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Futuristic Education:
Utilizing ChatGPT as a Support Learning Tool

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Abstract

ChatGPT has grown in popularity among educators over the past few months. The way we teach and learn could be completely changed by the implementation of artificial intelligence (AI) technology in schools. Therefore, the main goal of this study is to determine in-depth public perceptions of ChatGPT use in Chinese educational programs, particularly for college students. Moreover, it also aims to examine how using ChatGPT affects writing performances. The foundation of this study is the technology acceptance model and the connectivism learning theory. Mixed methods will be used in questionnaires and in-depth interviews to identify the most prevalent issues with Chat GPT use on the university campus, and to suggest inclusive education initiatives that can support a secure and productive learning environment for WKU students. Besides, 200 respondents, including students, professors, and staff at WKU, will make up the sample. This study is beneficial for professors who teach writing at Wenzhou Kean University because it demonstrates how to use Chat GPT correctly to enhance students' own writing abilities. Furt hermore, the future application of Chat GPT in China's educational system will greatly benefit from the findings of this study.

Keywords: ChatGPT, Futuristic Education, Writing Ability, College Students, College Professors

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Introduction

Background of the Research

In recent years, artificial intelligence (AI) has become increasingly popular in the field of education. The use of AI technology in education has the potential to revolutionize the way we teach and learn. Moreover, it has already had influenced educational practices worldwide, including in the Global South and in newly emerging educational models like MOOCs, blended learning, flipped classrooms, and more (Zhang & Aslan, 2021). Among the many AI technologies, Chatbot leds to creating a system that can recognize questions and, with the help of domain-specific ontologies and natural language processing techniques, provide students with the answers (Clarizia et al., 2018). So far, ChatGPT is the world's most advanced chatbot. Unlike other chatbots, it can write convincing articles, solve problems in various disciplines, and generate effective computer code.

ChatGPT has taken the world by storm. Two months after its launch, it reached 100 million active users, breaking the previous record for the fastest user growth. Even though it is not very mature, enough to cause the attention of all walks of life, especially education industry. As it can already handle challenging exams and offer seemingly convincing responses. One research assessed ChatGPT's performance on the US Medical Licensing Examination. Three standardized tests of expert-level knowledge known as the USMLE are necessary. ChatGPT performed at or close to the 60% accuracy passing mark in all three tests (Kung et al., 2023). Therefore, lots of schools have taken measures against ChatGPT, like the University of Hong Kong (HKU). HKU calimed that ChatGPT and all other AI-based tools are temporarily prohibited from being used for coursework, classwork, and assessments (*About ChatGPT | HKU Teaching and Learning*, 2023). However, "ChatGPT is a phrase predictor, it's a system that has memorised a billion books so that it can guess what comes after the question you ask it. Everything it says is essentially a rehash of something that has been said before, by a human. It's not remotely intelligent" (Milmo & editor, 2023). While ChatGPT occasionally corrects its errors, it also sometimes exhibits overconfidence in its incorrect responses (Azaria, 2022). Therefore, it is not strong enough to systematically generate novel concepts and produce academic papers, mathematical arguments, or successful experiments.

While ChatGPT is not currently available in mainland China, it is only a matter of time before similar software appears in China. Traditional education is being pushed into a corner and educational reform needs to catch up with the development of technology. ChatGPT could be a big opportunity for education to reform itself. Currently, many American college professors, department chairs, and administrators are beginning to overhaul their classrooms in response to these dramatic changes. Redesign their courses to include more oral exams, group work and handwritten assessments (Huang, 2023). As a Sino-American cooperative university, Wenzhou-Kean University should also thoughtfully embrace ChatGPT as a support learning tool that can unleash creativity, provide personalized tutoring, and better prepare to get used to futuristic education. Therefore，this research topic will focus on the potential of ChatGPT in education and explore the various ways in which ChatGPT can be used to improve the efficiency of teaching and learning. Besides, it will also research the challenges associated with the use of ChatGPT in education, and try to find potential solutions to these challenges.

The purpose of this study is to comprehensively figure out the overall opinion on ChatGPT use in Chinese education programs, especially for college students. Also, the study aims to analyze the influence of using ChatGPT in writing performances.

Research Questions

1. What are students' and teachers' views on using ChatGPT as a learning support tool?
2. Does the benefits of using ChatGPT outweighs its disadvantages?
3. To what extent does using ChatGPT enhance students' learning skills?
4. Is there a significant difference in test performance with the help of ChatGPT and without using ChatGPT?

Research Objective

1. To figure out the general view of using ChatGPT as a learning tool among students and teachers in college.
2. To analyze the benefits and drawbacks of ChatGPT.
3. To explore the level of improvement of the learning ability of students who use ChatGPT.
4. To determine the significant difference in test performance using ChatGPT and without using ChatGPT.

Hypothesis

This study tested the hypothesis in the null form: There is no significant difference in test performances with the help of ChatGPT and without using ChatGPT.

Theoretical Framework

The Connectivism Learning Theory and the technology acceptance model serve as the foundation for this study. These theories provided explanations for the variables in this research.

The first theory is the technology acceptance model. It is thought there are 2 factors that affect students' acceptance of technology. According to a person's intention to utilize new technology is mostly influenced by two factors: (1) perceived ease of use and (2) perceived usefulness. Fred Davis defined perceived usefulness (PU) as the extent to which a person believes that employing a certain technology would enhance their ability to accomplish their job. It refers to a person's perception of the technology's utility for their intended use (Davis 1989).

According to Davis, perceived ease of use (PEOU) is the extent to which a person perceives that utilizing a given system would be free from effort (Davis 1989). This can be interpreted in this study that Young people who think ChatGPT is too difficult to play or a waste of time are less likely to adopt the technology, while young people who think ChatGPT provides necessary mental stimulation and is easy to learn are more likely to want to use ChatGPT. The figure below illustrates the final version of TAM and external variables indicating the element that may influence an individual's attitude, such as social influence (Davis 1989). People will have the mindset and intention to use the technology once these items (TAM) are in place. Yet, because each individual differs, the perception may vary based on age and gender.
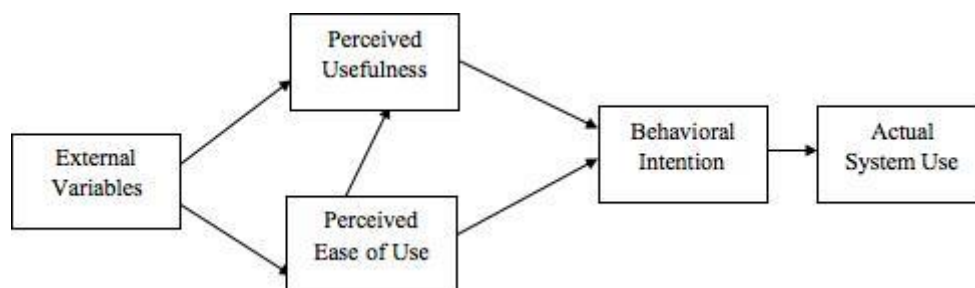
Figure 1: The final version of TAM (Venkatesh & Davis,1996)

The second theory appropriate in this study is the Connectivism Learning Theory of George Siemens and Stephen Downes. Connectivism is an emerging learning paradigm, that claims that students can effectively combine ideas, theories, and general knowledge through technology and network. Downes (2005) states acknowledged that technology plays a significant role in the learning process and that staying connected all the time allows us to make decisions about our learning. Connectivism encourages learning that takes place in environments other than a person, such as social media, online communities, or knowledge databases. ChatGPT is an emerging AI technology that provides users with comprehensive knowledge and information that can be used as a learning tool. From this theory, two terms—nodes and links—have been used to explain how we gain and connect the information in a network. Students are seen as "nodes" that can be connected to another object. While "links" help students make and maintain connections to form knowledge. As Downes (2005) states: "at its heart, connectivism is the thesis that knowledge is distributed across a network of connections, and therefore that learning consists of the ability to construct and traverse those networks". To be specific, using technology such as ChatGPT leads to a path to a broader knowledge field and makes it more efficient for learning and gaining knowledge.

Key Difficulties

Lack of Samples.
The study is facing a group of students in WKU using the bilingual language and has an urgent need for improvement in English. The most important limitation lies in the fact that the ChatGPT was developed by the American research lab OpenAI, which is not officially available in China (Yeung & Chang, 2023). Also, as ChatGPT is an emerging new scientific and technological achievement, few WKU students have experienced using ChatGPT as a tool.

Availability of Data.
Since it is a new topic that there are only a few studies have been conducted in this area. According to Doolan et al. (2007), researchers can get results considerably more rapidly, at a lesser cost, and without subjecting new participants to many of the possible drawbacks of research involvement, in particular, by leveraging an existing data set. Data availability supplies the researcher with approaches and previous research sources and outcomes, which presents an essential role in providing reference and research basis. As ChatGPT is an emerging technology, researchers lack existing data on ChatGPT information and its influences, especially in China. The lack of reference information and materials impacts the study, making the data collection and analysis more essential to current and future studies.

Research Instrumentation.
The researchers could hardly find a validated questionnaire on the topic of ChatGPT. It might affect the validity and reliability of the research, which proves to be the most fundamental and important psychometric properties in data interpretation (Cook & Beckman, 2006). Internal consistency could be influenced since this study has the difficulty in identifying the correlations between its various items to assess the same broad concept yield results that are comparable because we have no standard questions that have been illustrated by the previous research before. Also, the degree to which the scores accurately reflect the variable they are supposed to can be inaccurate which may determine the level of validity.

Methodology

Participates and Procedure

This study obtained approval from the Ethics Committee of Wenzhou Kenan University, All procedures performed were in compliance with required ethical standards. A mixed-method approach, incorporating both qualitative and quantitative methods was employed in this study. Data collection utilized a combination of survey and semi-experimental methods. We gathered sample data from 200 students and 12 professors at Wenzhou Kenan University using the online survey platform, Wenjuanxing. Participants were selected on a voluntary basis through convenient sampling and provided informed consent. After excluding invalid data, the student sample included 39 male (19.5%), 156 female (78%), 5 Other (2.5%), and included 49 freshman, 104 sophomore, 37 junior, 8 senior and 2 graduate students. In the professor sample, there was 7 male (58.33%) and 5 females (41.67%). Included 2 have taught 3-5 years (16.67%), 3 have taught 5-10 years (25%) and 7 have taught 58.33% years (58.33%). Data collection occurred in November 2022, and the administration of the questionnaire took approximately 12-18 min. Additionally, we invited 1 student who obtained A level in the basic English course (ENG1430). These students were divided into several batches for pretest-intervention-posttest.

Measures

1. Student ChatGPT Scale

To assess the current usage of ChatGPT among students, we developed a self-made questionnaire and sought validation from an authoritative professor in the field. The scale consists 15 items (e.g., "Have you ever heard of ChatGPT before?") that reflect the perspectives of students at Wenzhou Kenan University on the benefits, drawbacks, and availability of ChatGPT. In this study, the Cronbach's α coefficient for this scale ranged from 0.85 to 0.93, indicating that the analysis of the internal consistency is effective. This study also employed semi-structured interviews.

2. Professor ChatGPT Scale

Professor ChatGPT is measured through a self-made scale that validated by an authoritative professor in the field. It consists of 17 items (e.g., "Have you ever used ChatGPT as a teaching or research tool?"). These items reflect Wenzhou-Kean University professors' familiarity with ChatGPT and their recognition of it as a teaching tool.

3. ChatGPT Assistance in Reading

To examine the impact of ChatGPT on reading, we employed a semi-experimental research design with pretest-intervention-posttest phases. In the pre-test phase, participants completed a prepared IELTS reading test within 13 minutes without external influence or assistance. During the intervention phase, participants were granted access to ChatGPT to familiarize with reading materials. Participants could use ChatGPT for tasks such as translating reading passages or requesting summaries. In the post-test phase, participants were presented with the same reading questions as in the pre-test, and were required to complete them within 13 minutes. This was aimed to assess the impact of participants' individual review efforts and the use of ChatGPT on their reading performance. The study reflects the potential benefits of integrating ChatGPT to aid English language learners in enhancing their IELTS reading scores.

Ethical Consideration

Based on the recommendations of the Sino-Foreign University's Ethics Committee, ethical norms will be implemented. Following Bryman (2016), we shall reaffirm fundamental ethical precepts such as the respondents' voluntary involvement, the participants' safety from physical or emotional harm, and the participant's identity being preserved. Moreover, Wilson & MacLean (2011) shall be followed, guaranteeing privacy and secrecy. The majority of participants will maintain anonymity by using fictional identities. Participants will not be required to comment on subjects they may deem sensitive.

Research Design

One of the key components for adequately answering a research question is an appropriate research design (Cresswell,2009). The research design is a well-organized strategy that offers a precise framework for data collection. This study will utilize a mixed method in terms of qualitative and quantitative methods. Additionally, the research will also adopt the questionnaire approach and semi-experimental method.

The mixed methods will be utilized in questionnaires and in-depth interviews to identify the prevalent issues on the Chat GPT use on the university campus and propose inclusive education initiatives that can promote a secure and productive learning environment for WKU students. The cornerstone to gathering information for any research study is a research questionnaire (Creswell, 2009). Researchers will create a self-made questionnaire that will be validated by professors who are authorities in this field. Besides, the study will gain insights into the Focus Group Discussion approach to comprehensively interpret the understanding of users on Chat GPT. To ensure participant anonymity and privacy, the validated questionnaire will be given online in addition to in-depth interviews that will be conducted either in person or virtually.

The semi-experimental method was chosen because semi-experimental studies can use both with-intervention and without-intervention measurements as well as non-randomly selected control groups (Harris et al., 2006). The researchers emphasize the significance of participants and focus on exploring the difference in students' test performance with and without using ChatGPT as a learning and reviewing tool.

Data Gathering Procedure

The study will start in March to December 2023. Table 1 shows the schedule of data gathering. The following treatment phase were illustrated and explained.

Table 1: Schedule of data gathering and where it was conducted

Schedule of Data Gathering		
	When	Where
Pre-Test	November 22, 2023	WKU lab
Treatment Phase	November 24, 2023	WKU lab
Post Treatment Phase	November 24, 2023	WKU lab

The pre-test will be done on November 22, 2023; It is done through the pre-tests that researchers provide at the WKU classroom. The pre-test will identify the levels of learning abilities. The treatment phase will be done on November 24, 2023. The students are met at the WKU classroom, and later Chat GPT is introduced in their material learning procedure. Post-treatment is done on the same day as the treatment phase. The different phases are presented in Figure 2 below:

Pre-Treatment Phase
Profiling of the participants
Checking Students' Original Level and Proficiency in learning

Treatment Phase
Implementation of Chat GPT as support tool in assignment

Post-Treatment Phase
Writing post-test
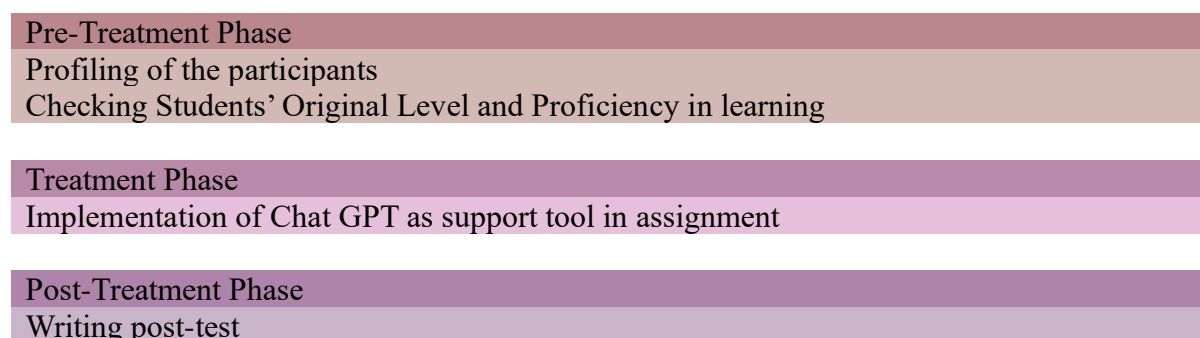
Figure 2: Research Design Framework

Phase 1. Pre-treatment Phase
The group was given a questionnaire about their attitudes before doing the pre-test. There are 28 items in the survey. Then they will do the pre-test, which is one of the parts of the pre-treatment phase. The pre-test will check students' learning capability, entry level and profile the population as well. The 35-item designed questions for the materials that researchers provide are used to conduct the test to determine the student's performance in learning and reviewing. By giving the participants a material and giving them 20 minutes to prepare for the material-based test, the pre-test is completed in this period. Then, researchers will mark the test paper.

Phase 2. Treatment Phase
The Treatment phase contains two groups. Based on the pre-test scores, the researchers will divide the respondents into two groups of generally average levels. Participants will be provided reading material and will learn it in a given time. The experimental group will be allowed to use ChatGPT as a learning tool, including the possibility of asking ChatGPT to spot-check their mastery and help them refine material focus and content. The control group will complete the review independently.

Phase 3. Post-treatment Phase

A post-test is organized during the post-treatment phase. The self-made post-test based on the provided materials will be given to participants after the treatment phase. This measure aims to explore the differences in learning outcomes between using Chat GPT as a tool and without using Chat GPT.

Data Analysis

Another step that researchers could take is to gain a fundamental understanding of qualitative data analysis. All quantitative data will be analyzed using SPSS software. Normally, researchers will look at the raw data and pinpoint important themes in light of the qualitative information gathered. The main techniques for analyzing qualitative data in this study are topic and narrative analysis. Researchers can gain a greater understanding of the participants' experiences and perspectives by using thematic analysis. A narrative analysis would also be used to gain a holistic view of the participants' experiences because it is also anticipated that study participants will create stories and share their social and cultural context. This would allow the researchers to see and feel how the phenomenon occurs in the social setting. In light of the literature review and theoretical perspective, researchers create patterns and key themes for a deeper comprehension of the subjects and better interpretations of the major findings.

Results

Experiment Results

Table 2: Experiment result

Group	Mean		Standard deviation		P value	Decision
	Pretest	Posttest	Pretest	Posttest		
EG	1.67	1.75	1.07	0.97	0.585	Retain

The experiment results showed that there is no significant difference in pre-test and post-test scores of the students in reading comprehension before and after using ChatGPT (p =0.585), which implies that the use of ChatGPT actually did not have a measurable impact on the students' reading abilities. We infer that the main reason might be that the questions we used was too detail-focused instead of testing participants' general understanding of the materials. And most of the participants mainly used the translating (n = 10) and summary (n = 7) functions (see Table 3), so actually they cannot really get full use of ChatGPT as we expected. Therefore, participants found it difficult to review and answer the test questions with the help of ChatGPT. At this level, there is a discrepancy between the question setup and the actual participants' usage of ChatGPT's capabilities. It is important to recognize the disparity that exists between the way the questions were initially written up and how participants actually use ChatGPT. We have decided to keep these results despite the small sample size of this study, however we acknowledge that conclusions should not be generalized too hastily. Subsequent investigations ought to carefully examine and regulate factors, guaranteeing a more comprehensive examination of ChatGPT's effectiveness as an educational aid.

Table 3: The functions of ChatGPT used by participants

Functions of ChatGPT	Frenquency	Percentage
Summary	7	58%
Translate	10	83%
ask for detailed information	3	25%
help with setting questions	2	17%
ask questions related to the article	1	8%

Questionnaire

Existing Student Perceptions of ChatGPT

Table 4: Students' familiarity with ChatGPT

Degree	Frenquency	Percentage
very familiar	26	13.68%
somewhat familiar	140	73.68%
not familiar at all	24	12.63%

Table 5: The level of trust among students in ChatGPT

Degree of trust	Frenquency	Percentage
very confident	25	13.16%
somewhat doubtful	161	84.74%
not confident at all	4	2.11%

The results indicated that the majority of students (74%) have a moderate level of familiarity with ChatGPT, 14% of the participants were very familiar with ChatGPT. And 84% of students hold a skeptical and doubtful attitude towards ChatGPT, with only 13% expressing high trust in it. This indicates that while ChatGPT generated considerable excitement during its initial release, students still approach it with curiosity and caution.

The functions students preferred to use

Function	numbers of students
For fun/for chatting	80
Enhancing creativity	48
Gaining professional knowledge	62
simplify certain lessons in a course	41
Practice a second language	32
Explain difficult concept	63
Provide personalized feedback	42
Help format essays	38
Spell-check and grammar-check for assignment	67
Brain storm	86
Searching information	116
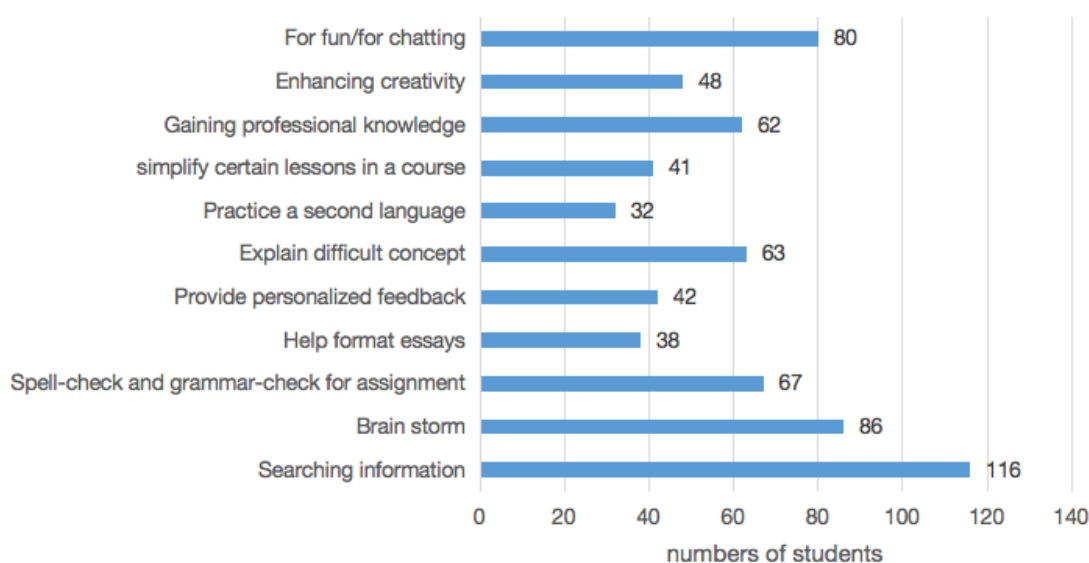
Figure 3: Functions students preferred to use

The functionalities most commonly used by students are information retrieval (61.05%), brain storming and generating opinions (45.26%), and entertainment (42.11%), while the utilization of features for assisting independent learning is relatively limited.

Finding 3- Questionnaire- Attitude
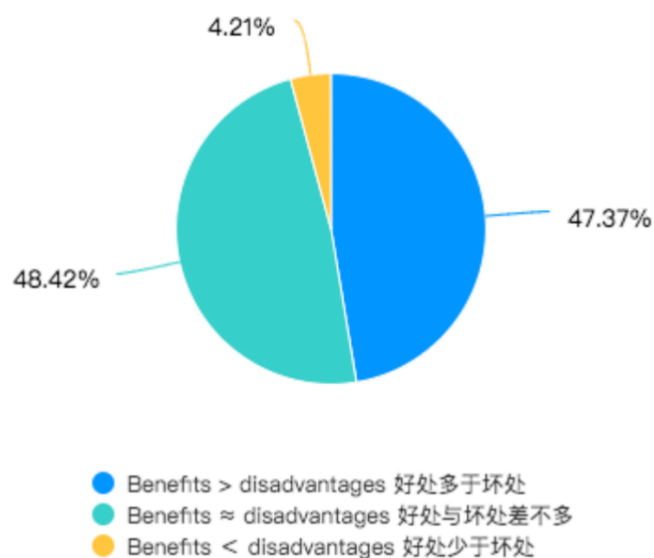
Figure 4: Students' attitude torward the potential benefits of using ChatGPT

Generally speaking, close to half of the participants believe that the benefits of using ChatGPT outweigh the drawbacks.

