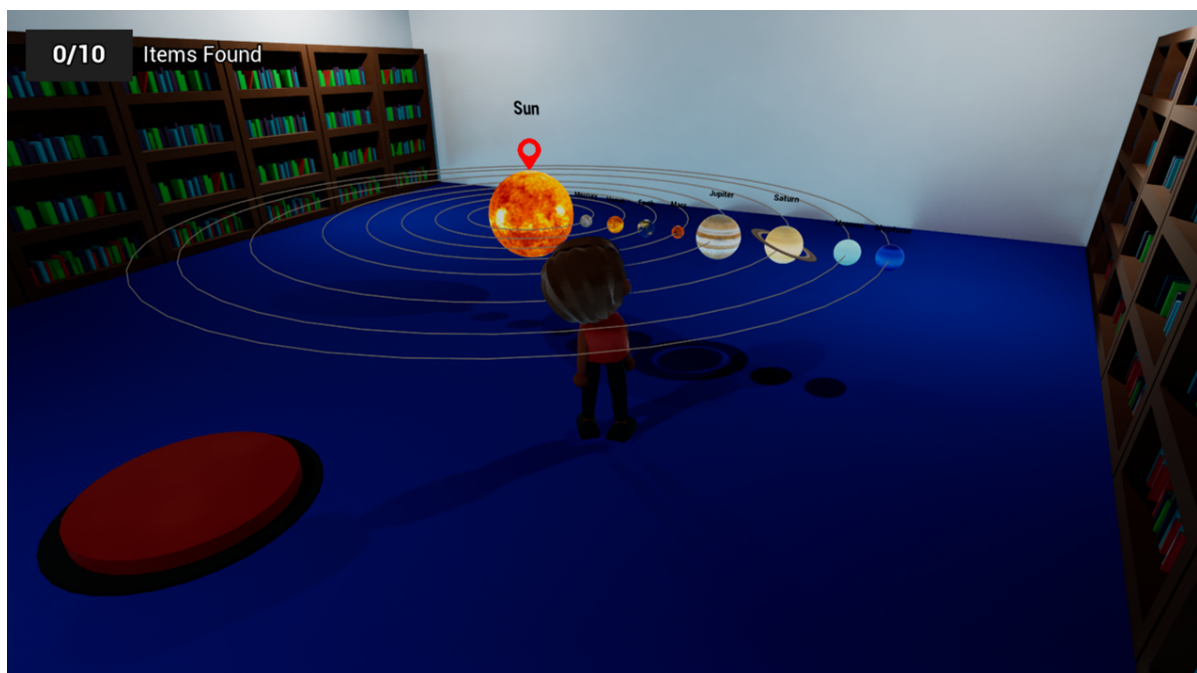

Figure 6. Solar system model in the library of the rocket ship

While playing the game, players interact with NPCs and keep receiving information necessary to play the game modules using dialogue boxes in the form of subtitles showing both English and their mother language. We hypothesized that such a way to present both languages in-game environments could help refugee students develop English vocabulary and reading skills. The effectiveness of this game will be tested through quantitative and qualitative data collection and controlled psycholinguistics experiments. Feedback will be sought from the students and the teachers using focus-group interviews. Based on the collected data, the game will be revised based on input from the teachers, refugee students, and parents.

Conclusion

The acquisition of the host language is a crucial condition for the successful resettlement of refugees, and digital games could be an effective way to help them to learn a new language. This paper introduces a prototype of a DGBL platform we developed to help refugees in the midwest area, specifically Wichita, Kansas, to learn English through science topics. The entire project aims to verify the potential of digital games as a valuable tool for refugee learners and highlight the significance of game-based language education more broadly.

In the future, the game we introduced in this paper will have both a desktop version as well as apps for both Apple and Android platforms. The game is developed to supplement the middle school science curriculum, and the modules are created using the Kansas Science Standards and the Next Generation Science Standards, as well as the Kansas State Department of Education's English Language Arts and Literacy Common Core Standards. Players have the option of personalizing their avatars, and they will complete a series of quests using role-playing that teach critical thinking skills, enhance student engagement, and improve student achievement. The unique aspect of this game-based learning platform is that the content will be presented to them in their native language (e.g., Kiswahili, Arabic, etc.) with a dictionary interface that translates the content into English. The aim of the game is to create a more engaging educational interface that fosters deep learning as well as literacy. Additionally, in our future research plan, there will be an interface for teachers and educators to immerse them in the cultural expectations of the refugee population.

The significance of this project is that it will help create free and accessible digital educational technology for refugee learners, thereby improving their opportunities for education and, a correlate, alleviating poverty. It will serve as a tool to empower refugee children and make them successful and help in integrating into U.S. society. As lack of education and poverty go hand in hand, increasing educational opportunities leads to a decrease in the world's percentage of poverty. Providing personalized game-based learning opportunities for refugee students will provide better lives and better standards of living. Education is a form of empowerment, especially for young girls. In addition, it reduces hunger, fights HIV/AIDS, spurs economic growth, and provides a foundation for peacebuilding (UNICEF, 2015).

By providing a free, accessible DGBL platform, this project will change the lives of thousands of refugees. During these uncertain COVID-19 times, the use of digital technologies is beneficial as formal school settings require money, time, and resources that they might not have access to. In addition, school districts can be spared from creating, staffing, and finding interpreters and translators. By allowing refugees to become responsible for their own learning, they can begin to learn much faster, quicker, and at their own pace.

With the current models of refugee education, refugees must wait for the government or an NGO to come in and set up paperwork, get materials, and staff the schools. Very often, this causes unnecessary delays in providing quick access to these special populations. Access to laptops, desktops, and mobile phones was assessed in a previous phase of this project, thereby ensuring that the educational platform will truly be accessible to the demographic population it is targeting.