Specifically, the participants identified several advantages. The main advantages include efficiency (90%), assistance in learning (73.33%), and inspiring new perspectives (66.7%). Others also discover its value in boosting creativity (43.33%), enhancing linguistic abilities (34.44%), and support the advanced technology in AI that can be used in learning (35.56%).
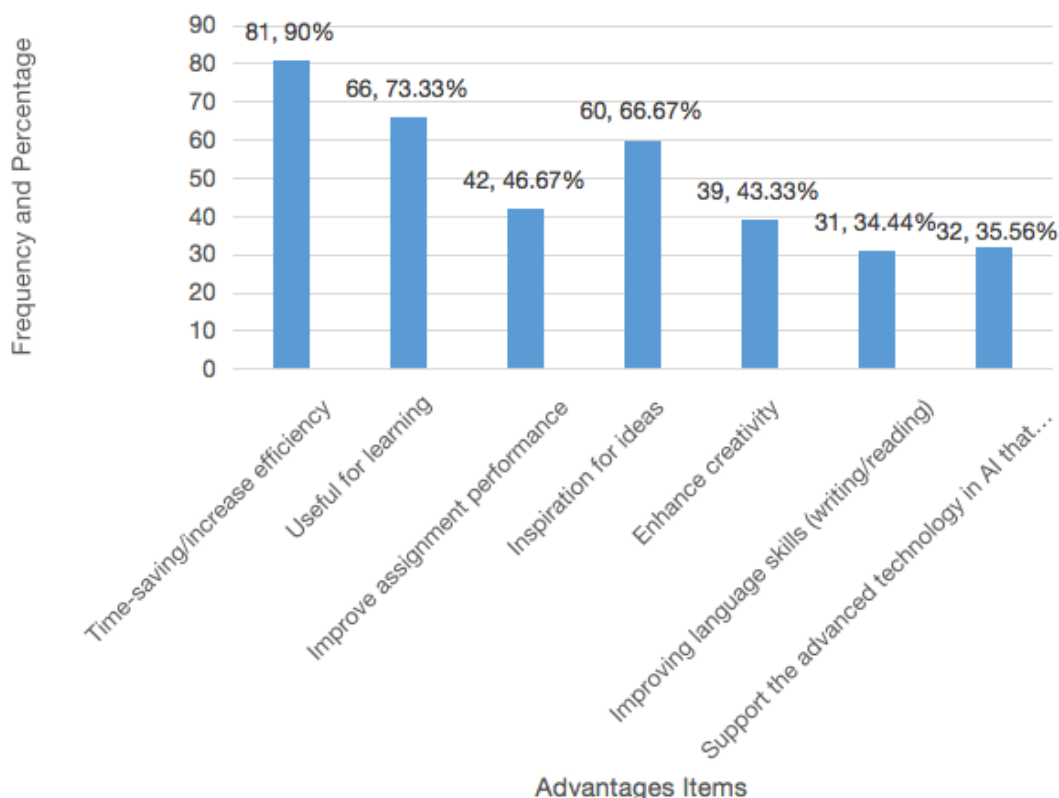
Figure 5: The advantages of using ChatGPT

The main drawbacks identified are the potential for cheating (77.37%), a lack of creativity (62.11%) and critical thinking (64.21%), and the possibility of inaccurate information (64.74%). Additional drawbacks encompass languange barrier (35.79%) and right issues (46.84%).
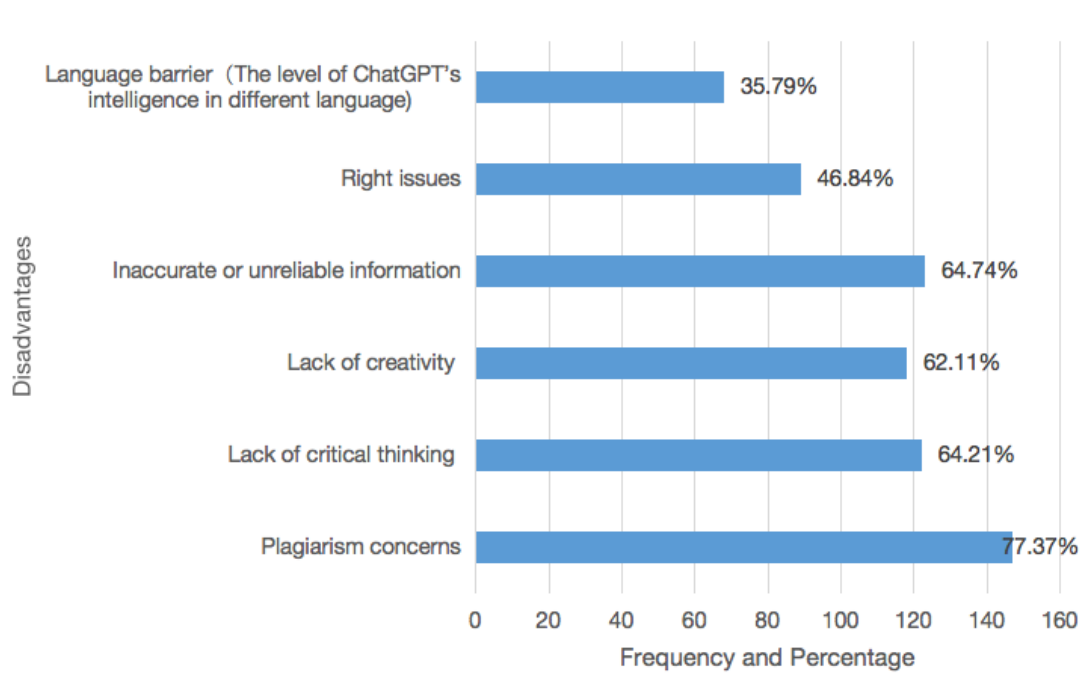
Figure 6: The disadvantages of using ChatGPT

Finding 4- Questionnaire- Future Prospects of ChatGPT

To conclude, the prevailing sentiment among most participants leans toward an optimistic outlook regarding the future evolution of ChatGPT. The majority of respondents (78.95%) are likely to express an interest in delving further into ChatGPT and its possible applications within their respective fields, while a minority (21.05%) may not share this enthusiasm.
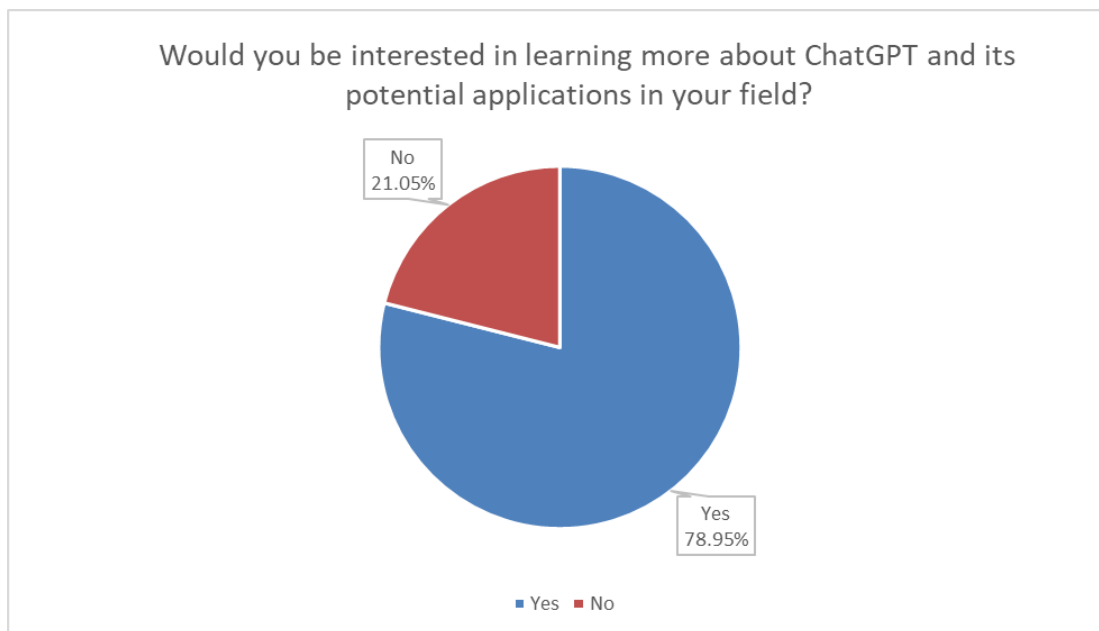
Figure 7: Students' interests in learning more about ChatGPT

The prevailing viewpoint among the majority of respondents (91.58%) is a positive outlook on the future improvement of ChatGPT, with only a minority (8.42%) maintaining a pessimistic stance.
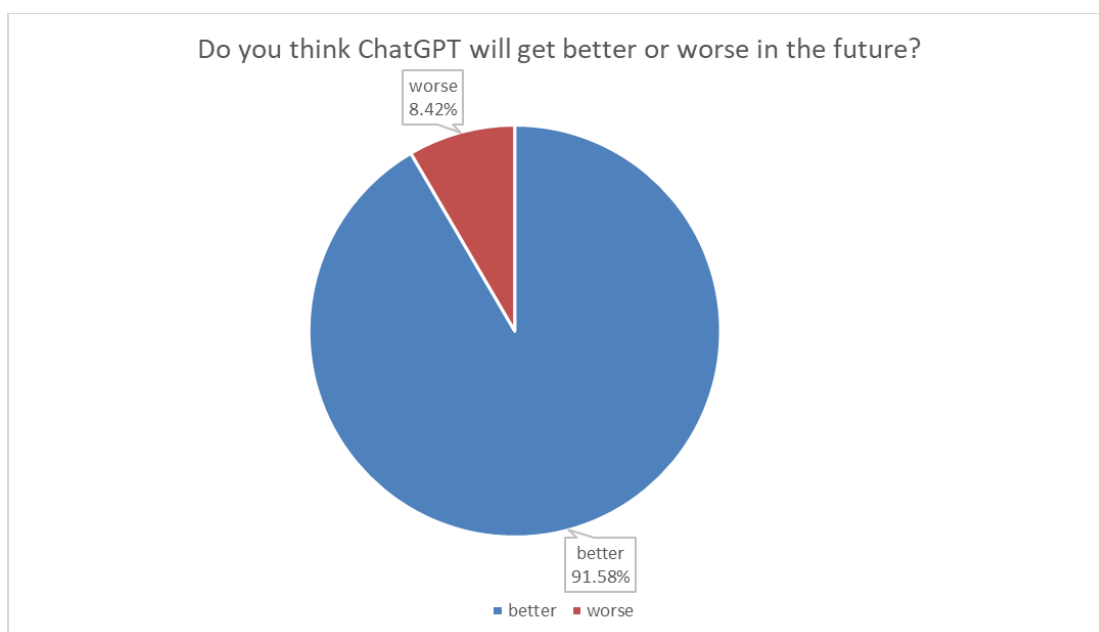
Figure 8: Students' perception in whether ChatGPT will better in the future

Questionnaire—Professor's View on the Use of ChatGPT

Demographic Profile of the Respondents

1. Respondents' Distribution by Gender

Figure 9 presents the Respondents' Distribution by Gender. Of 12 respondents in the survey, 7 or 41.67 % were males, while 5 or 58.33 % were females.
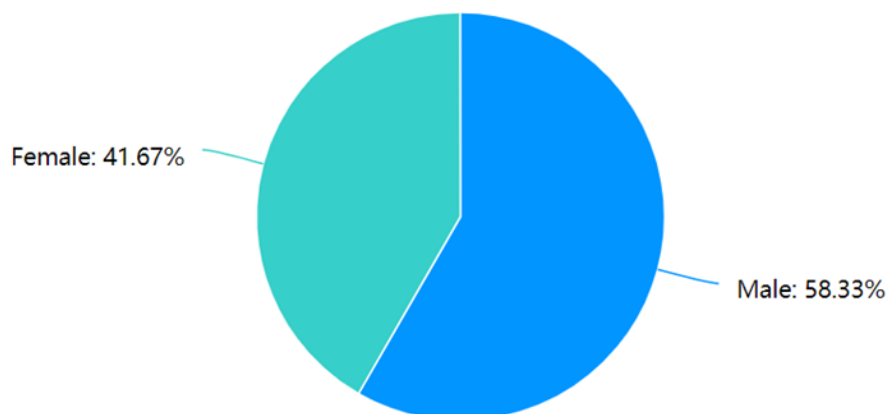
Figure 9: Respondents Distribution by Gender

2. Respondents' Distribution by College

Figure 10 presents the Respondents' Distribution by College. Of the12 respondents, 1 or 8.33% of them were College of Business & Public Management (CBPM), followed by 7 or 58.33% of them were College of Liberal Art (CLA); 1 or 8.33% of them were College of Architecture & Design (CAD); 3 or 25% of them were College of Science and Technology (CST).
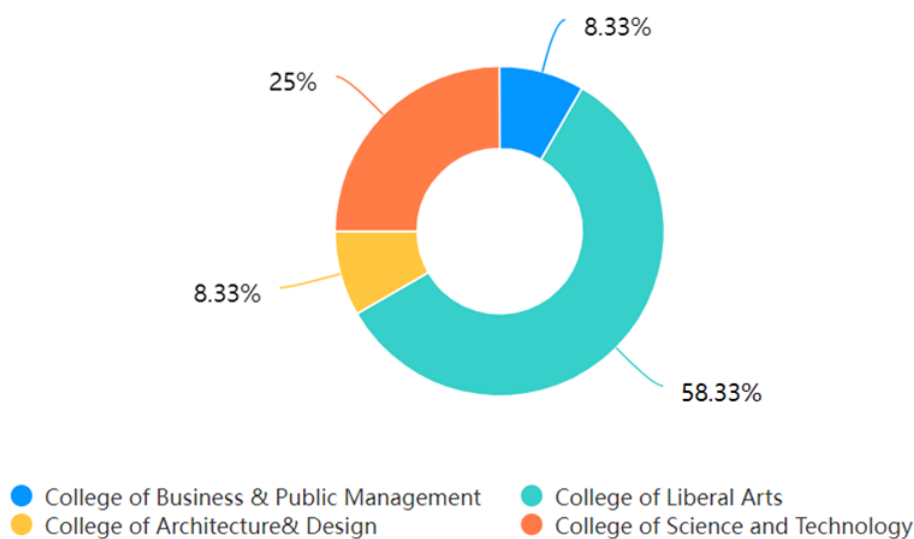
Figure 10: Respondents' Distribution by College

3. Respondents' Distribution by Teaching Years

Figure 11 presents the Respondents' Distribution by teaching years. Of the 12 respondents, no one has taught for less than two years; 2 or 16.67 % WKU professors have taught 3-5 years; followed by 3 or 25% WKU professors have taught for 5-10 years; 7 or 58.33% WKU professors have taught more than 10 years.
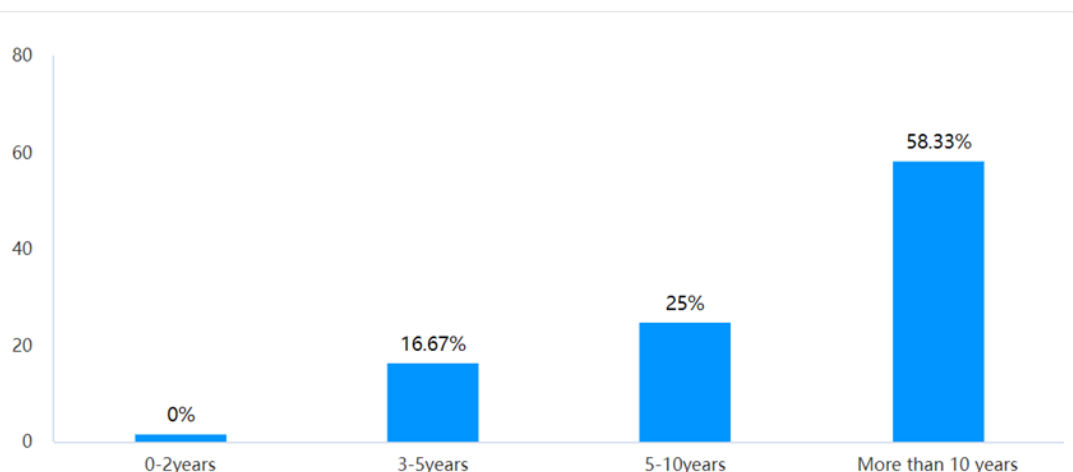
Figure 11: Respondents' Distribution by Teaching Years

Figure 12 presents the Respondents' Distribution by present position. Of the 12 respondents, no one is executive director or chair professor in WKU; 1 or 8.33 % is a Dean or Head of School; followed by 4 or 33.33% are Associate professors in WKU; 7 or 58.33% are senior lecturer in WKU.
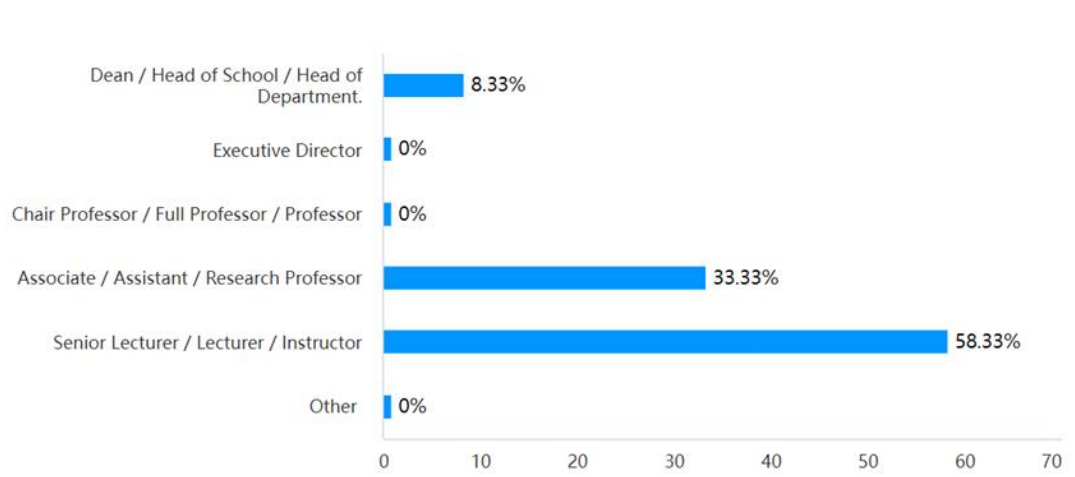
Figure 12: Respondents' Distribution by Present Position

Investigating the Usage of ChatGPT

1. Respondents' Awareness and Familiarity of ChatGPT

Figure 13 presents the Respondents whether have heard of ChatGPT before. Of the 12 respondents, 1 or 8.33% WKU professor have not heard of ChatGPT before; 11 or 91.67% had heard of ChatGPT before.

Figure 14 presents how the Respondents are familiar with ChatGPT. Of the 11 professors who had heard of ChatGPT, 1 or 9.09% WKU professor was very familiar with it; 9 or 81.82% WKU professors were somewhat familiar with ChatGPT; 1or 9.09% WKU professor was not familiar at all.

No: 8.33%

Yes: 91.67%
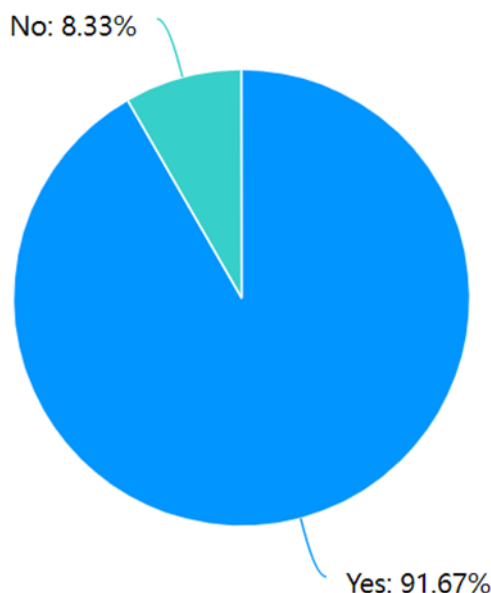
Figure 13: Respondents whether have heard of ChatGPT before

9.09%   9.09%

81.82%

● Very familiar   ● Somewhat familiar   ● Not familiar at all
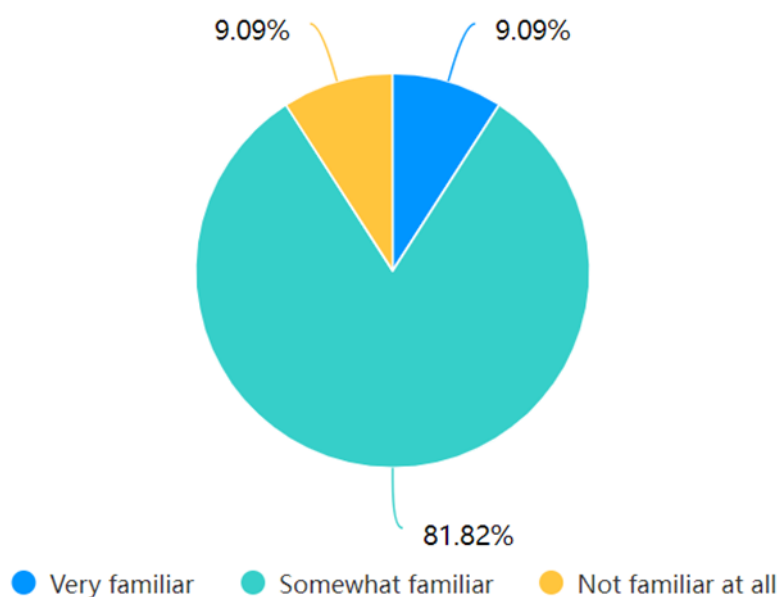
Figure 14: How the Respondents are familiar with ChatGPT

2. Respondents' Usage Pattern of ChatGPT

Figure 15 presents the Respondents whether have used ChatGPT as a teaching or research tool before. Of the 11 respondents who had heard about ChatGPT before, 2 or 18.18% WKU professors have used ChatGPT as teaching or research tool before; 9 or 81.82% WKU professors have not used ChatGPT as a teaching or research tool before.

Figure 16 presents how useful it was for Respondents' teaching or research. Of the 2 professors who had used ChatGPT for their teaching or research, 2 or 100% WKU professors think ChatGPT is somewhat useful for their teaching or research.

Figure 17 presents the Respondents' use of ChatGPT in teaching or research. Due to multiple choices, the total percentages would be greater than 100%. Use of ChatGPT in WKU professors' teaching or research was ranked in order of percentage as follows: Generating discussion topics/Syllabus > Enhancing creativity > Answering students' questions = Providing feedback = Teaching a foreign language. It can be seen that generating discussion topics/ Syllabus is the main use in WKU professors' teaching or research.
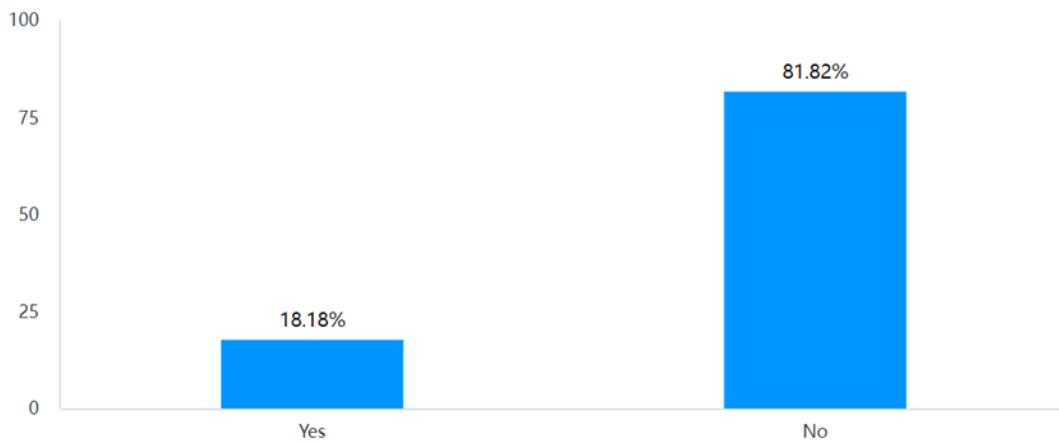
Figure 15: The Respondents whether have used ChatGPT
as a teaching or research tool before
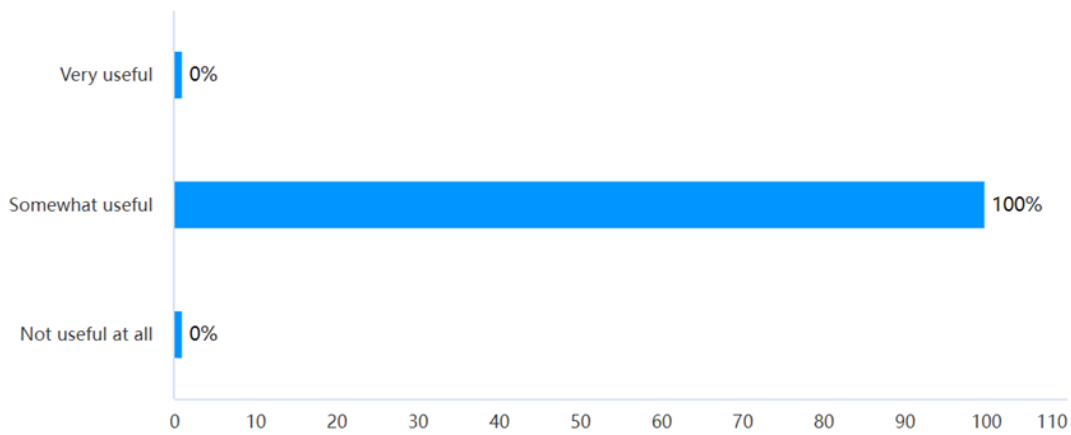
Figure 16: How useful it was for Respondents' teaching or research
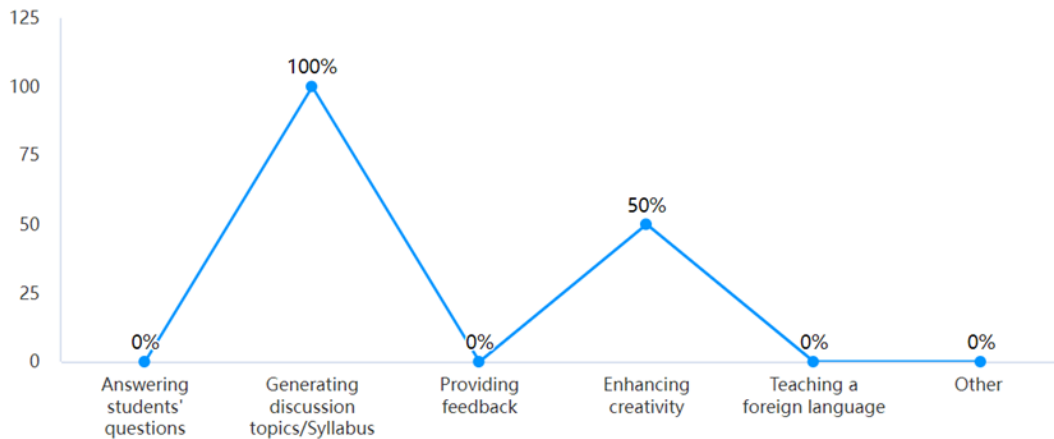
Figure 17: The Respondents' use of ChatGPT in teaching or research

Exploring the Attitude Towards Student's Usage of ChatGPT as Learning Support Tool

1. Respondents' Attitude Toward ChatGPT Whether Is a Useful Tool for Students

Figure 18 presents the Respondents' opinions on whether ChatGPT could be a useful tool for students. Of the 12 respondents, 1 or 9.09% WKU professor supposes ChatGPT definitely is a useful tool for students; 10 or 90.91% WKU professors suppose ChatGPT is a useful tool to some extent.
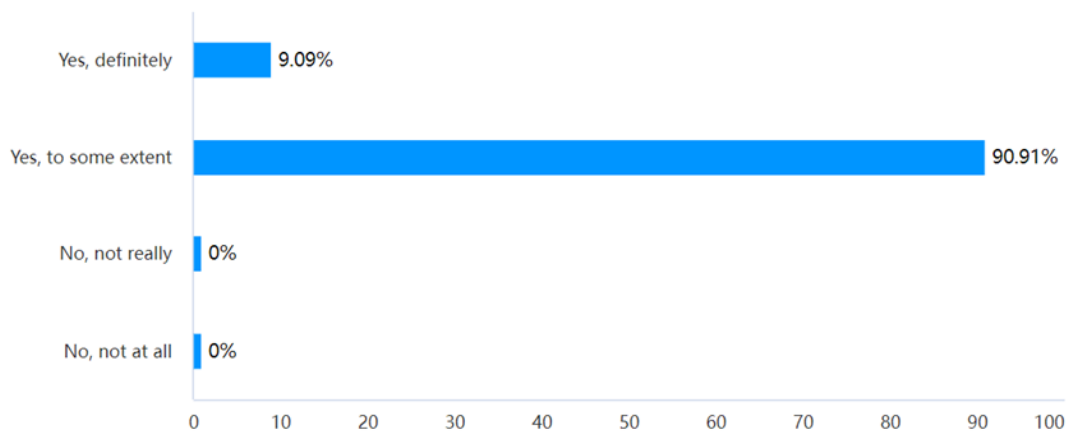
Figure 18: The Respondents' opinions on whether ChatGPT
could be a useful tool for students

2. Respondents' Reasons for Whether ChatGPT Is a Useful Tool for Students

Due to multiple choices, the total percentages would be greater than 100%. Figure 19 presents Respondents' reasons that ChatGPT could be a useful tool for students. Reasons of ChatGPT could be a useful tool of students was ranked in order of percentage as follows: Exploration > Idea generation > Language Learning = Time-saving. It can be seen that exploration is the main reason that ChatGPT could be a useful tool of students.

Figure 20 presents Respondents' reasons that ChatGPT could not be a useful tool for students. Reasons of ChatGPT could not be a useful tool of student was ranked in order of percentage as follows: Lack of critical thinking > Cheating = Plagiarism Concerns > Inaccurate or

unreliable information. It can be seen that lack of critical thinking is the main reason that ChatGPT could not be a useful tool of students.
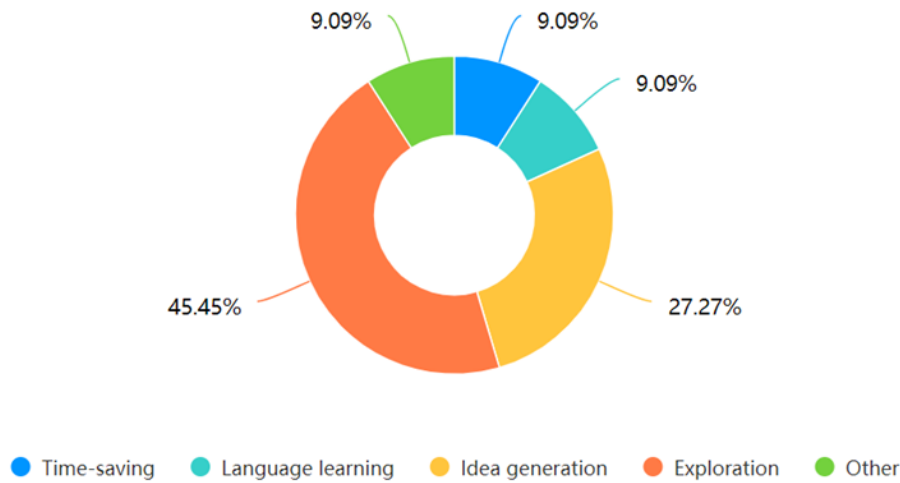
Figure 19: Respondents' reasons that ChatGPT could be a useful tool for students
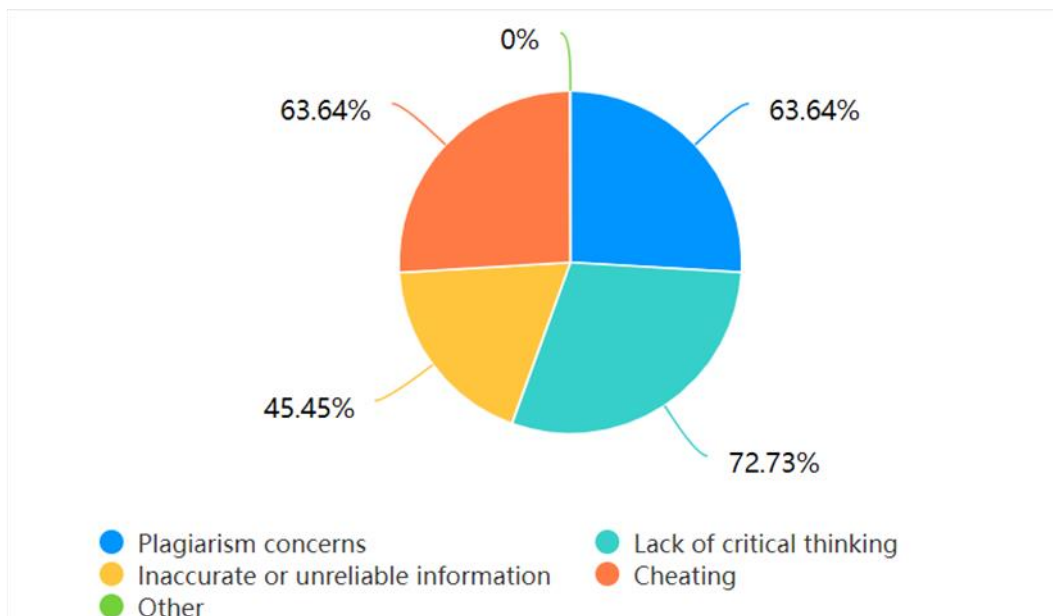
Figure 20: Respondents' reasons that ChatGPT could not be a useful tool for students

Discussion and Conclusion

This quasi study explores the role of ChatGPT as a learning aid through experiment and mixed method survey, as well as the acceptance and use of ChatGPT by students and professors at Sino-foreign joint universities. The experimental results showed that the addition of ChatGPT did not produce a significant difference in the pre-test and post-test scores of reading comprehension ($p = 0.585$). The lack of this effect suggests that, at least in the context of this study, ChatGPT did not significantly improve students' reading ability. One possible explanation for this result is a mismatch between the detail-oriented nature of the test questions and participants' primary use of ChatGPT's translation and summarization features.

The differences between problem setting and actual use highlight the need for a more consistent approach in future research.

In the survey questionnaire, we found that the majority of students (74%) reported moderate familiarity with ChatGPT, with 14% reporting high familiarity. However, an overwhelming 84% of people expressed doubts and doubts about ChatGPT, and only 13% showed high trust. This suggests that, while there was initial excitement about the release of ChatGPT, students approached it with curiosity and caution. The pervasive use of information retrieval, brainstorming, and entertainment features suggests that students have not yet exploited the full potential of ChatGPT to assist autonomous learning. ChatGPT is not widely used in students' autonomous and independent learning.

When considering the perceived advantages and disadvantages, nearly half of the participants believed that the advantages of using ChatGPT outweighed the disadvantages. Efficiency, learning assistance and the stimulation of new perspectives are considered key advantages. Instead, the possibility of cheating, lack of creativity and critical thinking, and the possibility of inaccurate information were considered major disadvantages. These findings highlight the nuanced perspectives students hold regarding the usefulness and limitations of ChatGPT.

A survey of Wenzhou-Kean University professors revealed differences in familiarity among educators, suggesting the need for targeted awareness initiatives and professional development opportunities to ensure informed use of ChatGPT in academic settings. Professors' perceptions of ChatGPT as a useful tool for students were primarily positive, with 90.91% finding it useful to some extent. This is consistent with perceived benefits reported by students, emphasizing the potential for exploration, idea generation, language learning and time saving. However, the concerns expressed by students and professors, particularly regarding a lack of critical thinking, cheating, and potential plagiarism, highlight the need for careful and thoughtful integration of ChatGPT into the learning environment.

The current study provides valuable insights into the complex dynamics surrounding the adoption of ChatGPT as an educational tool. The results indicate that while there is potential for its utility, careful consideration of factors such as problem setting, user familiarity, and the balance between advantages and disadvantages is critical for its effective integration. The use of ChatGPT is becoming more and more common in Sino-foreign joint schools. Under this trend, students need to fully understand the functions and usage of ChatGPT, and choose learning assistance methods that suit themselves and their goals. The findings also highlight the importance of collaborative approaches between educators and students, and the need to explore appropriate levels of use. How to take advantage of artificial intelligence tools such as ChatGPT and deal with potential crises and challenges are issues that people in this era have to face.

Future prospects for ChatGPT integration as a learning tool are promising, especially in higher education settings. Professors and students in high school and college may come up with creative methods to use ChatGPT's features for academic purposes. As more instructors and students get acquainted with ChatGPT, its use in higher education may go beyond basic assignments like brainstorming and information retrieval. It might be possible to work together to integrate ChatGPT into coursework to support language acquisition, idea production, and the examination of various viewpoints. According to the study, a sizable percentage of participants thought ChatGPT was helpful for efficiency and help with learning, suggesting that it could support academic pursuits.

Proactive steps must to be taken to avert possible overuse or dependency. It is possible to hold awareness campaigns to inform academics and students about the proper and moral use of ChatGPT. It is essential to promote a balance between the use of the instrument and autonomous thought. Using ChatGPT in conjunction with critical thinking activities helps promote a more all-encompassing learning strategy.

In summary, there is a great deal of potential for improving learning experiences when ChatGPT is incorporated into the educational system. As technology develops, it's critical to adjust and look for novel approaches to utilizing AI's advantages while maintaining ethical and responsible use. A comprehensive strategy that takes into account how the dynamics between technology and education are changing should direct future research and applications.

Innovation and Significance of Study

This paper is significant to the university, students, academic and educational system. This research helps determine how Chat GPT be better applied in the university and benefit students. Professor's view will be studied in this research. It has been found that ChatGDP is good at looking for factual answers but poor in writing academically. Moreover, it can help educators rethink how to make more challenging assignments and tests, to help students learn more (Thorp, 2023). This research will study the acceptance of this new learning tool by professors and students to determine whether universities can well accept it. As this is a new supporting learning tool, students' interest easily rises. The feeling of freshness order about them to make more and better use of it. Previous research has found that ChatGPT can help researchers conduct systematic reviews precisely and save time (Wang et al., 2023). If it can be widely used, it will be more convenient and practical for students to deal with complex literature. Whether the benefits of using ChatGPT outweigh its disadvantages will be studied in this research. ChatGPT has various functions and has already been used to write papers, summarize literature and drafts, and improve essays (van Dis et al., 2023). Students' reliance on it will be enormously improved if it is widely spread and used. However, students' reliance on learning tools heavily affects their academic performance. This research will try to balance using the learning tool and independent learning. This topic is innovative and has not been studied yet. Though it is limited to Sino-foreign joint universities, it still has its reference significance. The biggest problem that ChatGPT face is the academic integrity problem. It will be a significant step forward for the education system if it can be used and promoted within reasonable scopes.

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Peer and Cooperative Learning at the Freshman Level Digital Forensics Course Enhancement Through a Mentor-Mentee Program

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Abstract

The impact of peer- and cooperative learning is two-fold: Not only do the mentees benefit, but the mentor also has a lot to gain. This forms the basis for our research. We seek to imbue active-learning and community-engagement pedagogical techniques into the introductory digital forensics course series, DF1 and DF2, at our institution (Sam Houston State University). These courses are required by the Digital Forensics major and seek to transform the freshman student into a digital forensic analyst by their junior year. Many students find this course series challenging. This leads to several issues: failure in subsequent courses, change of major, and a general degradation of student morale. An oft-repeated request from students is the availability of tutors/mentors for guidance. Lack of funding has been a primary impediment to alleviating this concern. Our research entails enlisting the DF2 students as mentors and pairing them up with specific mentees in the DF1 course, effectively creating a peer-learning community. The mechanics of our peer-learning implementation lends itself to making the classroom more responsive to diversity. It is well-known that instructors tend to orient themselves, in terms of both effort and positive affect, towards students whom they consider 'teachable' and steer away from students who they perceive to be difficult-to-teach. By pairing mentors and mentees with diverse backgrounds, and ethnicities, we are attempting to mitigate this issue and promote a robust and vibrant, diverse learning community.

Keywords: Digital Forensics, Mentorship Program, STEM Course Enhancement

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Introduction

Global economic changes have increased the demand for science, technology, engineering, and mathematics (STEM) professionals in the United States (Washington et al., 2006). However, in the US, less than half of the students who enter STEM undergraduate curricula as freshmen will actually graduate with a STEM degree (Wilson et al., 2012). To address this concern, it is imperative to take steps that will propel students towards success. Mentorship is an excellent tool for fostering college students' success (Crisp & Cruz, 2009).

Benefits of mentorship include improved academic performance, social integration, and retention rates (Campbell & Campbell, 1997), (Allen et al., 1999), (Mangold et al., 2002). Additionally, peer mentoring can play a big role in students' social identities, helping them develop a sense of belonging (Inzlicht & Good, 2006) by connecting with students in similar groups. It also helps in developing friendships with their peers which increases performance of underrepresented students who face uncertainty about belonging in a group (Walton & Cohen, 2007). As such, near-peer mentorship provides a critical support for students.

In this study, we incorporate a student mentorship program within the revamped Introductory Digital Forensics and Information Assurance course series. The study was effectively executed and completed by introducing a mentorship initiative which involved the pairing of experienced upper-level digital forensics students from DFSC 2316.01 (DF 2): Introduction to Digital Forensics and Information Assurance – II (an ACE certified course) with students from DFSC 1316.01 (DF 1): Introduction to Digital Forensics and Information Assurance – I. By integrating student mentorship as a cornerstone of the revamped course series, we aim to create an inclusive and empowering learning environment where students can thrive academically and personally.

This approach will contribute to the overall success and development of our students, further solidifying the position of the Introductory Digital Forensics and Information Assurance courses as pivotal components of the Digital Forensics major. These sequential courses, known as DF-1 and DF-2, form the core and foundational classes of the Digital Forensics major thus, they play a vital role in fostering student retention and success within our department.

To effectively execute the program, two DF2 students were appointed as the ACE (Academic community engagement) facilitators. These students were carefully chosen based on their knowledge, dedication, and grades in the DF1 class. As part of their duties, they were responsible for maintaining the Discord server created for the Mentor Mentee program communication, led the mentor mentee introductions and pairings, and acted as a direct point of contact and contribute their concerns and feedback on behalf of the students. All the communication regarding the mentor mentee program was facilitated by a Discord server created for the program with dedicated channels for each lab assignment, general communication, and resources.

As part of the mentorship program, the students of the DF1 and DF2 classes were given an opportunity to meet each other through a Discord call organized by the ACE facilitators. Through that, mentors and mentees were paired up with whom they could engage in regular one-on-one meetings and collaborate study sessions. To foster this supportive learning environment outside the classroom, mentors and mentees were assigned specific labs and projects to complete together. These hands-on activities would serve as opportunities for

mentees to gain practical experience under the guidance and supervision of their mentors. We aimed that this collaborative work would not only enhance the technical skills but also foster teamwork and strengthen the mentor-mentee relationship.

Throughout the semester, two labs/projects and one collaborative exercise were given with a time span of two weeks to complete each lab. Upon completion of the labs, the points would then be accounted for as extra credit on the class grade which kept students motivated. After every lab, we conducted a survey to gauge the glows (strengths) and grows (areas of improvement) of the program. The feedback from the first lab was then used to improve the next lab assignment. Overall, both the feedback surveys helped us gauge the effectiveness of the program.

Methodology

As part of the grant sponsorship, we developed and implemented materials for student learning. We developed two comprehensive digital forensics labs on key topics. These labs served as comprehensive guidelines that outlined a tutorial of the software, objectives, tasks and learning activities for student instruction. These instructions provide clear and concise directions, ensuring that students understand the purpose of the activity and can effectively engage with the provided resources.

To gauge student progress and understanding, we developed end of lab surveys. This allowed for the evaluation of students' performance and feedback on the mentorship program. Following the surveys, the results were compiled and analyzed. These assessment results provided valuable insights into the areas for improvement, and overall effectiveness of the program. The assessment outcomes helped inform future strategies and allowed for tailored feedback and support to enhance students' learning experiences.

By providing well-structured student instructions, implementing effective assessment tools, and analyzing assessment results, the grant-sponsored learning activities aimed to promote active student engagement, facilitate learning outcomes, and foster continuous improvement in the educational process through community engagement and mentorship.

The following were the questions used for the survey:
1. On a scale of 1-5, rate how likely you would take this class if it were not required. (1 is being not likely and 5 being very likely)
2. On a scale of 1-5, rate how much you are interested in the cybersecurity field. (1 is being not likely and 5 being very likely)
3. How many times have you met with your mentor/mentee?
4. Are you satisfied with your mentor/mentee relationship? (Strongly disagree, Disagree, Too early to tell, Agree, Strongly agree)
5. Is there a positive change with your mentor/mentee relationship compared to the first weeks? (Strongly disagree, Disagree, Too early to tell, Agree, Strongly agree)
6. List anything you feel would make this mentorship program effective.
7. What have you gained from this program?

Results and Discussion

By integrating this comprehensive mentorship program, we aim to create a nurturing environment that promotes peer-to-peer learning, encourages knowledge sharing, and fosters personal and academic growth. The mentorship program not only facilitated the acquisition of essential digital forensics skills but also fostered a sense of community and camaraderie among students within the department.

Additionally, the mentorship program extended beyond the classroom, providing mentees with access to a support system and a network of individuals who share similar academic and career goals. This aspect of mentorship was instrumental in fostering personal and professional growth, boosting student morale, and increasing retention rates within the Digital Forensics major.

By leveraging the expertise and insights of more advanced students, mentees benefited from personalized attention, gaining valuable insights into the intricacies of digital forensics and information assurance. Mentors, on the other hand, developed their leadership and communication skills while solidifying their own understanding of the subject matter through teaching and guiding their peers.

Figures 1 and 2 show the number of students from different majors in the DF1 and DF2 classes respectively. Additionally, the graphs also depict that prior to this course, majority of the students did not engage in any sort of mentorship activity. This observation sheds light on the prevailing lack of mentorship experiences among the students, suggesting a potential gap in their academic journeys before encountering the course material. Figures 3 and 4 show the level of interest for cybersecurity after lab 1 and lab 2 for DF1 and DF2 students respectively on a scale of 1 to 5 (1 being not interested and 5 being very interested). These graphs depict a growing interest in cybersecurity among students as the mentorship activities progress. This is a key indicator of progress that we gauged. Additionally, Figure 5 depicts the positive change felt among the students by participating in the mentorship program between 1 to 5 (1 being no positive change and 5 being considerable positive change). This feedback was gathered after lab 2 so that students could analyze and understand the personal progress they have throughout the program. It can be seen that among DF1 and DF2 students most of the responses were between 4 -5 which indicates considerable progress observed by the students.