The long-term benefits of this project include providing a safe social setting to learn, thereby helping relieve refugees of emotional trauma. Offering a digital platform for a child to learn also gives their parents time to do activities they need to do, such as searching for a job, or applying for a driving license, thereby allowing for better integration into U.S. society.

In today's current volatile world, it is important to note that many of these refugees are Africans, and they are subjected to racial discrimination, like the African Americans in society. There is an urgent need to address this issue, given what is happening in the world today. This growing gap in education between refugee children and American children will create a divide that will be too hard to close if the problem isn't addressed immediately. Thus, there is an urgency to create accessible educational tools and provide equitable education for all.

Acknowledgments

References

Andallaza, T. C. S, Rodrigo, M. M. T., Lagud, M. C. V., Jimenez, R. J. M., Sugay, J. O. (2012). Modeling the affective states of students using an intelligent tutoring system for algebra. In *Proc. International Workshop on Empathic Computing (IWEC)*.

Aydın, S. M., & Çakır, N. A. (2022). The effects of a game-enhanced learning intervention on foreign language learning. *Educational technology research and development, 70*(5), 1809-1841.

Bai, H., Pan, W., Hirumi, A., & Kebritchi, M. (2012). Assessing the effectiveness of a 3-D instructional game on improving mathematics achievement and motivation of middle school students. *British Journal of Educational Technology, 43*(6), 993–1003.

Beserra, V., Nussbaum, M., Zeni, R., Rodriguez, W., & Wurman, G. (2014). Practicing arithmetic using educational video games with an interpersonal computer. *Educational Technology and Society, 17*(3), 343–358.

Byun, J., & Joung, E. (2018). Digital game-based learning for K–12 mathematics education: A meta-analysis. *School Science and Mathematics, 118*(3-4), 113-126.

Chaudhary, A. G. (2008). Digital game-based learning–future of education?. *Pranjana: The Journal of Management Awareness*, *11*(2).

Chen, Z. H., Liao, C. C., Cheng, H. N., Yeh, C. Y., & Chan, T. W. (2012). Influence of game quests on pupils' enjoyment and goal pursuing in mathematics learning. *Educational Technology and Society, 15*(2), 317–327.

Gordon, G., Spaulding, S., Westlund, J.K., Lee, J.J., Plummer, L., Martinez, M., Das, M., Braezeal, C. (2016). Affective personalization of a social robot tutor for children's second language skills. In *Proc. of the Thirtieth AAAI Conference on Artificial Intelligence* (pp. 3951-3957).

Hellerstedt, A., & Mozelius, P. (2019). Game-based learning: A long history. In *Irish Conference on Game-based Learning 2019, Cork, Ireland, June 26-28, 2019 (Vol. 1)*.

Hussein, M. H., Ow, S. H., Cheong, L. S., Thong, M. K., & Ebrahim, N. A. (2019). Effects of digital game-based learning on elementary science learning: A systematic review. *IEEE Access*, *7*, 62465-62478.

Lin, C. H., Liu, E. Z. F., Chen, Y. L., Liou, P. Y., Chang, M., Wu, C. H., & Yuan, S. M. (2013). Game-based remedial instruction in mastery learning for upper-primary school students. *Educational Technology and Society, 16*(2), 271–281.

Menon, M, Marble-Flint, K., Gami-Kadiri, S., Mangaza, M., (2023) Educational Outcomes and Technology Access among Refugee Populations from Africa: A Needs-Assessment Study. *Proceedings of the Migration Conference 2022*.

Nitisakunwut, P., Hwang, G. J., & Chanyoo, N. (2022). Pedagogical Design Perspective of Digital Game-Based English Language Learning: An Analysis of Journal Publications From 2000 to 2021. *International Journal of Online Pedagogy and Course Design (IJOPCD)*, *12*(4), 1-28.

Prensky, M. (2001). *Digital game-based learning*. New York, NY: McGraw-Hill.

Rayya, M. A., & Hamdi, N. (2001). The impact of using educational games strategy conducted by computer-assisted instruction in acquiring the four mathematical skills for sixth-grade students. *Dirasat: Educational Sciences, 28*(1), 164–176.

UN High Commissioner for Refugees (UNHCR). 2001. *UNHCR: The Global Report 2001*. Geneva: UNHCR. https://www.unhcr.org/en-us/publications/fundraising/4a0d28726/global-report-2001.html

UN High Commissioner for Refugees (UNHCR). 2016. *UNHCR: Global Trends: Forced Displacement in 2016*. Geneva: UNHCR. https://www.unhcr.org/5943e8a34.pdf

UN High Commissioner for Refugees (UNHCR). 2018. *UNHCR: Global Trends: Forced Displacement in 2018*. Geneva: UNHCR. https://www.unhcr.org/5d08d7ee7.pdf

Umamah, A., & Saukah, A. (2022). Digital Game-Based Learning (DGBL): The Voice of EFL University Students and Teachers. *PASAA: Journal of Language Teaching and Learning in Thailand, 63*, 279-314.

Vogel, J. J., Greenwood-Ericksen, A., Cannon-Bowers, J., & Bowers, C. A. (2006). Using virtual reality with and without gaming attributes for academic achievement. *Journal of Research on Technology in Education, 39*(1), 105–118.

Xu, Z., Chen, Z., Eutsler, L., Geng, Z., & Kogut, A. (2020). A scoping review of digital game-based technology on English language learning. *Educational Technology Research and Development*, *68*, 877-904.

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