Another aspect the survey aimed to understand from the students was their personal goals from the program and whether they achieved those goals at the end of the program. Figure 6 shows a word cloud of the key skills/goals students wanted to acquire from the mentorship program. Key concepts circled around gaining knowledge, helping others, gaining extra credit for class, developing working knowledge of the software and developing teamwork skills. After the successful completion of the program, students were asked about the skills/goals they accomplished from the program as depicted by Figure 7. Majority of the ideas in the word cloud revolved around learning digital forensics concepts, gaining experience, building teamwork skills and many more majority of which students wished to accomplish on the onset of the program.
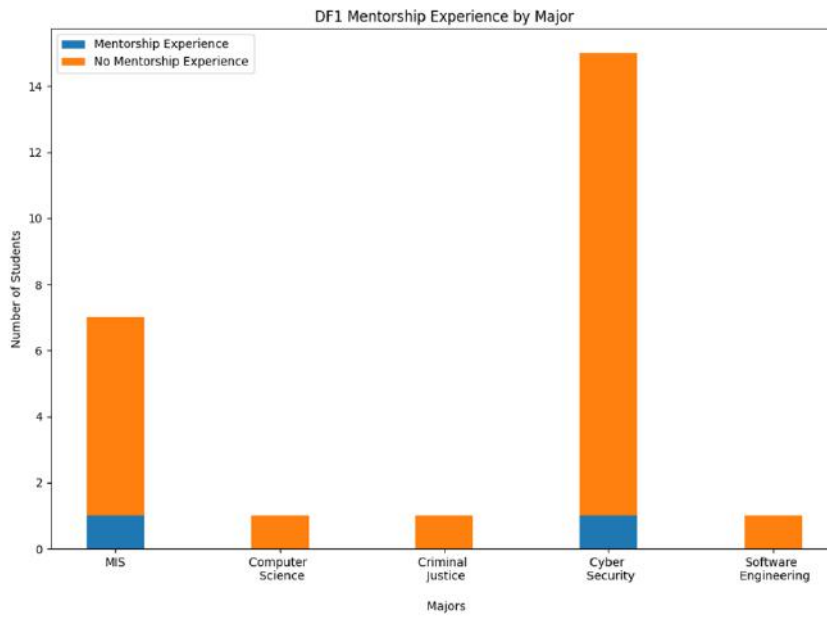
Figure 1: DF1 students mentorship experience by major
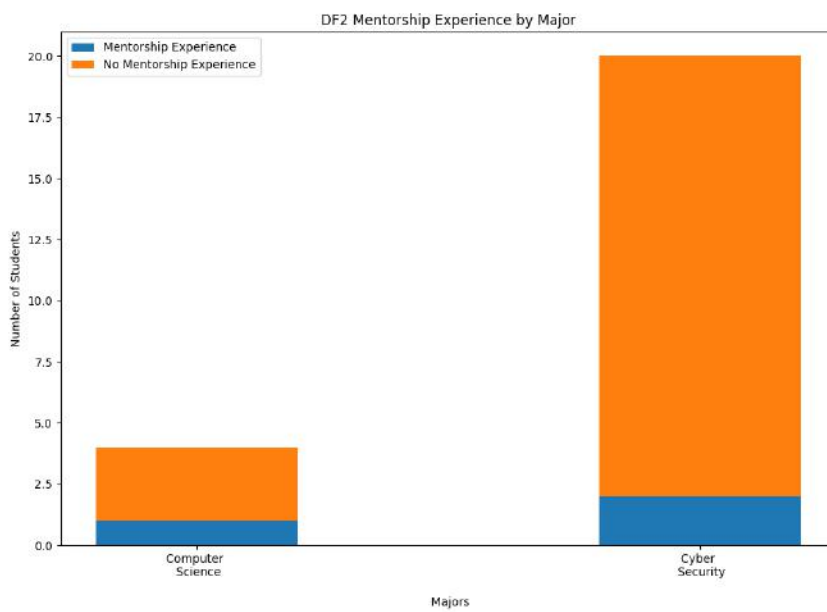
Figure 2: DF2 students mentorship experience by major
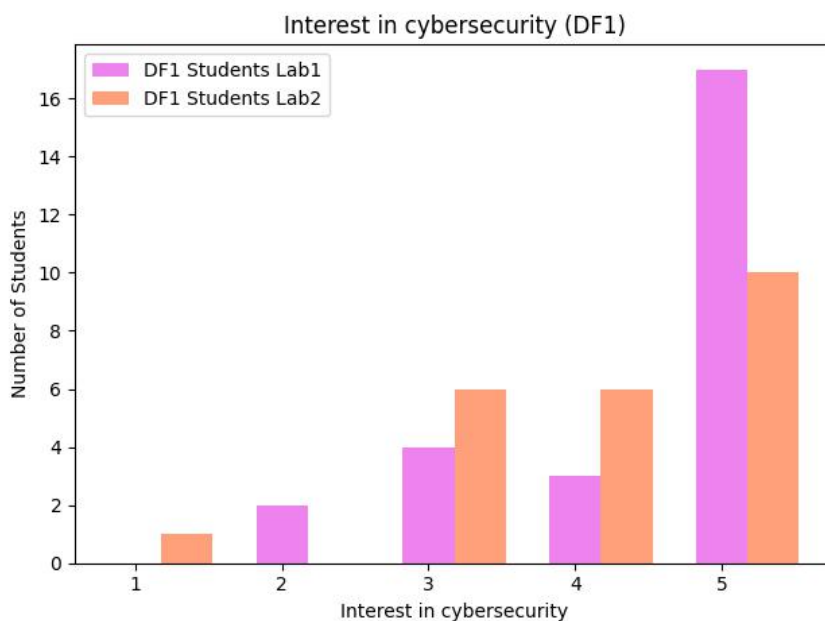
Figure 3: Level of interest in cybersecurity in DF1 students
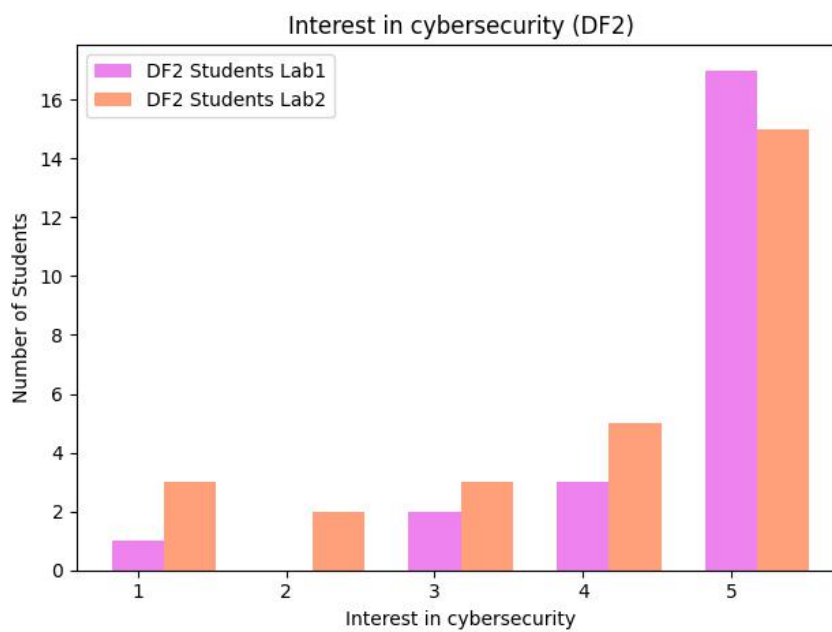
Figure 4: Level of interest in cybersecurity in DF2 students
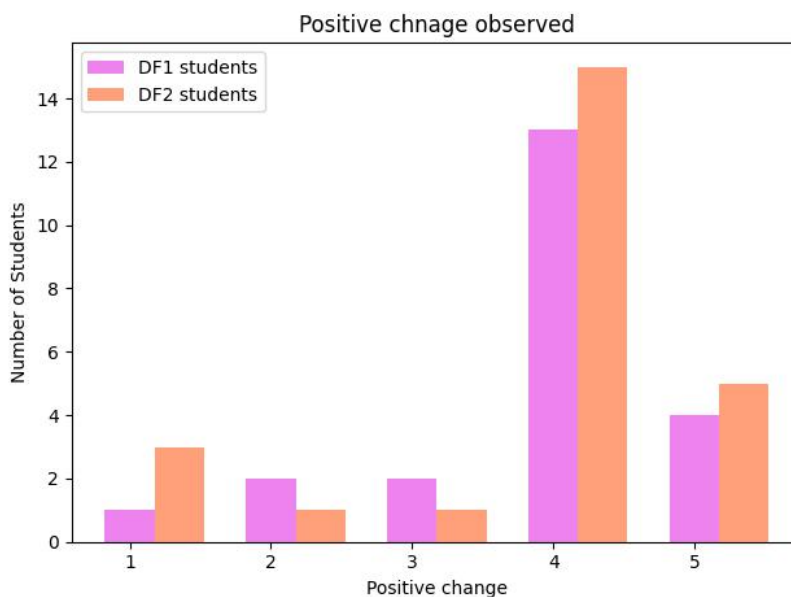
Figure 5: Positive change observed in DF1 and DF2 students

Figure 6: Skills students aimed to get from the program   Figure 7: Skills students gained from the program

Conclusion - Lessons Learned

The assessments conducted after every lab helped us gauge areas of improvement to help us effectively plan and execute the next mentorship activities as shown in Figure 8 and 9 respectively.

Some of the feedback received included pointers on:
1. The mentorship activity should include dedicated time for mentorship meetings/exercises.
2. The mentorship should constitute of bi-weekly meetings with reports.
3. There should be video tutorials on downloading and using the software.

Some of the lessons learned during this preliminary mentorship exercise included:
1. Students should be able to choose whether they would like to participate in the program or not so that they can immerse themselves in the experience and reap the benefits of the program.
2. Students should be given more time to choose their mentor based on their interests and working styles.

3. There can be a better way of tracking personal progress throughout the mentorship program which can be executed with meeting reports.

Figure 8: Areas of improvement after iteration 1   *Figure 9: Areas of improvement after iteration 2*

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Reading Comprehension of Junior High School Students With Hearing Impairment in the Post Pandemic Classes

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Abstract

Reading is an essential life skill and one of the focal concerns of the academic system particularly among the learners. However, Junior High School (JHS) with hearing impairment in the post pandemic classes are facing challenges in reading comprehension. Their hearing impairment is pointed out to be the reason for their difficulty in comprehending what they are reading. In this regard, this study identified S.Y. 2022-2023 JHS students with hearing impairment as the respondents. It sought to determine the reading comprehension level, hearing impairment level, and reading comprehension level according to the level of hearing impairment. This study used the descriptive survey design. The respondents of this study were JHS students with hearing impairment. Universal sampling or total enumeration of the respondents was used. An adapted reading comprehension test was used to determine the reading comprehension. The students' hearing impairment levels were determined based on the profile of the students. Frequency count, percentage, and weighted mean were the statistical tools used to answer problems 1, 2, and 3. The results reveal that the overall level reading comprehension is literal level, hearing impairment is profound, and that the reading comprehension is not dictated by the hearing impairment level. In this regard, emphasis on the use of different post pandemic reading strategies should be reemphasized and considered by the teachers in order to develop and improve the reading comprehension of the JHS students with hearing impairment in the post pandemic classes.

Keywords: Reading Comprehension, Junior High School Students With Hearing Impairment, Post Pandemic Classes

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Introduction

Bringing education back to face-to-face classes means that students even from special education are undergoing a phase of adjustment in their reading practices relevant to their reading comprehension. This transition poses a challenge on the reading comprehension of junior high school students with hearing impairment. Hence, this study aimed to determine the level of reading comprehension, hearing impairment, and the level of reading comprehension according to their hearing impairment in the post pandemic classes. This study can help reading coordinators understand the needs of the JHS students with hearing impairment that will be a basis for reading comprehension plans and strategies. This will help JHS students with hearing impairment based on the results of the reading comprehension test. Moreover, this can help educators make necessary adjustments in their overall teaching styles in order to meet the needs of the JHS students with hearing impairment. With this, the reading comprehension of JHS students with hearing impairment will benefit from SPED teachers' preparation and adjustment of teaching approaches.

Literature Review

Bachik and Aladdin (2022) discovered that the impact of online learning amid the Covid-19 pandemic has been detrimental to students with hearing impairment. It has resulted in a substantial decrease in their performance on reading tasks, a decline in the application of prior knowledge, and a reduction in the average achievement level when completing reading comprehension assignments. However, effects of the pandemic are neither clear nor simple for deaf students (Kuhfeld, et. al. 2021).

In the Philippines, according to Magsambol (2020), instructing students with special needs online has been challenging in the Philippines. In 2019, even prior to the pandemic and post pandemic research showed that the level of hearing impairment of SHS students with hearing impairment does not necessarily affect the level of reading comprehension (Sibayan, 2019). With this, there is a need to identify the JHS student's level of hearing impairment, level of reading comprehension, and level of reading comprehension according to the level of hearing impairment in the post pandemic classes.

In the context of this study, hearing impairment refers to a condition where an individual's ability to hear falls below the norm of 20 dB or better in both ears, compared to those with typical hearing. The degree of hearing loss can range from mild to profound, impacting one or both ears. Common contributors to hearing impairment encompass congenital or early childhood onset, persistent middle ear infections, damage from loud noises, age-related factors, and the use of ototoxic drugs that harm the inner ear (WHO, 2023) While reading comprehension as mentioned by Basaraba, et. al. (2012) is a complex process that requires different building-block skills. One model of reading comprehension proposes that understanding what we read is really the result of three levels of skills: literal comprehension, inferential comprehension and critical comprehension. Firstly, a reader who acquired the literal level must be able to determine what is actually stated which include facts, details, rote learning and information (Bernardo, 2009 as cited in De Guzman, et al., 2014). Secondly, Sao-an (2008) stated that a reader who acquired the inferential level must be able to assume and interpret correctly events as occur in the selection. Lastly, a reader who acquired the critical level must be able to acquire the skill that the very act of reading the reader constructs meaning by extending his prior knowledge base and arriving at new insights (Rudell, 2001 as cited in Resurreccion, 2010).

Problem Statement

This study aimed to determine the level of reading comprehension and level hearing impairment of JHS students with hearing impairment in the post pandemic classes and the level of reading comprehension according to their hearing impairment.

Method

Descriptive survey design was used to systematically analyse and measure the level of reading comprehension and hearing impairment of JHS students with hearing impairment.

Materials

A 30-item reading comprehension test was adapted from the research entitled "Reading Comprehension of Senior High School Students with Hearing Impairment" by Sibayan (2019). Its reliability test result using Kuder-Richardson Formula showed a 0.72 value which means that the items in the questionnaire have relatively high consistency. It is composed of questions along the three levels of reading comprehension, specifically the literal, inferential, and critical level. This reading comprehension test was distributed through the use of printed format. The hearing impairment level was based on the school profile of the students.

Samples

Universal sampling was employed. With this, a total of (24) JHS students with hearing impairment in the post pandemic classes from one SPED school for the S.Y. 2022-2023 were identified. Specifically (4) or 16.67% from Grade 7, (10) or 41.67% from Grade 8, (7) or 30.43% from Grade 9, and (3) or 12.5% from Grade 10.

Site

The SPED Integrated School identified from the Schools Division Office - City of San Fernando is a SPED centre that caters JHS with hearing impairment in the post pandemic classes.

Procedures

Before the data gathering collection, the researcher 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 student profile and reading comprehension test were both statistically treated, analysed, and interpreted.

Measurement

The researcher based the hearing impairment level of JHS students with hearing impairment in the post pandemic classes from the students' profile available in their school. Meanwhile, the frequency count for the level of reading comprehension was based on research entitled "Reading Strategies and Reading Comprehension Levels of the Sophomore BSED students Major in English". The level of reading comprehension of the participants ranges from poor (0-2), (0-6) to excellent (9,10) (25-30).

Data Analysis

Weighted mean was used to identify the level of hearing impairment of JHS students with hearing impairment in the post pandemic classes as elicited from their student profile.

Table 1 presents the level of severity of hearing loss and resulting impairments.

Table 1. *Severity of Hearing Loss and Resulting Impairments*

Statistical Range	Descriptor	Interpretation
26-40 Db	Slight	Able to hear or repeat words spoken in normal voice at 1 meter.
41-60 Db	Moderate	Able to hear or repeat words spoken in a raised voice at 1 meter.
61-80 Db	Severe	Able to hear some words when shouted into a better ear.
81 Db- above	Profound	Unable to hear and understand even with a shouted voice.

Weighted mean was used to identify the level of reading comprehension of JHS students with hearing impairment along literal, inferential, and critical level. Table 2 presents the numerical and qualitative value that was used to categorize and interpret the level of reading comprehension of JHS students with hearing impairment along literal, inferential, and critical level.

Table 2. *Level of Reading Comprehension*

Statistical Range	Descriptor	Interpretation
9-10	Excellent	The level of reading comprehension of JHS student with hearing impairment is very high.
7-8	Above Average	The level of reading comprehension of JHS student with hearing impairment is high.
5-6	Average	The level of reading comprehension of JHS student with hearing impairment is moderate.
3-4	Fair	The level of reading comprehension of JHS student with hearing impairment is low.
0-2	Poor	The level of reading comprehension of JHS student with hearing impairment is very low.

Table 3. *Overall Level of Reading Comprehension*

Statistical Range	Descriptor	Interpretation
25-30	Excellent	The overall level of reading comprehension of JHS student with hearing impairment is very high.
19-24	Above Average	The overall level of reading comprehension of JHS student with hearing impairment is high.
13-18	Average	The overall of reading comprehension of JHS student with hearing impairment is moderate.
7-12	Fair	The overall of reading comprehension of JHS student with hearing impairment is low.
0-6	Poor	The overall of reading comprehension of JHS student with hearing impairment is very low.

Weighted mean was used to identify the overall level of reading comprehension of JHS students with hearing impairment. Table 3 presents the numerical and qualitative value that was used to categorize and interpret the overall level of reading comprehension JHS students with hearing impairment.

Validity and Reliability

The hearing impairment level was elicited from the student's profile present in school. While the reliability of the reading comprehension test adapted for the study has a KR20 reliability coefficient that is considered as highly consistent. After the data gathering collection, the process of triangulation was also utilized to further analyze and verify the findings of the study.

Results and Discussion

This portion of the study presents analysis, interpretation, and discussion of the data collected on the overall level of hearing impairment, level of reading comprehension, and overall reading comprehension according to the level of hearing impairment.

Table 4 presents the overall level of hearing impairment of JHS students with hearing impairment in the post pandemic classes.

Generally, the level of hearing impairment of 19 or 79.2% JHS students with hearing impairment in the post pandemic classes have profound (61-80 Db) level of hearing impairment while only five (5) or 20.8% have moderate (41-60 Db) level of hearing impairment.

Table 4. *Overall level of hearing impairment*

Statistical Range	Descriptor	Frequency	%
41-60 Db	Moderate	5	20.8%
61-80 Db	Profound	19	79.2%
Total		24	100%

This implies that the majority of JHS students with hearing impairment in the post pandemic classes are unable to hear and understand even with a shouted voice. This indicates that with a profound level of hearing impairment they use sign language to communicate.

Similarly, the World Health Organization (2023) shares that Deaf people mostly have profound hearing loss, which implies very little or no hearing. They often use sign language for communication.

Table 5 presents the overall level of reading comprehension of JHS students with hearing impairment in the post pandemic classes.

Table 5. *Overall level of reading comprehension*

Items		Mean Score	Equivalent
Literal Level		4	Fair
Inferential Level		3	Fair
Critical Level		2	Poor
	Overall Mean Score	9	FAIR

Generally, the level of reading comprehension of JHS students with hearing impairment in the post pandemic classes along literal, inferential, and critical level is fair. Table 5 as gleaned above shows the literal level (4) fair garnering the highest of the overall mean score (See Appendix A).

This suggests that a negative impact of the pandemic is existing in the post-pandemic classes. The result shows that the respondents mostly recognize simply, directly, and explicitly talked about information in the textual message. This hints that it will take lots of effort for the JHS students to recover with their reading comprehension during their post pandemic classes.

These results support the research of Bachik and Aladdin (2022) when they found that the impact of online learning amid the Covid-19 pandemic has been detrimental to students with hearing impairment. It has resulted in a substantial decrease in their performance on reading tasks, a decline in the application of prior knowledge, and a reduction in the average achievement level when completing reading comprehension assignments. Meanwhile, Kunzre et. al. (2022) suggested that students may be bouncing back from the negative impacts, but for some groups, the impacts may be continuing or even deepening. This negates the findings that effects of the pandemic are neither clear nor simple for deaf students (Kuhfeld, et. al. 2021).

Table 6 presents the overall level of reading comprehension of JHS students with moderate hearing impairment in the post pandemic classes.

Table 6. *Moderate hearing impairment level*

Respondent		Score	Equivalent
Respondent A		15	Average
Respondent B		14	Average
Respondent C		17	Average
Respondent D		11	Fair
Respondent E		13	Average
Mean Score		14	**AVERAGE**

The results reveal that the overall level of reading comprehension among JHS learners with moderate hearing impairment in the post pandemic classes is average. The results reveal that the majority of the JHS students with moderate hearing impairment in the post pandemic classes were able to answer half of the items correctly. Four (4) out of five (5) respondents got an average score or moderate level of reading comprehension and only one (1) got a fair score or low level of reading comprehension.

This suggests that the JHS students with moderate hearing impairment in the post pandemic classes exhibit different levels of resilience in coping and adjusting from the pandemic classes to the post pandemic classes in connection to their reading comprehension. This implies that despite having the same level of hearing impairment reading comprehension test results still vary.

The results affirm the interview among deaf students wherein they described their experience of using online technology in both negative and positive terms Alshawabkeh, et. al. (2021). This backs the findings of Aljedaani, et. al. (2022) where they revealed that various recent studies have shown the underlying infrastructure used by academic institutions may not be suitable for students with hearing impairments. The results support similar research concluding that the hearing impairment level does not necessarily affect the level of reading comprehension (Sibayan, 2019). The result negates the idea of Friend and Bursuck (2006) stating that students with hearing losses have the same range of intellectual disability as other students.

Table 7 presents the overall level of reading comprehension of JHS students with profound hearing impairment in the post pandemic classes.

Table 7. *Profound hearing impairment level*

Respondent	Score	Equivalent
Respondent F	10	Fair
Respondent G	14	Average
Respondent H	8	Fair
Respondent I	6	Poor
Respondent J	7	Fair
Respondent K	9	Fair
Respondent L	3	Poor
Respondent M	7	Fair
Respondent N	7	Fair
Respondent O	8	Fair
Respondent P	10	Fair
Respondent Q	2	Poor
Respondent R	6	Poor
Respondent S	8	Fair
Respondent T	9	Fair
Respondent U	9	Fair
Respondent V	5	Fair
Respondent W	9	Fair
Respondent X	10	Fair
Mean Score	**7.74**	**FAIR**

The results reveal that the overall level of reading comprehension among JHS learners with profound hearing impairment in the post pandemic classes is fair. This reveals that the majority of the JHS students with profound hearing impairment in the post pandemic classes were able to answer only 25% of the items correctly. One (1) out of 19 respondents got an average score or moderate level of reading comprehension. While 15 respondents got a fair or low level of reading comprehension and four (4) got a poor score or very low level of reading comprehension.

This suggests that most of the JHS students with profound level hearing impairment in the post pandemic classes are having difficulty in coping and adjusting from the pandemic classes to the post pandemic classes in connection to their reading comprehension. Also, this hints that the level of hearing impairment does not necessarily affect the level of reading comprehension level.

These results support the findings that COVID-19 pandemic has had adverse effects on students with hearing impairments, particularly in terms of the negative impact of online learning. It has led to a significant drop in their performance in reading tasks, a decrease in the application of previously acquired knowledge, and a decline in overall achievement levels when undertaking reading comprehension assignments Bachik and Aladdin (2022). The results support similar research showing that the degree of hearing impairment does not necessarily influence the proficiency in reading comprehension (Sibayan, 2019).

Conclusion

This portion of the study presents the conclusion drawn and recommendations proposed by the researcher. Looking through the level of hearing impairment and level of reading comprehension of the Junior High School students with hearing impairment in the post pandemic classes showed that it can be the basis for further research. In light of the findings of the study, the following conclusions are drawn: The hearing impairment level of the Junior High School students does not dictate the result of the level of reading comprehension in the post pandemic classes.

After a careful review of the conclusion, the following are recommended. SPED teachers in the post pandemic classes are recommended to Sign Exact English (SEE) to develop the JHS with hearing impairments level of reading comprehension. Also, emphasize the use of different post pandemic reading strategies to develop and improve the reading comprehension of the JHS students with hearing impairment. The JHS students with hearing impairment are recommended to promote a solid working open communication and collaboration with their peers and parents to improve their reading comprehension level. In addition, future researchers are recommended to look into other variables aside from the post pandemic classes and hearing impairment that might affect the level of reading comprehension.

Certainly, being able to reveal the overall level of reading comprehension and level of hearing impairment of JHS students with hearing impairment are both vital in the 21st century learning as a reflection of our special education system's adaptability in the changing environment.

Acknowledgements

Appendix A

HEARING IMPAIRMENT AND READING COMPREHENSION LEVEL

Respondent	Level of Hearing Impairment	Literal Level Score	Inferential Level Score	Critical Level Score	Over-all Score
A	Moderate	7	5	3	15
B	Moderate	9	2	3	14
C	Moderate	6	7	4	17
D	Moderate	5	3	3	11
E	Moderate	5	4	4	13
F	Profound	6	1	3	10
G	Profound	6	2	4	14
H	Profound	5	3	0	8
I	Profound	3	1	2	6
J	Profound	2	2	3	7
K	Profound	5	3	1	9
L	Profound	0	1	2	3
M	Profound	1	4	2	7
N	Profound	4	2	1	7
O	Profound	2	3	3	8
P	Profound	3	3	4	10
Q	Profound	1	0	1	2
R	Profound	3	2	1	6
S	Profound	4	2	2	8
T	Profound	6	1	2	9
U	Profound	3	4	2	9
V	Profound	2	1	2	5
W	Profound	2	3	4	9
X	Profound	6	4	0	10
Over-all	Profound	4	3	2	9

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ProctorBox: The Open-Source Operative System Designed to Guarantee the Integrity & Security of Online Assessments

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Abstract

Computerized proctoring systems play an essential role in protecting the integrity and security of assessments in several modes of instruction, such as online learning. The most recent literature focuses on adding features that may impede the student from committing academic dishonesty and fraud by combining several elements that may protect the integrity of the remote assessment. The majority of the features we can explore in contemporary literature are the detection of mobile devices, eye movement tracking, extracting verbal communication to text, and other complex solutions involving pre-trained models to improve the efficiency of detecting objects. However, there needs to be an initiative to solve the issue of academic dishonesty in proctoring systems. Protecting the integrity and security of online assessments is possible by providing the student with a robust combination of security measures embedded into an operative system. Therefore, we present ProctorBox, the open-source platform explicitly engineered to protect the integrity and security of an online assessment. We implement state-of-the-art security by hardening the system with essential concepts that work as a synergetic mechanism to impede fraud and academic dishonesty. First, we obtain the image of an open-source system to eliminate licensing issues and the cost of the computerized proctoring system. Then, we establish a baseline image of the system by removing all the unnecessary components that may aid in committing dishonesty. Moreover, we secure the guest account from executing third-party applications and handle internet browser security by building a Chromium extension to safeguard the integrity of the online assessment.

Keywords: Proctoring Systems, Online Assessments, Assessment Integrity, Distance Education

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Introduction

The current proctoring solutions available in the market and the solutions presented by academics in the most recent literature focus on features that can prevent or make a student doubt before committing academic dishonesty or cheating in an online examination. Face detection, eye movement, audio analysis, extraction of voice into text, and detection of external devices are the most common features in modern proctoring applications. However, as proved by Solis et al. (2023), A proctoring solution is limited to its built-in functionalities, and it is possible to bypass such security features with little to no effort on behalf of the student. Therefore, the security of online assessments goes beyond providing a third-party application to protect assessment integrity. To ensure the safety and integrity of an online examination, give the test taker a secure platform capable of halting any attempts to commit academic dishonesty and fraud on an online assessment.

Therefore, ProctorBox follows rigorous principles such as system hardening, the least privilege, and state-of-the-art browser security to prevent malicious activity while an online exam is in session. ProctorBox is aimed to limit the functionalities and access to external resources that a student can have during an examination, thus, reducing the opportunities to cheat in an online test. ProctorBox is a groundbreaking open-source operating system designed explicitly to assure any faculty member of the integrity of any online examination. The open-source nature of our platform gives it a significant edge, promoting transparency and abiding by the most rigorous academic standards. Nonetheless, our robust platform allows the system owner to add or remove any necessary applications that an assessment may require. The portability and user-friendly interface let students take an assessment effortlessly, making the examination process as seamless and secure as possible.

To showcase the security, integrity, and effectiveness of ProctorBox, we follow rigorous security standards to harden our portable operating system. Our baseline distribution contains no unnecessary applications, making it impossible for the student to commit dishonesty. Moreover, the system can handle user switching, allowing faculty members to add necessary features to the guest account. These features can be accessed by third-party applications provided by our Debian-based system. Moreover, we offer a trailblazing browser security mechanism by implementing a custom browser extension with the ability to block the left click on any window, and that allows only one active tab at a time. In addition, we are pioneers in the academic industry in offering students a complete proctoring platform at no cost. ProctorBox is proven to work on the leading hardware architectures, such as AMD and Intel processors, making it superior to any proprietary proctoring solution available.

Literature Review

Saurav et al. (2021) present a proctoring system that leverages AI features to detect cheating in online examinations. The method comprises seven elements working synergistically by collecting low-level information from each feature. Then, the data is analyzed on a secondary window to identify traits that may lead to cheating. The first component is user verification and facial landmarks detection. The second feature is composed of eye-tracking components that are based on coordinate points. The third feature detects whether the test taker opens their mouth while an examination progresses. The fourth component is a trained model capable of detecting other devices in use during the examination. The fifth feature,

head pose detection, identifies whether the test taker is looking at a secondary device. The sixth component, tab switching, is built into Java script so the student does not require additional software. The last component is voice detection, which monitors and extracts audio, which is then converted to text using Google Speech Recognition.

Although we can see significant use of AI technology in exam proctoring, the authors must realize how feasible this proposed model can be at a larger scale. Moreover, we need to find out where the exam is hosted. For example, it would be ideal to know if the proposed system can support modern learning management systems such as Blackboard, Moodle, or Canvas. On the other hand, it would be more beneficial to see a chart to examine the efficiency of such a model.

Ganidisastra and Bandung (2021) propose using a fully automated proctoring system using face recognition to solve the need for continuous user verification while the student is taking an examination. The model consists of grabbing images that are captured at the same time when the lecture is taking place. The incremental training consists of two deep learning models: multi-task cascaded convoluted network and YOLO-face. The two proposed methods demonstrate a higher performance under different conditions, such as low light and alternative poses. The process starts by capturing the student's identity for registration. An image of the student is captured using a mobile device. The system requires several angles of the student, such as front view, left view, right view, and so on. The incremental training occurs at the end of each lecture session once a new data set is collected. The results show that the two proposed models, multi-task cascaded convoluted network and YOLO-face, perform better over viola-jones and LBP, which are also utilized for face detection model processing images as a batch.

While the proposed model requires incremental training for improvement and better performance, it will fail under certain circumstances. For example, lectures that are taken place in large auditoriums will most likely cause students to switch positions during lecture time. Also, if the model requires continuous snapshots of the student using different angles, this will result in less lecture time and consume considerable time. Nonetheless, it is a reasonable effort in automated proctoring systems that require continuous user verification.

Madhusudan et al. (2022) developed a proctoring system to fulfill the needs and wants of current automated proctoring solutions. The system utilizes several multimedia features such as face recognition and capturing of objects such as mobile devices. The plan aims to eliminate the traditional pen-and-paper examination and remove the human factor from an online exam; in this example, a proctor is nonexistent to reduce the cost of proctoring a test. The proposed system consists of a website with two separate logins. One login pertains to the student, and the second login screen belongs to the faculty member. The system can allow the faculty member to generate exams. After that, a unique key is generated, which is then given to the student along with a password to access the exam. A text editor shows when a mobile device is detected to capture discrepancies during the online examination. Moreover, a warning is also displayed to the student if the test taker attempts to switch tabs. Some of the limitations of the proposed system are the use of proper lighting during registration, which may cause improper face detection. Also, a minimum distance is required between the webcam and the student.

The features implemented in this multimedia proctoring system are good features to consider reducing the cost of proctoring software. However, as a faculty member, there is no clear evidence of a student intending to cheat since all the evidence is based on text. A student can build a case based on these observations and appeal that no intent of cheating occurred during an examination. Furthermore, the faculty members may question the system's performance if several flags happen during an examination session.

Padilla et al. (2021) proposed a cloud-based system to manage remote proctoring of examinations. The method comprises several AWS features such as Dynamo DB, S3, Lambda functions, Cloudfront, and API Gateways. The remote proctoring software shall consist of two applications, one for faculty members and a front end for the students. Moreover, there is an additional machine-learning component capable of detecting head movements during the examination, which are recorded as notifications for playback. An examination was given to thirty students to test the system's performance. Then, the exam was accompanied by a post-assessment survey to measure the system's effectiveness. Of a sample of the thirty students, twenty-one admitted some cheating or plagiarism. However, the system could identify a different group of five students who also committed some plagiarism.

The features presented in this work and the type of technology implemented meet the current demands of proctoring solutions. This is a platform that proved to be efficient and that has excellent performance to detect cheating or plagiarism. However, a critical factor should have been considered, which is the security of the test taker system. The security features in this system, which is meant to run in Windows distributions, can quickly be canceled with a remote desktop connection to the test-taker machine. This will create no alerts for the faculty since the student will have the proper head placement during the examination. However, the faculty will not be aware that a person is taking the test remotely on behalf of the student.

Abozaid and Atia (2022) offer a semi-automated proctoring solution with three main features: head-pose, a feature that locates the head movement of an individual using computer vision technology. The second component, object detection, is used to identify resources not allowed during an examination, such as phones, persons, and books. The third component, eye-gazing, is used to track the position of the eyes during an investigation. The system captures a picture of the student at an interval of every ten seconds. Then, the image is processed, and a report is generated for the faculty member if an abnormality is found. Four different experiments validated the effectiveness of this proposed solution. The first experiment was composed of head pose testing, and the VGG16 model had the highest accuracy. A second experiment was done to test the efficacy of the three features separately. The overall accuracy was 96.66%. The third and last experiment involved students doing different activities to simulate cheating.

Overall, the proposed multi-modal system has exciting features that can minimize the efforts of having a proctor in person and reduce the cost of a proctoring solution. However, the testing was done following a strict set of parameters given to the students. On the other hand, it would be ideal to include detailed screenshots of the report generated once an event is captured by one of the three features. Moreover, it would be great to know how the video is stored and processed on the back end so that faculty can rely on playback if necessary.

Grigoriev (2022) presents a detailed review of the market's most popular proctoring solutions and briefly describes each system's flaws. However, a method is implemented to improve the current proctoring solutions with four distinct functionalities. To detect abnormalities during the examination, the first component uses YOLOv3, a model frequently used in proctoring solutions to detect objects such as mobile devices and more than one person. The second component, which detects abnormalities in the audio, uses FFmpeg. This feature depends on the DB levels captured during the testing session to see if cheating is happening. Moreover, the feed from the audio is converted to text using Google Speech Recognition API, which gives the proctor a list of the most used words. The third component is to detect abnormalities in the test taker's desktop. As discussed in the first component, this feature also utilizes a model based on convolutional neural networks to identify social media platforms, calculators, or additional software not allowed during the examination. The final component is a control to reduce the system's false positives. This final module provides the proctor with a time interval of the video along with a description of the violation committed during the session.

Although the solution is meant to improve the flaws of modern proctoring solutions available in the market, each of the features of the system has been presented by other authors using the same convolutional network models. The only district feature which makes this solution unique is the ability to detect abnormalities based on the DB levels captured during an examination. Furthermore, it would be ideal for reviewing the system's performance on a larger scale and observing if it can simultaneously process multimedia from several sessions.

Malhotra et al. (2022) leverage artificial intelligence to implement a proctoring system that eliminates needing a physical proctor in the room. Three essential components make this system possible. The first component is emotion detection. This feature is possible by using convolutional neural networks. According to their model, emotion detection can predict if the student commits fraud during the examination. The second component of this system is head pose movement. This feature measures 0 to 90 degrees at angles when motion is detected. As a starting point, the student starts at an angle of 0. The model uses six facial points, which are then converted to coordinates. The third and last feature is malicious object detection, which was used in previous work. The model is based on YOLOv3 and can detect objects such as people, mobile devices, and books. This combination of models can aid in identifying if fraud or cheating is committed in an online examination.

Overall, the system uses three essential features that have been in use by several authors. However, the head pose movement feature has yet to be seen as detailed as the one presented in this work. Getting more details on this model's efficacy in a real-world environment would be ideal. There is no additional data to support the efficiency of this model. Moreover, it would be excellent also to include different steps on how it would be possible to scale this solution to support multiple exam sessions at any given time.

Definitions and Tools

Definitions

- Integrity – The state of being whole, entire, or undiminished (Dictionary.com, 2019).
- Least Privilege – The principle that a security architecture should be designed so that each entity is granted the minimum system resources and authorizations needed to perform its functions (Editor, n.d.).
- Proctor – US (in a college or university) a supervisor or monitor who invigilates examinations, enforces discipline, etc. (Definition of Proctor | Dictionary.com, 2019).
- Open-Source – Pertaining to or denoting software whose source code is available free of charge to the public to use, copy, modify, sublicense, or distribute (Open-Source Definition & Meaning, n.d.).
- Operating System – The collection of software that directs a computer's operation controlling and scheduling the execution of other programs, and managing storage, input/output, and communication resources (Definition of Operating System | Dictionary.com, n.d.).
- System Hardening – A process intended to eliminate a means of attack by patching vulnerabilities and turning off nonessential services (Editor, n.d.-a).

Tools

- Chromium Browser – The foundation of our trailblazing browser security relies on altering certain browser functions and behaviors, such as enabling only one tab at a time and turning off the right click. To make this happen, our Slax distribution is optimized to run the latest stable version of the Chromium browser, which is open source. Our custom Chromium extension provides the necessary browser-level security to assure the integrity of any online examination (The Chromium Projects, n.d.).
- LXDE – Desktop environment used to disable Fluxbox, the default built-in application that runs on any Slax distribution (LXDE, n.d.).
- LXDM – The installation of LXDM is necessary to void the auto-login function in Slax. Also, it allows user-switching without any conflicts (LXDM - ArchWiki, n.d.).
- Slax – To provide the test taker with a state-of-the-art secure platform, ProctorBox utilizes the Debian-Based Slax distribution, which is open source, and its design allows the system owner to customize the distribution by turning modules on and off. Slax is stored on a USB drive, and all the system changes are persistent (M, n.d.).
- USB Drive – A USB drive is required to store and boot the ProctorBox system on the student machine.
- AMD or Intel computer system – To test the effectiveness and efficiency of ProctorBox, a baseline image of the system was loaded on both hardware architectures. The system is proven to run on computer systems with AMD and Intel processors.

Methodology

ProctorBox aims to achieve maximum security and integrity when it is time to proctor an online assessment. We abide by the most rigorous guidelines to comply with all the requirements to restrict academic dishonesty while maintaining academic integrity. Our leading goal is to make ProctorBox a lightweight and user-friendly platform. We achieve this

requirement by obtaining a baseline image of the Slax distribution and applying cyber security concepts such as least privilege, system hardening, and securing the system using only two accounts. The root account is meant for system owners, which in this case is the faculty member. The root account can install new applications and load new modules. On the other hand, the secondary account is the guest account, which has access to a network manager, the Chromium browser, and our custom browser extension. We looked deeply at all baseline software and removed unnecessary tools from the system.

Obtaining a Baseline System Image

The first step was to compare all open-source operating systems that require minimum hardware resources to run on any student machine, preferably any Linux distribution. The idea behind adopting a Linux distribution is to eliminate the proctoring cost to the student and to keep this project open-source for the academic community. After extensive trial and error with several Linux distributions, we adopted Slax for the foundation of our project. Slax is offered in two different architectures, a 32-bit version, and a 64-bit version. Nowadays, all computer systems are based on a 64-bit architecture. Therefore, we opted for a 64-bit architecture based on the Debian distribution.

Figure 1: Slax distributions available to the public.
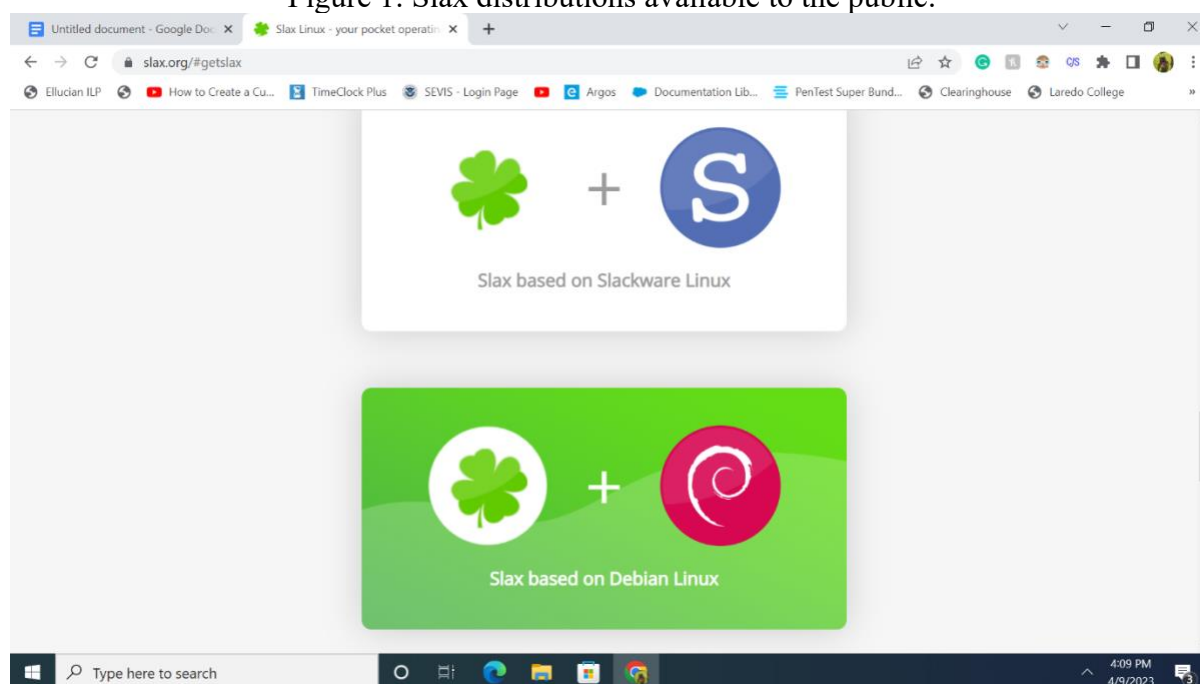
Preparing Our USB Drive for the First Time

Our next step is to prepare the USB drive to store and boot the Slax distribution for the first time. Formatting the target drive using the FAT32 file system is essential. Choosing any other type of file system will make the boot process fail. This concept applies to both Intel and AMD computer systems. Next, we must copy the file's contents obtained in Figure one and paste the complete folder into our target drive. Once the files are moved to our target drive, we must navigate to the Slax folder and double-click the boot directory to access the boot files. Now, we must locate the bootinst file and run it as administrator on our Windows system. Once the process is complete, the green screen will indicate to press any key to exit. At this point, the target USB drive is ready to boot Slax for the first time. Some computers

may require additional modifications to the BIOS. Restart the PC and press the appropriate keys to launch the boot menu. From the boot menu, select the USB drive.

Figure 2: Making our bootable USB drive.
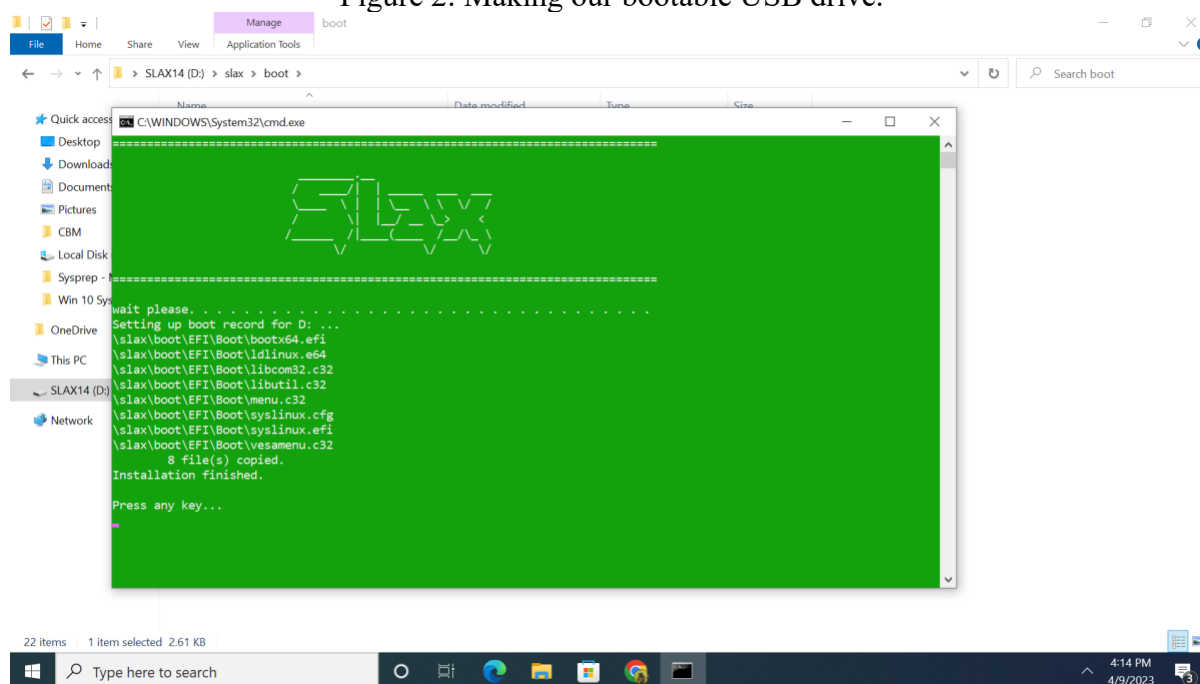
Connecting to the Network

Note that after a successful boot for the first time, Slax does not require a username and password and has an automatic login function to the root account. We will modify this process in the following steps. At this point, we need to download the necessary applications for the Slax distribution. From the start menu, launch the Net Manager application, select wireless, choose your home network, and enter the passphrase for your network.

Figure 3: Connecting Slax to the Network.
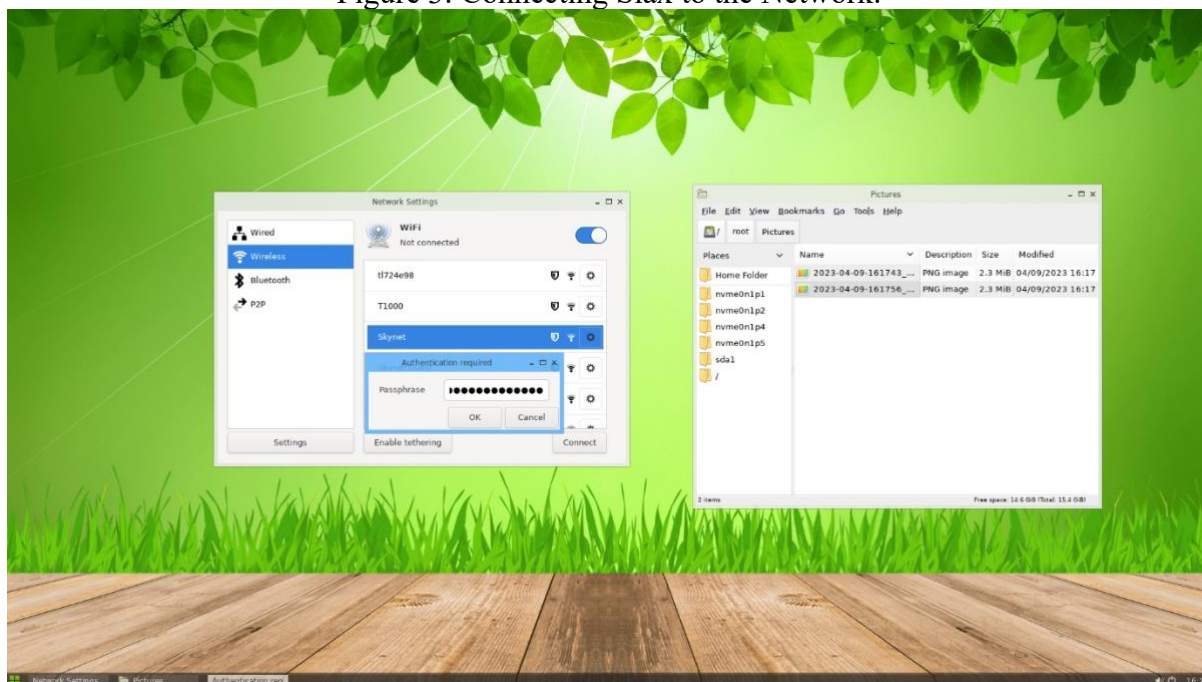
Changing the Default Root Password

It is time to take ownership of our custom Slax distribution. To make this happen, click on the start menu, and select 'Terminal.' A prompt will open to enter the desired commands. By default, Slax has an automatic login to the root account, and the password is visible during boot time. We want to prevent students from making changes as root. Therefore, enter passwd in the terminal and press the enter key. This action will prompt us to enter the new password to the root account. For testing purposes, the root password is 'shsu.'

Figure 4: Changing the default root password using the passwd command.
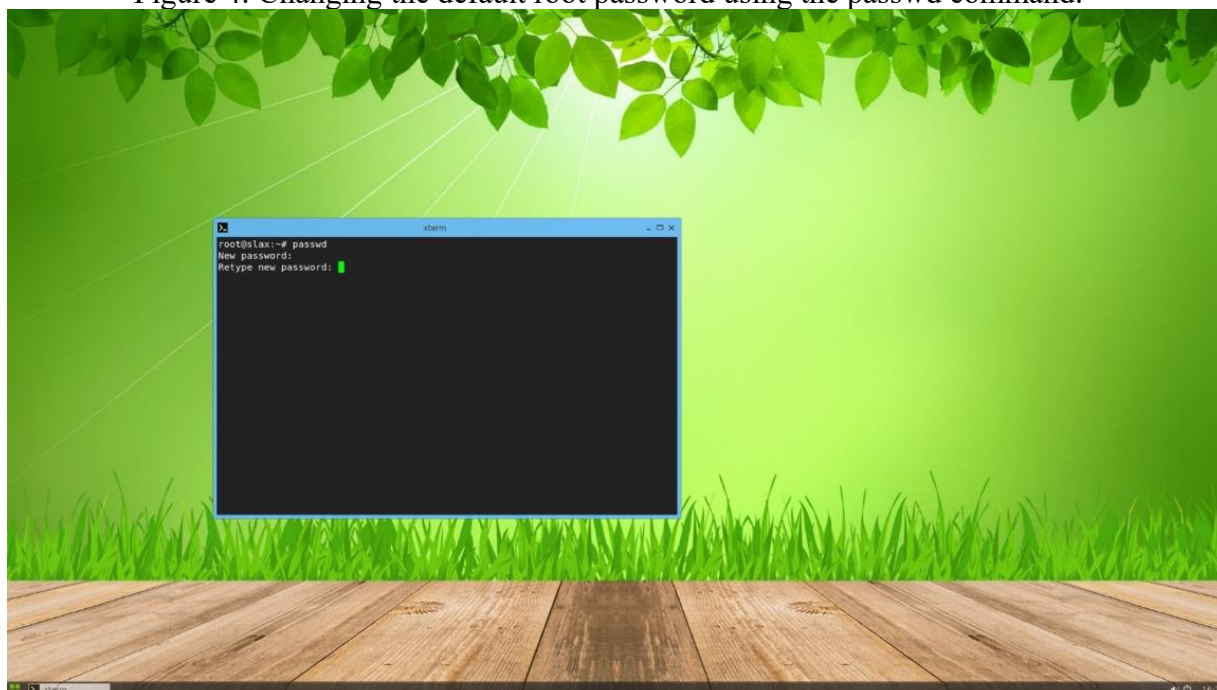
Installing Chromium Browser From the Terminal

By default, it is possible to install Chromium using the shortcut under the start menu. However, the installation process may fail due to unexpected versions. It is best to use the command apt-get install chromium/stable to solve this problem. Once the process is complete, we can test that chromium is working. Note that any changes made to chromium as root will transfer to the guest account.

Figure 5: Installing Chromium Browser From the Terminal.
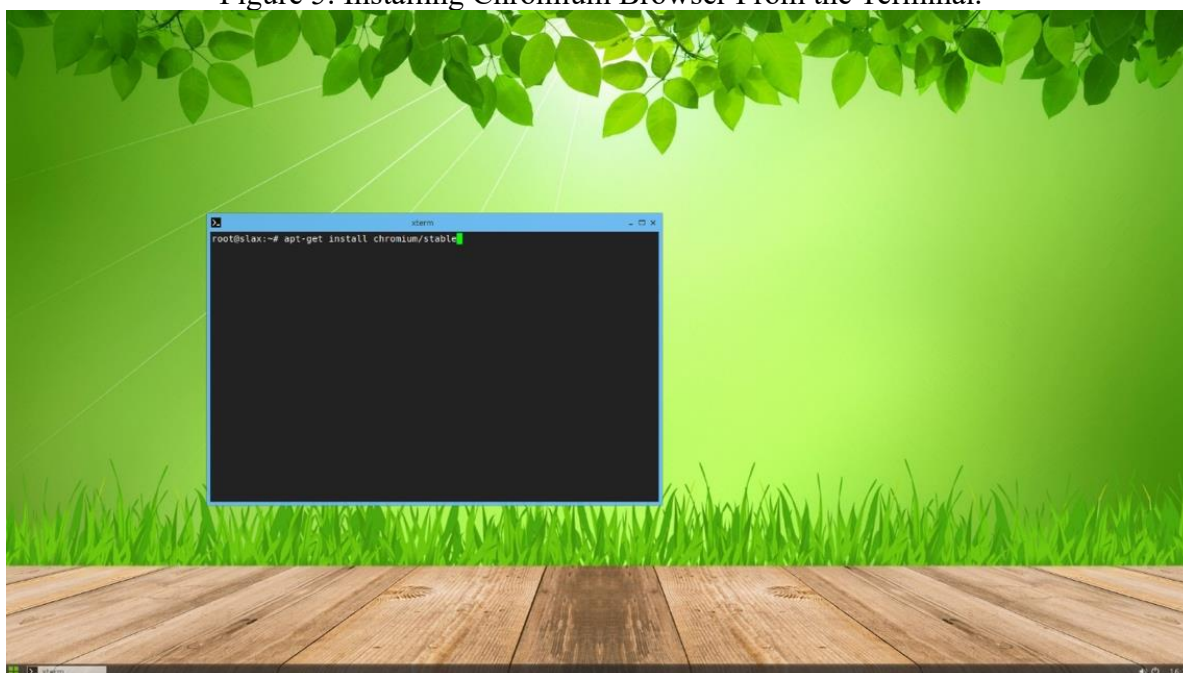
Installing a Desktop Environment for the Guest Account

Another default setting in Slax is the desktop environment. As a default setting, Slax uses Fluxbox as the desktop environment. By default, Fluxbox is limited in options and does not allow features such as a login screen, user switching, and a custom desktop environment. Attempting to log in with the guest account, which is built-in by default, will give us a blank desktop with no applications available. Several desktop environments exist, such as GNOME, KDE, & Xfe. To proceed with installing LXDE, launch a terminal window and type the command apt-get install lxde.

Figure 6: Installing LXDE From the Terminal.
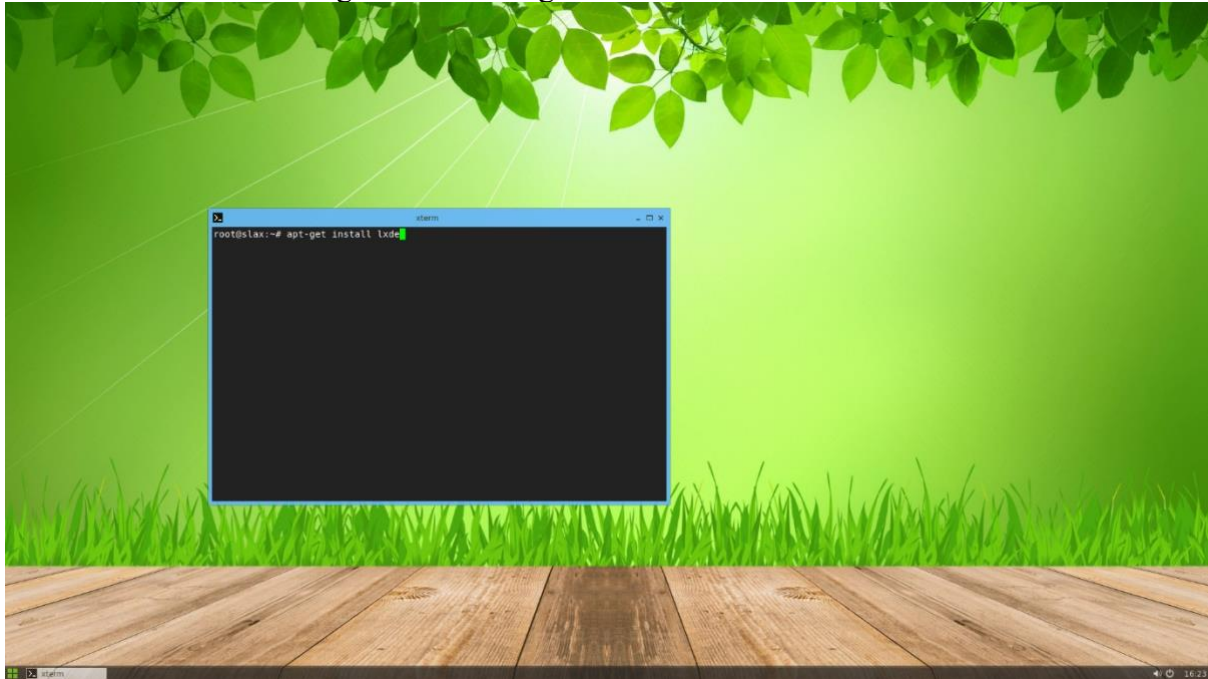
Installing a Display Manager for our System

We must incorporate a separate display manager to prevent the auto login feature as root. LXDM can handle user switching without conflicts. Also, this feature manages the users and goes along with LXDE. Moreover, the root account is hidden from the login screen, and the student will only see the Guest account. To install LXDM, launch a terminal window and type the command apt-get install lxdm. We are still logged in as root. Once the installation of LXDM is complete, restart the system for the first time. At this point, the autologin function as root has been turned off by installing LXDM. Now, upon a restart, we are presented with a login screen. By default, the 'Guest' user is shown; we can click 'more' and manually type any desired user. To continue our setup, click 'More' and type 'root' as the user. It is essential to notice how the desktop is set below the user selection box as 'Default.' From now on, the student must log in using the guest account with the default password of 'guest.' And with the desktop setting set to 'Default.'

Figure 7: Installing LXDM From the Terminal.
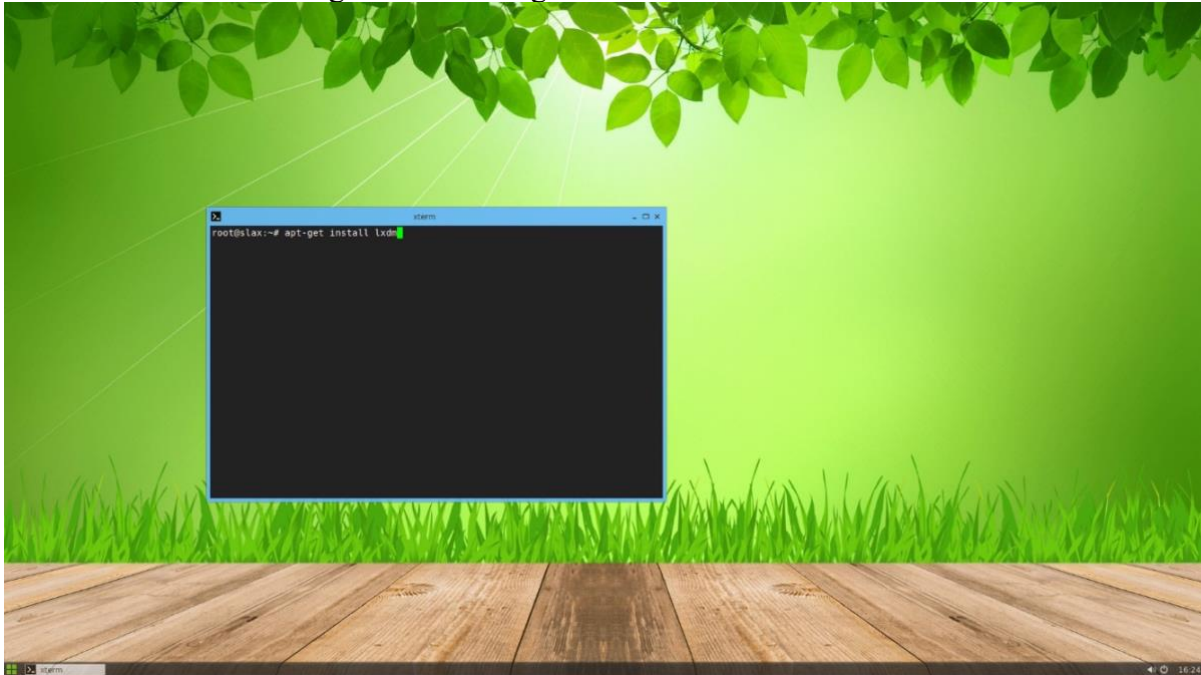
Figure 8: Guest Account log in with the desktop environment 'Default.'
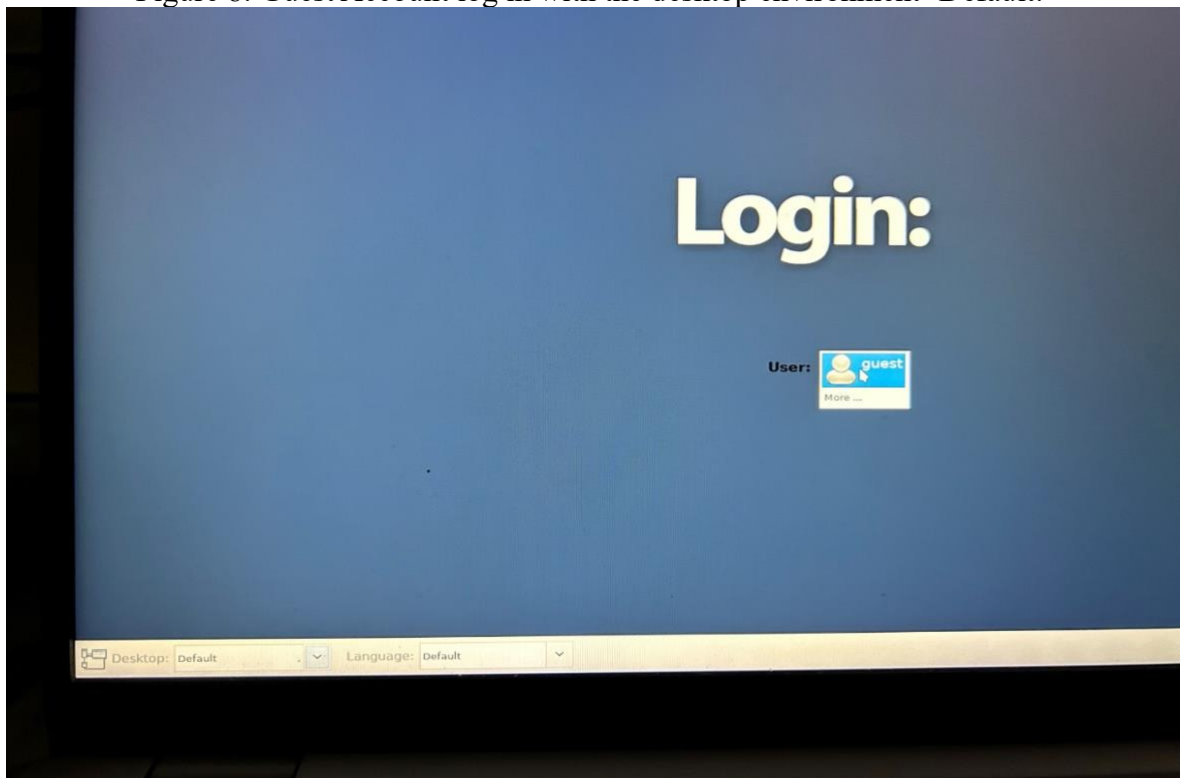
Log in as Root and Remove Unnecessary Applications From the System

To continue setting up our environment, we must log in to the system as root. It is essential to notice how the root account is strictly tied to the 'Fluxbox desktop, unlike the guest account, which must use the default desktop environment.

Figure 9: Root Account log in with the desktop environment 'Fluxbox.'
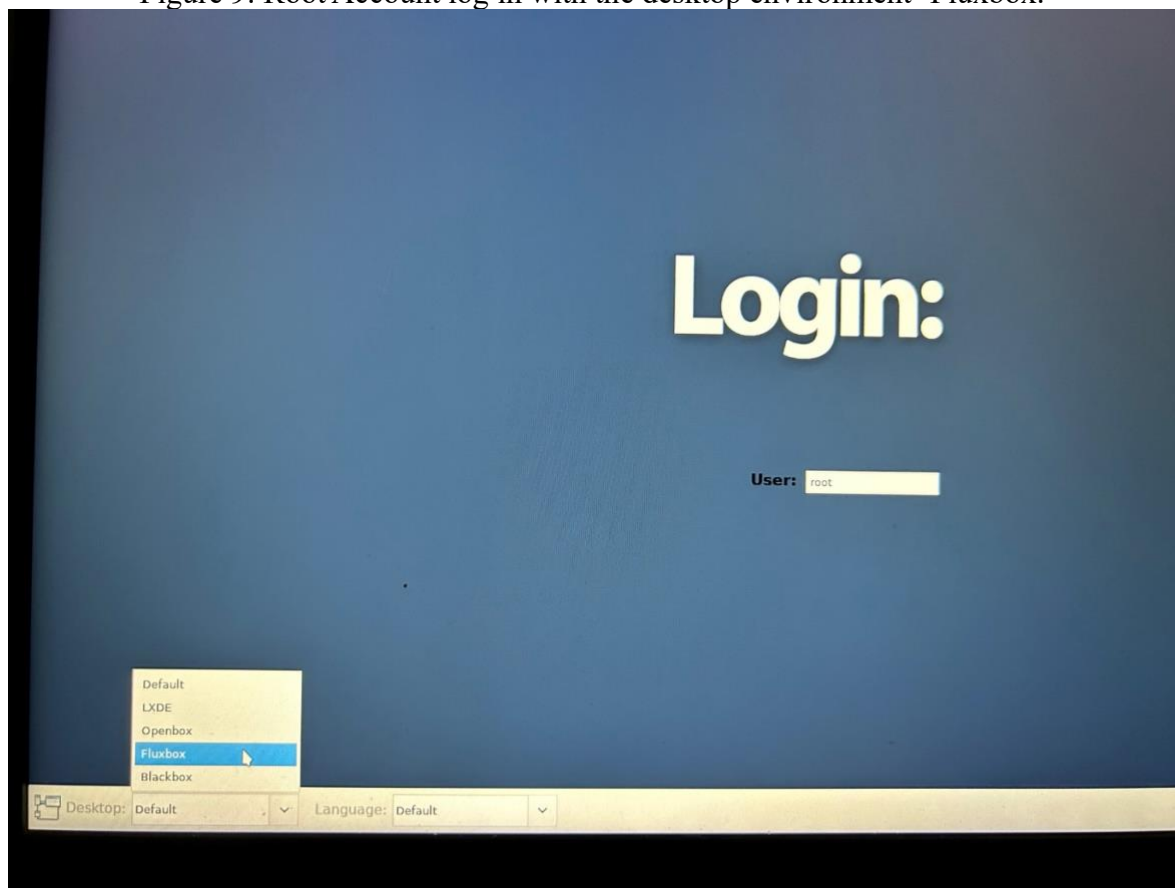
Upon logging in as root with the Fluxbox desktop, we can use the file explorer to navigate into the following directory: /usr/share/applications. Once we locate the directory, we will see several applications, such as a text editor, a terminal emulator, a calculator, etc. Each application is a shortcut to the executable file under the /bin directory. We can delete the shortcut from /usr/share/applications and its corresponding binary. Doing so may damage the display manager settings and the desktop environment manager. After intensive testing, we concluded that leaving the binary files intact is best. Moreover, the applications folder comprises the applications available to the guest user. To prevent any act of academic misconduct during testing, we decided to give access to the web browser only, along with some display manager settings. We can log out from the root account and log in with the guest profile to see what has been made available for the guest account, which is the account that will be utilized for testing.

Figure 10: /usr/share/applications directory
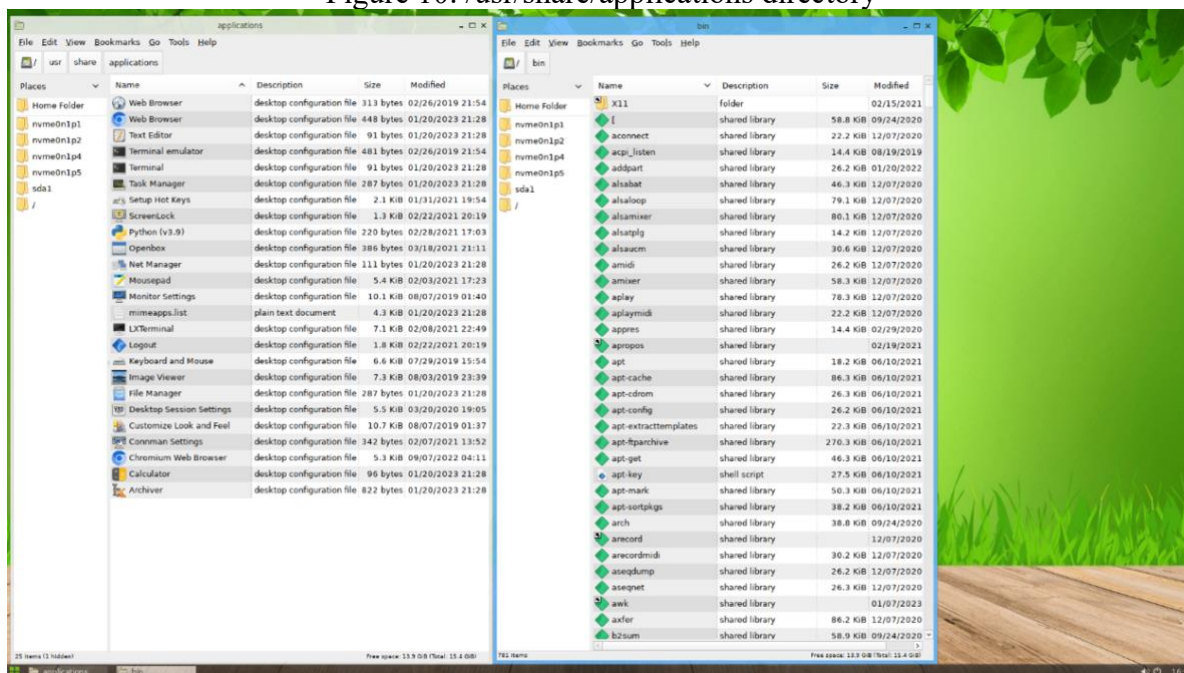
Implementing Browser-Level Security

Now that the system meets our desired requirements, it is time to work on the browser-level security before making the changes permanent. To accomplish this task, the best approach is to build a Chromium extension with two basic functionalities. The first task of the Chromium extension is to turn off the right click; this will prevent the student from having access to the context menu, which may facilitate academic dishonesty during an examination. The second function of our Chromium extension is to allow only one tab at a time. One tab only aims to take full advantage of the exam logs provided by our learning management systems. The higher ed market is compromised by Blackboard and Canvas users. Each time an assessment takes place, the learning management system provides full logs until the student submits an exam. Therefore, by allowing only one tab at a time, we can read the logs and identify if there was a period when the student started another session. Moreover, we discovered that the one-tab limit prevents the student from opening the settings in Chromium.

Figure 11: ProctorBox Chromium Extension
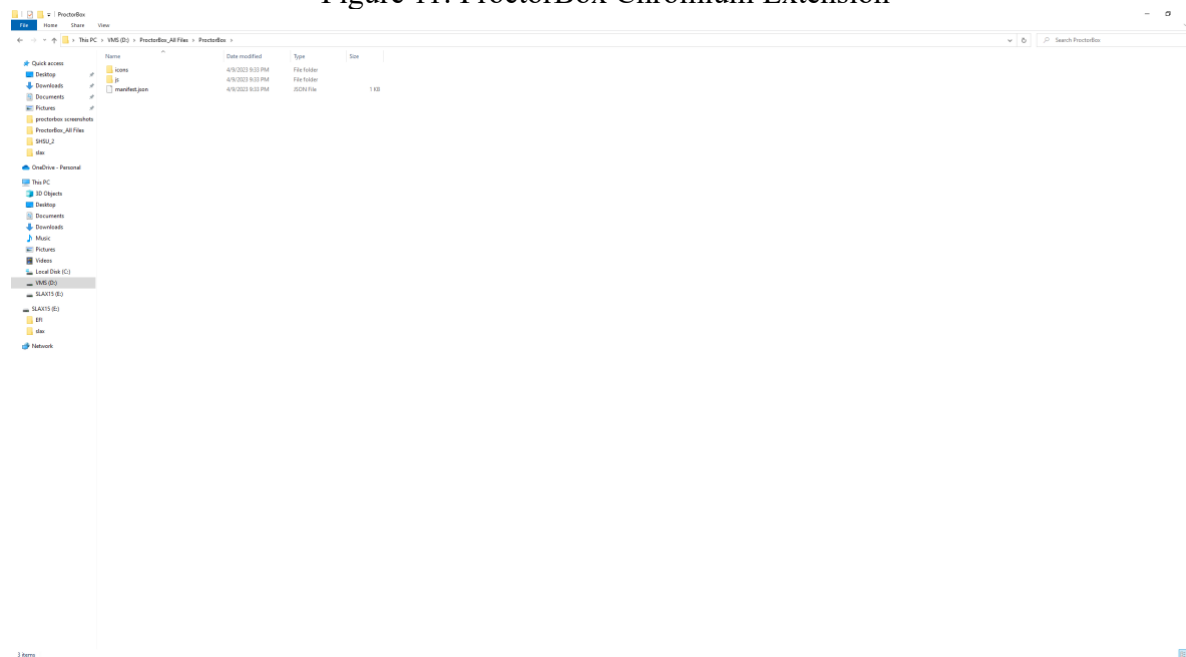
Figure 11 represents the root folder of our Chromium extension. The icons folder inside the root contains the required extension icons. Next, the js folder has the two scripts that handle the extension's behavior. In this case, there is a script to turn off the right click and another script to allow only one tab at a time. Finally, we have manifest.json file, which contains all the configurations for the ProctorBox extension. To access this folder and its content, log in to the system as root and navigate to /usr/share/applications. A copy of the folder is located there and has been loaded into Chromium for the root and guest accounts.

Building the ProctorBox Module to Make the Changes Permanent.

Now that the system has met all our requirements, we can make the changes permanently by creating a module. Note for future system owners, you will use the savechanges command anytime you make any adjustments to the ProctorBox system. To start the process, click the start menu and launch the terminal. Once the terminal appears, type the command savechanges /tmp/proctorbox.sb. The purpose of this command is to create the proctorbox.sb module under the /tmp folder. A progress bar will appear after a few seconds. Please wait for this process to finish before any other system modifications. Once the savechanges command is complete, locate the file in the /tmp directory and click copy. Now, Paste the proctorbox.sb module into /sda1/slax/modules directory.

Figure 12: Creating the ProctorBox Module from Terminal.
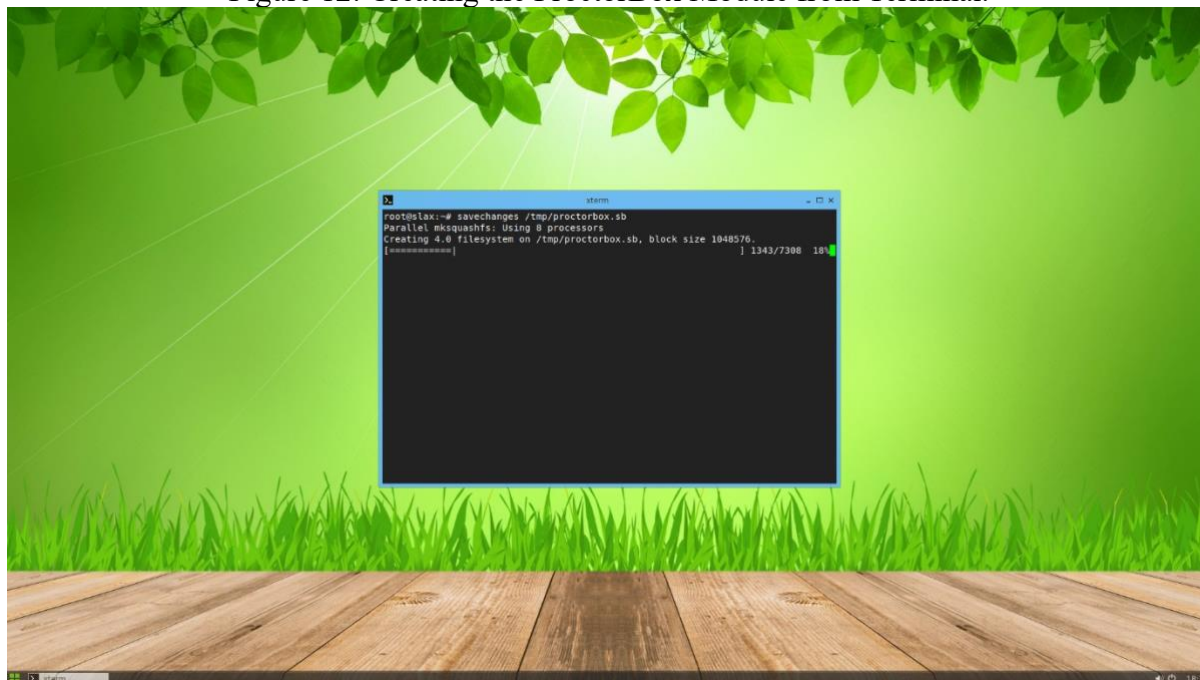
Preparing ProctorBox for Distribution.

We can start distributing our ProctorBox platform to the public, end users, students, and system owners, and the process is simple. Go back to your Windows PC and plug in the proctor box USB drive that contains the proctobox.sb module. Prepare a secondary blank drive similar to the process we completed in Figure 2. Once the drive has been formatted, paste the two folders 'EFI' & 'slax' into the root directory of your blank drive. Finally, on your new target drive, navigate to /slax/boot and run the bootinst file to prepare our new target drive for boot.

Conclusion and Future Work

ProctorBox represents a significant leap in computerized proctoring applications and platforms, serving as a benchmark for the integrity and security of online examinations. The open-source nature of our platform empowers a global community of academics to constantly contribute to its evolution resulting in an ever-improving, robust proctoring platform that can effectively meet the demands of modern distance learning education. From advanced proctoring features such as trailblazing browser security to its intuitive user interface ProctorBox caters to educators and students alike, promoting an environment of fairness and ease. Moreover, ProctorBox is not just a proctoring platform but a pioneer in offering no-cost proctoring to students worldwide. Our unparalleled scalability and interoperability make ProctorBox a leading platform for online examinations, setting the gold standard for secure, fair, and transparent online examinations.

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Difficulties in Instructing Novice Nurses as Perceived by Preceptors

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Abstract

Preceptors of novice nurses are expected to play an important role as part of the continuing education of novice nurses who have just become nurses after graduating from school. Since preceptors may experience a variety of difficulties in instructing novice nurses, it is necessary to provide support for preceptors to alleviate the difficulties in instructing novice nurses. This study aims to elucidate the difficulties perceived by preceptors in instructing novice nurses. An anonymous self-administered questionnaire survey was conducted from February to March 2021 to investigate the difficulties perceived by preceptors. The data were qualitatively and inductively analyzed. The survey items included: demographics (age, gender, professional experience, length of working as a nurse, length of working as a preceptor, hospital wards assigned to, and final education); and experiences with difficulties in instructing novice nurses. Demographic characteristics of the participants were: mean age 30.6 years, mean nursing experience 6.7 years, and mean preceptor experience 3.1 years. The described data were organized into categories and subcategories according to similarity of meaningful contexts. Eighty-nine contexts and three categories were identified: "Difficulties related to the attitude of novice nurses when being instructed," "Difficulties in performing the role of preceptor," and "Difficulties due to disagreements with seniors/supervisors about instruction policies." The findings show the necessity to provide support for preceptors to improve their nursing practice skills and educational skills to educate novice nurses with confidence. Entire organizations, including senior nurses and nursing managers, need to establish education policies and support arrangements for preceptors of novice nurses.

Keywords: Preceptors, Difficulties, Novice Nurses, Instructing

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Introduction

In recent years, the needs of the general public for medical care and quality nursing in Japan have increased due to shorter hospital stays, along with the increase in the aged population and decreased birthrate and also with the advances in medicine. However, due to the discrepancy between basic nursing education and clinical practice, novice nurses may experience a reality shock (Itomine et al., 2006) and burnout (Suzuki et al., 2005). In 2011, the Ministry of Health, Labour, and Welfare (MHLW) released guidelines for training of novice nurses (Guidelines), which stipulated training after the graduation from nursing schools: an obligation to make increased efforts (MHLW, 2010), to ensure improvements in support for novice nurses. Preceptors of novice nurses are assumed to be part of the continuing education of novice nurses who have just become nurses after graduating from nursing school. These preceptors need to evaluate educational achievements of novice nurses, such as on basic knowledge, skills, and attitudes as nurses (Ministry of Health, Labour and Welfare, 2014), and to play an important role in instructing novice nurses. Previous studies have reported that preceptors with about five-year nursing experience and who are inexperienced in social and clinical experience (Komiyama, 2016) feel a lack of confidence in their own instruction (Ito & Munakata, 2016). Preceptors also play various roles as leader nurses and members of medical teams in addition to the educational roles for novice nurses. To meet the needs for their roles, preceptors may engage in the instruction of novice nurses with a sense of tension, and experience a variety of difficulties in instructing novice nurses. For this reason, it is necessary to provide support for preceptors to alleviate the difficulties in instructing novice nurses. This study aims to elucidate the difficulties perceived by preceptors in instructing novice nurses.

Methods

1. Terms and Definitions
   1) Preceptors: Teachers who provide practical instructions and evaluation of clinical practice for novice nurses
   2) Novice nurses: Nurses who are employed as nurses directly after obtaining the nursing license

2. Survey Items
   1) Demographics (age, gender, professional experience, length of working as a nurse, length of working as a preceptor, hospital wards assigned to, and final education)
   2) Experiences with difficulties in instructing novice nurses

3. Participants and Survey Methods
   In February and March of 2021, we conducted an anonymous self-administered questionnaire survey with 92 nurses who perform preceptor roles in participating university hospitals, to investigate difficulties perceived by the preceptors. The data were qualitatively and inductively analyzed.

4. Analysis
   Data from the open-ended section in the questionnaire were coded while ensuring that the meaning of the descriptions of difficulties perceived by the preceptors was not distorted. The codes were organized into categories and subcategories according to similarities and relevance of the descriptions. The results of analysis were examined

and evaluated with the supervision of researchers in Doctoral programs in the field of nursing management and policy studies.

5. Ethics

This study was approved by the ethics review committee of Teikyo Heisei University. We explained the purpose, methods, and ethical considerations of the study to the participant nurses in writing.

Results

1. Demographics of Participants

Twenty-five (27.2%) responses that described "Experiences with difficulties in instructing novice nurses" from among responses collected from 92 preceptors working in two university hospitals and engaging in instruction of novice nurses were determined to be valid: 22 (88%) females, 2 (8%) males and 1 (4%) unknown. Demographics of the included respondents were as follows: mean age 30.6 years, mean nursing experience 6.7 years, and mean preceptor experience 3.1 years (Table 1).

Table 1: Demographic Characteristics of Participants

Item	Detail	n	%	Mean
Age (years)	25 - 30	15	60	30.6
	31 - 35	5	20	
	36 - 40	2	8	
	41 -	3	12	
Sex	Male	2	8	
	Female	22	88	
	Unknown	1	4	
Occupation	Nurse	20	80	
	Midwife	5	20	
Nursing experience (years)	2.9 - 5	14	56	6.7
	6 - 10	7	28	
	11 -	4	16	
Preceptor experience (years)	1 - 5	19	76	3.1
	6 - 10	4	16	
	Unknown	2	8	
Ward	Internal medicine	2	8	
	Surgery	9	36	
	Pediatrics	2	8	
	Obstetrics and gynecology	6	24	
	Mixed ward	4	16	
	Operating room	2	8	
Final education	Nursing professional school	10	40	
	Nursing junior college	8	32	
	Nursing college/university	7	28	

2. Difficulties in Instructing Novice Nurses as Perceived by Preceptors (Table 2)

As difficulties perceived by preceptors, 89 contexts were identified. Classifying these according to similarity of meaningful contexts, we examined them further, and narrowed the contexts down to 69 contexts in the following three categories: "Difficulties related to the attitude of novice nurses when being instructed," "Difficulties in performing the role of preceptor," and "Difficulties due to disagreements with seniors/supervisors about instruction policies." In the following, subcategories will be indicated with single quotation marks (' ') and descriptions of difficulties in *italics*.

1) Difficulties related to the attitude of novice nurses when being instructed
The category "Difficulties related to the attitude of novice nurses when being instructed" is comprised of three subcategories: 'Disappointments at the teaching not being understood and applied' was derived from *Disappointed because novice nurses did not understand and did not apply what they had learned although they were instructed in the same matter over and over*; 'Dealing with novice nurses who are unwilling to learn' was derived from *Felt difficulties in instructing novice nurses because it seemed that they did not follow advice to study what they had learned by themselves*: and 'Disturbed by the attitude of novice nurses when being instructed' was derived from *Feelings of emptiness in instructing assigned novice nurse because of their attitudes lacking any wish to improve themselves*.

2) Difficulties in performing the role of preceptor
The category "Difficulties in performing the role of preceptor" is comprised of nine subcategories: 'Individual differences in the development and comprehension of novice nurses' was derived from *Feel difficulties in instructing novice nurses because of differences in understanding and experience of nursing skills depending on the schools they graduated from*; 'Communication difficulties' was derived from *Felt difficulties in communicating what I should teach because the novice nurses began to cry immediately when I used somewhat strong words in the instruction*; 'Difficulties in instructing when novice nurses make mistakes' was derived from *Experienced a hard time because I had no experience in giving instruction on the mistakes novice nurses made*; 'Difficulties in fulfilling assigned roles' was derived from *Felt difficulties in deciding what and how I should instruct because I did not know what a preceptor should do*; 'Anxiety due to lack of confidence' was derived from *Feelings that my teaching methods were not good enough because it took a long time for the novice nurses to understand what I instructed them in*; 'Difficulties in understanding the situation of novice nurses' was derived from *Felt difficulties in sharing the information about how well the novice nurses have mastered skills when among other staff;* 'Anxiety about giving mental support to novice nurses' was derived from *Worries about whether I am able to instruct novice nurses with a full understanding of their feelings*; 'Turnover of novice nurses in the charge of the preceptors' was derived from *Worries that the novice nurses in my charge will leave their employment*; and 'Burden of time spent out of work hours' was derived from *Feeling it a burden to take care of novice nurses' daily reflection outside of my work hours because I myself am busy with my duties*.

3) Difficulties due to disagreements with seniors/supervisors about instruction policies
The category "Difficulties due to disagreements with seniors/supervisors about instruction policies" is comprised of two subcategories: 'Pressure from senior nurses' was derived from *Experienced a hard time in instructing novice nurses because people around me told me different opinions about instruction of novice nurses*; and 'Disagreements with seniors/supervisors about instruction goals' was derived from *Feeling uncomfortable*

instructing novice because the situation of on-site novice nurse instruction did not match the ideas of my supervisor, and it took time to set goals for the novice nurses.

Table 2: Difficulties in Instructing Novice Nurses as Perceived by Preceptors

Category	Subcategory	Description of Difficulties
Difficulties related to the attitude of novice nurses when being instructed	Disappointments at the teaching not being understood and applied	I gave guidance on medical safety, but I was anxious about letting the novice nurses do the work alone because they do things from their own ideas without reviewing it.
		Disappointed because novice nurses did not understand and did not apply what they had learned although they were instructed in the same matter over and over.
		I had other nurses help me to instruct the novice nurses in my charge, but I felt a sense of emptiness because the novice nurses did not understand or apply what they had learned.
		I have been thinking of different ways to instruct the novice nurses, but it is hard to produce results.
		I was disappointed because the novice nurses were not able to use the nursing skills that I taught them.
		It was painful for me to say the same things many times because the novice nurses did not share information among themselves.
	Dealing with novice nurses who are unwilling to learn	Felt difficulties in instructing novice nurses because it seemed that they did not follow advice to study what they had learned by themselves.
		I thought that the novice nurses would not be able to make progress in their studies because they were passive and not proactive.
		I told the novice nurses to submit reports on the what they had been instructed in, but they did not submit the reports. I was disappointed because they had no motivation.
		I repeatedly told the novice nurses what I wanted them to learn and memorize, but they did not follow my advice, and I felt uneasy.
		I felt it difficult to teach novice nurses because they did not follow my advice to reflect on what they had learned and to study in advance.
		I was worried that the novice nurses in my charge would repeat the same mistakes over and over because they were not aware that they had caused incidents and made mistakes.
		I had trouble with how to teach novice nurses who would not reflect on what they had learned and not prepare for the study in advance.
	Disturbed by the attitude of novice nurses when being instructed	Feelings of emptiness in instructing assigned novice nurse because of their attitudes lacking any wish to improve themselves.
		It was difficult for me to teach the novice nurses I was in charge of because they showed poor attitudes when they were instructed.
		I did not know how to teach the novice nurses who would not try to learn because they showed rebellious attitudes when I told them to learn what they already had been instructed in.
		I was troubled because I did not know how to instruct novice nurses and I repeatedly instructed them, but they did not respond to my instructions.
		I felt uneasy because the novice nurses were rough in their speech also in front of patients.
		I felt it unrewarding to teach novice nurses because they would not listen to me when I was giving them instructions.

Table 2 (Continued)

Category	Subcategory	Description of Difficulties
Difficulties related to the attitude of novice nurses when being instructed	Disturbed by the attitude of novice nurses when being instructed	I was disappointed when the novice nurses said "I do not know" and "It was first time to hear this" although I had already taught them these matters. I felt uneasy about the attitudes of the novice nurses being instructed because they did not take notes when I gave advice to them.
Difficulties in performing the role of preceptor	Individual differences in the development and comprehension of novice nurses	Feel difficulties in instructing novice nurses because of differences in understanding and experience of nursing skills depending on the schools they graduated from. It is difficult to teach novice nurses by changing teaching methods because of the individual differences in their development. I was concerned about whether the work load I give them is appropriate because of the individual differences in their understanding.
	Communication difficulties	Felt difficulties in communicating what I should teach because the novice nurses began to cry immediately when I used somewhat strong words in the instruction. I felt difficulties because the novice nurses took everything I said to them with the intention of giving them guidance as a kind of power harassment. Communication is difficult because the novice nurses felt they were scolded by me although I was just giving them instructions. Due to a generation gap with novice nurses, I felt the work to be difficult because of the difference between what I wanted to convey and how the novice nurses understood it. It is difficult to teach because the novice nurses of had different standards of values.
	Difficulties in instructing when novice nurses make mistakes	Experienced a hard time because I had no experience in giving instruction on the mistakes novice nurses made. I felt uneasy because I thought my instruction was poor when the novice nurse made the same incidence again and again. I lost confidence in my way of giving instructions to see my novice nurse being discouraged when I gave her instructions on the mistakes she made in her task. I felt a sense of emptiness when novice nurses acted on their own decisions, resulting in incidents and mistakes. I felt burdened to follow up on mistakes made by the novice nurses in my charge when I was not available.
	Difficulties in fulfilling assigned roles	Felt difficulties in deciding what and how I should instruct because I did not know what a preceptor should do. I was worried about my instruction methods as a preceptor in charge of novice nurses. I felt difficulties in showing novice nurses how to behave as adult members of society. I felt uneasy when I could not assist the novice nurse who were given a severe complaint by a patient.
	Anxiety due to lack of confidence	I was anxious about whether the novice nurses fully understood what I taught them because I was teaching them while doing my own duties. Feelings that my teaching methods were not good enough because it took a long time for the novice nurses to understand what I instructed them in.

Table 2 (Continued)

Category	Subcategory	Description of Difficulties
Difficulties in performing the role of preceptor	Anxiety due to lack of confidence	I worried about my teaching methods because I was not confident in teaching novice nurses. I felt anxious about teaching novice nurses because I was not sure if I was able to communicate my ideas to them. I felt difficulty in teaching novice nurses because I was not able to explain the nursing skills to them so they understood. Because I was not sure if my knowledge was correct, I was worried that I may have told something wrong to the novice nurses. I am not sure if I can instruct novice nurses to become aware of the answers by themselves instead of just teaching them the answers. I worried that I had to give instruction to novice nurses, because I was not competent in nursing.
	Difficulties in understanding the situation of novice nurses	Felt difficulties in sharing the information about how well the novice nurses have mastered skills when among other staff. Because there were times when my assignment was different from that of the novice nurses, it was difficult for me to understand their situations. So I felt difficulties in instructing the novice nurses.
	Anxiety about giving mental support to novice nurses	Worries about whether I am able to instruct novice nurses with a full understanding of their feelings. I am not sure if I can support the stress the novice nurses feel. I am not sure if I can provide emotional support to novice nurses who are depressed when they compare their progress to that of their peers.
	Turnover of novice nurses in the charge of the preceptors	Worries that the novice nurses in my charge will leave their employment I was disappointed when I knew that the novice nurse I had carefully guided decided to quit nursing because I expected her to become a competent nurse. I am not sure whether I can fulfill my preceptor roles because the novice nurse I was in charge of quit
	Burden of time spent out of work hours	It is burdensome to follow up novice nurses who work slowly day after day. Feeling it a burden to take care of novice nurses' daily reflection outside of my work hours because I myself am busy with my duties I feel that novice nurses feel it a burden to be instructed outside of work hours. I often have to give instructions to novice nurses outside of work hours. This makes me feel it burdensome because I am not paid for overtime work. I often have to give instructions to novice nurses outside of work hours. This makes me feel it burdensome because I am not paid for overtime work. I think it burdensome to create teaching materials and check the homework for novice nurses after my regular work hours.
Difficulties due to disagreements with seniors/supervisors about instruction policies	Pressure from senior nurses	Experienced a hard time in instructing novice nurses because people around me told me different opinions about instruction of novice nurses It was difficult for me to be told by other nurses that the novice nurses in my charge were behind the novice nurses other nurses were in charge of.

Table 2 (Continued)

Category	Subcategory	Description of Difficulties
Difficulties due to disagreements with seniors/supervisors about instruction policies	Pressure from senior nurses	It was difficult for me to be urged by senior nurses to instruct my novice nurses as scheduled because the instruction I had planned did not go as planned.
		I know that there are things I do not know as a preceptor, but I had a hard time when senior nurses questioned me about my teaching methods.
		I was disappointed when a senior nurse told me that my teaching method was poor by pointing out what the novice nurse in my charge failed to do what she was instructed to do.
		There was a traditional workplace belief that the opinions of senior nurses are absolute, and I had difficulties in instructing novice nurses due to difference in instruction policies with superiors.
	Disagreements with seniors/supervisors about instruction goals	Feeling uncomfortable instructing novice because the situation of on-site novice nurse instruction did not match the ideas of my supervisor, and it took time to set goals for the novice nurses.
		I always made efforts in instructing novice nurses but the novice nurses in my charge did not progress as planned. I was disappointed when I was told to lower the goal I set for my novice nurses.
		It is natural that there are individual differences in the development of skills of novice nurses, but my superior told me to teach the novice nurses not to be behind other novice nurses. I had difficulty in teaching them.

Discussion

1. Characteristics of Participants

The preceptors in this study were midcareer nurses who practice nursing based on traditionally accepted moral principles, assessing situations as a whole rather than separate from the perspective of an isolated element, like competent nurses, which is the level at which nurses can conduct their own nursing practices based on long-term goals and plans from their clinical experience (Benner, 2005). This definition suggests that nurses who can supervise novice nurses have practical skills to assume important roles such as leadership roles and instructing novice and other junior nurses.

2. Difficulties in Instructing Novice Nurses as Perceived by Preceptors

Difficulties in instructing novice nurses as perceived by preceptors were comprised of three categories: "Difficulties related to the attitude of novice nurses when being instructed," "Difficulties in performing the role of preceptor," and "Difficulties due to disagreements with seniors/supervisors about instruction policies." The results in the present study showed that preceptors had difficulties with novice nurses, with themselves, and with others around them, such as their seniors and supervisors. These difficulties were similar to the results of a previous study identifying difficulties which newly appointed preceptors experienced in instructing novice nurses (Hirano & Koyama, 2018). The present study discusses the categories identified as difficulties in instructing novice nurses and examines measures to support preceptors who have difficulties in instructing novice nurses.

1) Difficulties related to the attitude of novice nurses when being instructed

The analysis in this study showed that preceptors felt difficulties towards the attitude of novice nurses being instructed. These difficulties arose from a lack of motivation to learn and poor attitudes in towards learning. Gregg et al. (2017) reported that novice nurses do not know what needs to be done and how to do things during the transition from being a student to performing as a nurse, and cannot study as they wish in the new unfamiliar work environment. The attitude of novice nurses when being instructed may be affected by these learning obstacles. If preceptors know the background of the motivation to learn and the way of learning of novice nurses, they may have opportunities to think about support for novice nurses to improve the motivation of the novice nurses to learn and guide their way of learning. For this reason, it is necessary to provide support for preceptors to be able to assist novice nurses to learn.

2) Difficulties in performing the role of preceptor

The analysis in this study showed that preceptors felt difficulties in performing the role of preceptor including the interaction with the novice nurses. A previous study reported that preceptors feel difficulties in instructing novice nurses and find it burdensome because preceptors have no confidence in their instruction due to their own lack of knowledge and teaching experience (Ito & Munakata, 2016). This could be because much of the instruction provided during daily duties is related to nursing activities such as assessment and care in utilizing nursing skills, this then causing difficulties in relation to the practical nursing skills of the preceptors (Yamakawa & Miyazato, 2023). It is important to train preceptors as well as novice nurses by improving educational support for preceptors. If preceptors can then deal with novice nurses with confidence, this may be helpful for the preceptors to develop themselves.

3) Difficulties due to disagreements with seniors/supervisors about instruction policies

Preceptors felt difficulties when they faced opinions and pressures from senior nurses about the degree of development of novice nurses and the teaching methods, and there were also differences in instruction policies and goals between preceptors and their supervisors. A previous study reported that it may be difficult for nurses in charge of performing preceptor roles with 2 to 3 years of working experience as nurse to be able to communicate and express their opinions to their seniors (Hirano & Koyama, 2018). Further, the educators of novice nurses have not been able to interact with preceptors as well as novice nurses although such interaction is supposed to be important. It has been reported that preceptors find it difficult to fully understand the instruction policies and the teaching plans established based on these for the entire team (Gregg, Yagi, & Tamada, 2016). These findings suggest that opinions and advice from senior nurses and supervisors may create difficulties for preceptors when they feel difficulties in performing their roles. Together these show the necessity to create an environment where preceptors can ask advice from their seniors and supervisors without hesitation and obtain support for the instruction of novice nurses. It is also necessary to provide organizational support so that preceptors can provide unified instructions for novice nurses by having seniors and supervisors understand the instruction policies of preceptors.

Conclusions

As difficulties in instructing novice nurses, as perceived by preceptors, the following difficulties were identified: difficulties related to the attitude of novice nurses when being instructed, difficulties in performing the role of preceptor, and difficulties due to

disagreements with seniors/supervisors about instruction policies. The findings suggest the necessity to provide support for preceptors to improve their nursing practice skills and educational skills to educate novice nurses with confidence. The whole of the nursing organization, including senior nurses and nursing managers, need to establish education policies and support arrangements for preceptors of novice nurses. Further studies are needed to elucidate how the difficulties perceived by preceptors affect their instruction based on the results of this study by conducting a questionnaire survey with preceptors using an originally developed scale to evaluate the difficulties of preceptors.

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Clarice Lispector's "Água Viva": Literature, Culture, and the Power of Words

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Abstract

I am interested in Modernist Literature, specifically written by women, and Clarice Lispector is a renowned 20th century Brazilian writer. I have studied and authored my dissertation on a few of her works, but now want to focus on *Água Viva*, which is considered a third stage Brazilian Modernist book. It is about a woman painter who is fascinated with the power of words and poses several existential questions. Edmund White has placed Lispector in the same pantheon as Kafka and Joyce, and Hélène Cixous has given several lectures on the writers' oeuvre and style. I will focus on the voice of the woman narrator, who is facing her most honest and inner questionings as she goes through a stage in her life when she is the closest to understanding her own nature, her own existence as a Latin American woman. The flow of the prose-poetic work is intense, and the reader must also surrender themself entirely to the mind of the painter/poet. This way they will be able to understand what it is to be a mature and independent Brazilian woman of 50 years ago. Further, I will explain how I use literature in the world language classroom, in the hopes of motivating students to understand other cultures, learn and appreciate the power of words, and of literature.

Keywords: Reading, Second Language Acquisition, Modernism

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Introduction

> *"Preciso terrivelmente de você. Nós temos que ser dois. Para que o trigo fique alto"*
> *[I need you terribly. We must be two. So that the wheat grows tall].*
> Clarice Lispector (Lispector & Ferraz, 2020)

Clarice Lispector was a wonderful Brazilian Modernist writer who never failed to impress but was not always understood. Most of her short stories and novels present the reader with characters in search of something or in a process of growth, of internal discovery that pushes the reader into a fascinating journey. In *Água Viva*, something similar occurs, rather randomly perhaps. The narrator's flow guides the reader but also disorients. To Lúcia Helena, *Água Viva* is "Nem romance, nem novela, nem conto, nem poema, apenas (e isso não é pouco) fragmento, história em ruína, *Água Viva* condensa tensões e desestabiliza expectativas, fazendo-se linguagem ardente, corpo de significantes em cenas fulgor" (Helena, 1997, p. 98). [Neither novel, nor soap opera, nor short story, nor poem, just (and this is no small feat) fragment, story in ruin, *Água Viva* condenses tensions and destabilizes expectations, becoming fiery language, a body of signifiers in brilliant scenes]. I discuss some aspects of this story in ruin that can confuse and enlighten, but hopefully in the end raise some interesting existential questions as well as improve students' language skills.

In *Água Viva*, one of the themes that stand out is freedom. Woman's freedom, a feeling of total happiness deriving from such liberty of the mind and creativity. I will discuss a bit about that and how it is inspiring to the reader to allow themselves to experience something similar. Also, through this type of fluid reading, I think it is possible to teach Portuguese language students not only many new words and practice structures but also motivate their creativity, critical thinking, and personal growth. *Água Viva* is a unique combination of the simple and the complex, the body and the soul, the physical and the transcendental, and it is my hope that it will guide students to experience some of those as they read and reflect upon the literary piece.

A Woman's Freedom

A constant theme in *Água Viva* is freedom. It is the sort of freedom of heart and soul that does not depend on where one is but rather on one's inner self. The reader knows the writer is a woman, and that makes sense from the perspective of a mature, independent woman in the 1970s in Brazil. Clarice Lispector was then divorced, living in an apartment in Rio by choice, visiting the Botanical Garden in that city, and writing as much as she possibly could every chance she had. She was a successful journalist and had published many short stories and seven books before she published *Água Viva* in 1973, four years before her passing in 1977. She had been writing since childhood and published her first novel as a young adult. She was from a poor Jewish Ukrainian family who immigrated to the northeast of Brazil escaping Russian persecution during that country's civil war. At the age of twelve, she moved with her family to Rio de Janeiro and entered law school at twenty-one, graduating in 1944. She frequently wrote for the newspaper. She worked all her life, in and out of the house as she traveled to different parts of the world with her diplomat husband. She achieved true and complete freedom after her divorce when she was able to fully dedicate herself to her thoughts and her writing.

In *Água Viva* the reader is invited to a journey hand in hand with the narrator. It is a journey that involves intuition, self-discovery, freedom to imagine anything that is not limited to time

or space. What matters is the present, but the past and the future exist as an illusion that also inspires and motivates. Telma Maria Vieira concludes in her analysis of Lispector's reader that the author's metalinguistic process offers innumerable possibilities of study, but she chooses to center her reading in the implicit reader (Vieira, 1998, p. 19). Such a reader is constructed in the text and has a narrow connection with language, the characters, the narrator, the author, and all become characters. I argue that the reader also becomes a character in *Água Viva*. The end of the prose-poem is a revelation of the reader's pertinent place in this journey: "O que te escrevo é um 'isto'. Não vai parar: continua. Olha para mim e me ama. Não: tu olhas para ti e te amas. É o que está certo" (Lispector & Ferraz, 2020). [What I write to you is 'this'. It will not stop: it goes on. Look at me and love me. No: look at yourself and love yourself. It is what is right]. The reader is left with a sense that they are enchanted, that time goes beyond the present moment as they learn to love themselves, or at the very least love themselves more as Clarice wants them to do. The reader is equally free, independent, ecstatic, full of the complete hallelujah they learn about in the first paragraph of this beautiful work.

Literature in the Study of Language and Culture and the Creation of Art

There is a narrator-character in LW who is a painter and a writer and guides the reader throughout the text to engage in the story telling. It is thus very easy to use *Água Viva* in the language and culture classroom because the narrator-character involves the reader in the process the whole time. Telma Maria Vieira, in *Clarice lispector: uma leitura instigante*, points out that "Clarice Lispector's fiction, especially *Água Viva*, has what Olga de Sá called 'poetics of the instant': the attempt to grasp the present moment. The desire to take possession and write the "it" of things turns difficult due to the 'discursivity of language', against which Clarice Lispector fights hand to hand" (Vieira, 1998). Thus, Clarice Lispector's writing seeks to break the limits of the signifier, therefore, needing a special reader who, like her, is willing to build themselves throughout the narrative and read in an unlimited way. The reader needs to be sensitive to participate in the conversation with the narrator-characters and even with the author herself, who is textualized. Additionally, Valdicléa Souza notes that:

> Com efeito, o narrador-personagem abre seu texto convidando o leitor para um jogo. Ele – que objetiva desconstruir os sentidos das coisas–brinca com leitor em todo o texto. Como uma criança diante de um brinquedo novo, o narrador-personagem desmonta a palavra em busca de uma origem primeira e absoluta. Todavia, o texto fica desmontado, porque, em seu jogo discursivo, o que interessa é desmontar para que os leitores possam juntar as peças do quebra-cabeça. Descobrimos, então, a intenção discursiva do narrador e, consequentemente, a figura de leitor construída em toda narrativa. (Souza, 2018)

> [In effect, the narrator-character opens their text by inviting the reader to a game. They–who objectively deconstruct the meanings of things–play with the reader throughout the text. Like a child faced with a new toy, the narrator-character dismantles the word in search of a first and absolute origin. However, the text remains disassembled, because, in its discursive game, what matters is dismantling so that readers can put the pieces of the puzzle together. We then discover the narrator's discursive intention and, consequently, the figure of the reader constructed throughout the narrative].

This is pertinent to the process of reading and learning Portuguese through literature. The Second Language Acquisition class students may also creatively participate in the game as they practice reading and learn new vocabulary and structures. Such a powerful narrator character is the perfect motivator for the students. For example, in several passages, they discuss time, the essence of time, the seed of time, the past, present, and future. Students in the intermediate and advanced levels can write more elaborate sentences after reading passages of *Água Viva* in those tenses, but beginning level students are soon capable of asking and answering questions in the present tense and near future using *Água Viva* as inspiration. "Nova era, esta minha, e ela me anuncia para já. Tenho coragem? Por enquanto estou tendo: porque venho do sofrido longe, venho do inferno de amor mas agora estou livre de ti. Venho do longe—de uma pesada ancestralidade" (Lispector & Ferraz, 2020, p. 13). ["New era, this mine, and it announces to me right away. Do I have the courage? For now, I am having it: one of because I came from suffering far away, I come from the hell of love but now I am free from you. I come from far away—from a heavy ancestry"].

In this paragraph, the narrator-character reflects upon their courage and concludes it has to do with their ancestry. This is a common concept many people like to discuss, so an idea for the classroom is to have students describe their ancestry. They will read the paragraph in class and describe their family. Beginning level students can learn vocabulary about the family and draw a family tree, whereas intermediate level students can go a step further by sharing what they know about their ancestors, or their best guess, or even how they imagine their ancestors' lives were.

The narrator-character is a lover of words, and that is inspiring. Several pages deal with the concept of freedom. Those are two different concepts that can be explored philosophically or in more tangible ways. The way Sunday is described is so simple yet deep and revealing of a Sunday in a tropical place:

> Agora é dia feito e de repente de novo domingo em erupção inopinada (súbita). Domingo é dia de ecos—quentes, secos, e em toda parte zumbidos de abelhas e vespas gritos de pássaros e o longínquo das marteladas compassadas—de onde vêm os ecos de domingo? Eu que detesto domingo por ser oco. Eu que quero a coisa mais primeira porque é fonte de geração--eu que ambicio beber água na nascente da fonte—eu que tudo isso, devo por sina e trágico destino só conhecer e experimentar os ecos de mim, porque não capto o mim propriamente dito. Estou numa expectativa estupefaciente, trêmula, maravilha, de costas para o mundo, e em alguma parte foge o inocente esquilo. Plantas, plantas. Fico dormitando no calor estio do domingo que tem moscas voando em torno do açucareiro. Alarde colorido, o do domingo, e a esplendidez madura. E tudo isso pintei há algum tempo e em outro domingo. E eis aquela tela antes virgem, agora coberta de coisas maduras. Moscas azuis cintilam diante de minha janela aberta para o ar da rua entorpecida. O dia parece a pele esticada e lisa de uma fruta que numa pequena catástrofe os dentes rompem, o seu caldo escorre. Tenho medo do domingo maldito que me liquifica. (Lispector & Ferraz, 2020, p. 14)

> [Now the day is over and suddenly again Sunday in an unexpected eruption. Sunday is a day of echoes—hot, dry, and everywhere the buzzing of bees and wasps, the cries of birds and the distant sound of rhythmic hammering—where do Sunday's echoes come from? I hate Sundays for being hollow. I who want the most important thing because it is the source of generation--I who aspire to drink water from the source of the fountain--I want all of this, I must by fate and tragic destiny only know and experience the

echoes of myself, because I do not capture myself properly said. I am in stupefying anticipation, trembling, wonder, with my back to the world, and somewhere the innocent squirrel runs away. Plants, plants. I stay asleep in the heat of the Sunday summer with flies flying around the sugar bowl. Colorful fanfare, that of Sunday, and mature splendidness. And all of this I painted some time ago and on another Sunday. And here's that previously virgin canvas, now covered with ripe things. Blue flies flicker before my window opens to the dull street air. The day looks like the stretched and smooth skin of a fruit that in a small catastrophe the teeth break and its juice run out. I'm afraid of the damn Sunday that liquefies me].

I would ask students to start by jotting down some words to explain what their least favorite day of the week is, then share with their partner and inquire further about what they dislike about that day, and even draw each other's day, inspired by the poet/painter's actions. Further, they can suggest ways through which their least favorite could become less tedious or burdensome. To analyze a bit about the culture, a subject that has become equally important in the U.S.A. World Language Education, the conversation could go to differences in lifestyle in Brazil and the U.S.A. or the student's country/ies of origin. Sundays in Brazil are for the most part days of rest, family visits, long lunches with typical foods, music or TV and conversation, and so on. How do students spend their Sunday? I can see many of them talking about finishing their homework due on Canvas by 11:59pm. What would they wish they were doing instead? Do they fear any day of the week the way the poet/painter fears Sundays? Would you paint or do something you like to make your least favorite day more interesting or fun?

The narrative ends on a Saturday, and the reader will remember that is the day before the narrator-character's most dreaded day. The cycle goes on, and that is an invitation for reflection on life, time, and purpose. As Lúcia Helena points out, "mais do que metalinguagem, em *Água viva* há um constelado, uma rede entramada e obsessive, uma teia de linguagem que revê a temporalidade linear dos antigos textos[...]. E é neste espaço-tempo, instante-já, que se constrói a teia de linguagem de Lispector na qual, experiência de vida e escrita, o sujeito se inscreve na história" (Helena, 1997, p. 91) [More than metalanguage, in *Água Viva* there is a constellation, an interlocking and obsessive network, a web of language that reviews the linear temporality of ancient texts [...]. And it is in this space-time, instant-now, that Lispector's web of language is constructed in which, life experience and writing, the subject is inscribed in the story]. For the more artistic students, this is all plenty of food for thought. Drawing, painting, writing, and photographing are some projects of which I can think. I would suggest students pursue and present their creative work inspired by *Água Viva* as an end-of-the-semester project presentation.

Esther Schat et al, in "Key Principles for an Integrated Intercultural Literary Pedagogy: An Educational Design Research Project on Arts Integration for Intercultural Competence" show how they treat literature in the language and cultural classroom as an art form. My goals and process of teaching literature in the language and culture classroom are like theirs. By treating literature as an art form, they formulate research-based design principles for an integrated intercultural literary pedagogy (IILP) that may foster intercultural competence through arts integration in foreign language classes at the pre-university level in the Netherlands. Their results illustrated the effectiveness of IILP-based lesson materials for intercultural competence. Although participating students encountered some difficulties relating to the functionality of the design, students appreciated its social relevance. They reported that processing literary texts through dialogic tasks with peers in the target language fostered intercultural language learning (Schat et al., 2021, p. 332). The narrator-character in

Água Viva is very engaging, so the readers/students can experience their perspective rather than simply reading about it. Such an engagement, as noted by Ana Gonçalves Matos in *Literary Texts and Intercultural Learning: Exploring New Directions*, makes literary texts highly valuable artistic expressions for intercultural development (Matos, 2012). Some of the skills implicated in the construction of textual understanding can facilitate intercultural learning, opening opportunities for a pedagogical approach in which the reading of literary texts develops students' intercultural perspective and fosters reflection on cultural difference.

Animals and Dreams in *Água Viva*

My personal experience as a reader of *Água Viva* is that I am taken to a fascinating world of animals of all kinds in a dreamlike manner. The whole narrative seems like a dream to me. It is tangible yet distant, a game of words and feelings that almost intoxicate. There is a constant search for the essence of things, the "it", and I wonder how I would describe my "it", my essence, my desire to do the simplest and the craziest or most spiritual things. The beginning of the literary piece sounds like a birth, and the end takes the reader to infinite through a cycle that never ends even though it is grounded in the present. It is truly empowering.

By using this prose-poem or story in ruin in the Portuguese as a Second Language Classroom I would like to explore the concept of dreams and take that to each students' understanding and experiences dreaming or creating a dream. They can write or describe a dream they have had or perhaps would like to have. The narrator-character dreams they are dreaming. That is, to me, the purest form of dream. A dream within a dream creates infinite opportunities for artistic creativity, production of a poem or a descriptive paragraph, or simply topic for discussion among students and instructor.

The narrator-character uses several animals to engage the reader. I believe that is a great way of engaging the students as well. Such animals are not separate and random beings, but rather they are representations of one's essence. This is sublime, in my opinion. For instance, the poet feels in one passage that they are a tiger with a mortal arrow in its flesh (Lispector & Ferraz 2020, p. 71). People around the wounded tiger fear relieving the tiger from its pain except for a fearless person that takes the arrow out of the tiger's flesh. The narrator-character is brave, and the person who aids the wounded tiger is also brave. What does that mean to the reader/student? Have they felt as if they were animals of some kind before? What type of connection have they felt? Did that bring them comfort? Lispector's art can have the reader exploit their emotions and thoughts about many philosophical and deep concepts.

In a different section of the story in ruins the character-narrator thinks of turtles. Intuition tells them a turtle is a dinosauric animal. It turns out they are correct. Since many students are in sciences, a discussion on biology is appropriate here. Alternatively, some research on other animals that have the same kind of origin, or an activity in which students explain biological concepts they already know in their first language in the target language would be challenging and rewarding to them.

Conclusion

In sum, I have articulated some of the themes in *Água Viva*. Such vary from freedom to one's essence, life and death, spirituality, dreams, and interpersonal connections. Also, I have discussed several ways in which Clarice Lispector's prose-poem or story in ruin is source of

endless possibilities for the creation of activities for the student of Portuguese as a second language as well as culture. I believe students will dive into a fascinating world of ideas that will foster their own creativity and sensibility. There are so many philosophical concepts that are empowering to the students and help them develop their Portuguese language skills and confidence in reading, writing, and speaking.

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Place-Based ESL Learning: Designing a "Beyond ESL" Study Abroad Program

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Abstract

Universities in Japan and South Korea resumed sending students abroad to improve their English skills, to experience new cultures, to acquire global perspectives, and so forth. An international program at a state university provides a 3-week English as a Second Language (ESL) program focusing on oral communication skills and cultural competency. I received a program request for interdisciplinary students to carry out experiential learning activities outside classrooms, learn presentation skills, and stay abroad for five weeks to meet their scholarship eligibility requirements. In response, I designed a 5-week exploration and research course initially in 2022 and revised it in 2023. I adopted the place-based learning approach, in which students use their residing location as a resource to access locally relevant and culturally significant knowledge through authentic learning experiences (Sobel, 2005) and acknowledges "multiple knowledge sources, meanings, and human-place-animal-plant relationships as valid sense-making tools" (McClain, Chiu, & Zimmerman, 2022). The course started with a series of outings in the community, whose focus ranged from microplastic issues to entomology to stream biodiversity, and students conducted group research and final presentations. This course allowed me to showcase culturally unique community locations and research organizations on campus while students gained knowledge from field experts and research and successfully demonstrated research findings and future implications for their lives back home. Based on course evaluations, this paper will conclude with suggestions for designing a place-based learning course to maximize students' learning outcomes and areas for future improvements.

Keywords: Study Abroad, ESL, Place-Based Learning, Program Design

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Introduction

Study abroad is one of many educational opportunities that students at higher education institutions can take during their undergraduate and graduate studies. Regardless of the length of study abroad programs, it can enhance students' formal education in their home countries, raise the level of their global and cultural awareness and knowledge, improve their cross-cultural skills, and boost their potential for future employment opportunities (Smith & Mitry, 2008). It also has a great influence on improving language skills (e.g., Arnett, 2013; Grey, Cox, Serafini, & Sanz, 2015; Masuda, 2011; Taguchi, 2011). There are other benefits of studying abroad, for example, improving students' self-efficacy perceptions (Cubillos & Ilvento, 2013), and facilitating acculturation processes students go through while studying abroad (Doi, 2016).

I am a faculty member at Outreach College at a state university in the United States, and the college offers year-round lifelong learning opportunities for traditional and non-traditional students. In the unit I oversee, there are a variety of non-credit ESL programs including an intensive English program accredited by a specialized accreditation body, and short-term open-enrollment and a la carte (i.e., customized) ESL programs, and we had welcomed many college-age students in our programs before the Covid-19 pandemic. When various restrictions for international traveling and daily life started to get lifted at the end of 2021, I was approached by one foreign partner university with a unique programming request. I was asked to create a program option for a group of 15 interdisciplinary students to fulfill the following three goals:
- to improve conversation and presentation skills in English
- to carry out hands-on and experiential learning activities outside the classroom
- to study abroad for five weeks

The rationale for the last goal was that students could be eligible for study abroad scholarship opportunities by staying outside their home country for more than 31 days. This would help reduce students' financial burden on the costs involved in studying abroad. Upon learning about the three goals, I started to develop a new program option specifically for this group while working with a limited set of resources available within our unit, which had decreased significantly due to reassignments of staff and faculty to other units in the college during the pandemic.

Developing a New Program Framework

Our unit was set to offer an open-enrollment 3-week ESL program in the summer of 2022. The program focuses on improving students' oral communication skills and cultural competency through conversation-focused class activities in and outside the classrooms and a final speaking project all students have to complete at the end of the program. Therefore, having the students enrolled in the open enrollment program would fulfill the first goal set by the partner institution. However, the second and third goals required me to deviate from our usual lineup of program options including setting up a 5-week customized program for this group and to be creative, especially because (a) our unit was still recovering from a lack of human resources compared to the pre-pandemic level, and (b) I had to design and arrange a series of hands-on and experiential learning activities outside the classrooms. To overcome these challenges and deliver a meaningful study abroad program option to the partner institution, I designed an add-on 5-week course, which was complementary to the existing 3-week ESL program, and applied place-based learning principles to the 5-week course. In

other words, I had to think outside the box in terms of developing new courses. Literally, I had to design a "beyond ESL" study abroad program option.

Place-Based Learning Approach

Place-based learning is an instructional approach that aims to immerse students in local natural and cultural contexts and focus on developing students' sense of place and learning through exploring their immediate environment. Depending on how exploration activities are designed and implemented, place-based learning can take many forms and occur in many types of settings such as museums, cultural centers, farms, parks, and beaches. According to some of the key place-based learning principles, students use their residing location, that is, a study abroad location, as a resource to provide natural, cultural, and historical contexts for their explorations (Sobel, 2005). These exploratory experiences serve as a foundation for further learning of course content (Knapp, 2005; Smith, 2022).

ESL instructors are trained to help students improve their English skills, but when it comes to providing information and activities that are unique to a location, they are not usually trained adequately. There are local informants and experts in the community who have a wealth of experience and knowledge of what each location can provide to students. It is critical to redefine our default teacher-student relationship (Irwin & Otteman, 2018) in implementing place-based learning activities. In contrast to how an ESL instructor "teaches" students in his or her ESL classroom, ESL instructors need to step aside and take the role of a facilitator in students' explorations. By acknowledging "multiple knowledge sources" (McClain et al., 2022), new knowledge from explorations can be internalized in a realistic environment with true-life problems and decision-making requirements (Irwin & Otteman, 2018). Thus, depending on how students are asked to interact with each location by local informants and experts and how instructors guide their explorations and encourage divergent thinking (Irwin & Otteman, 2018), place-based learning can be a powerful approach to be taken in study abroad programs.

As shown in Figure 1, a conceptual framework for building intercultural competency in a place-based learning approach (Doi & Agullana, 2023) illustrates three main parties involved in this learning approach: educators (i.e., ESL instructors), local/cultural informants, and students. However, it is important to note that in this learning context, we need to redefine our instructor-student relationship. More precisely, instructors consider students as colleagues in their joint endeavors of carrying out their exploratory activities in an immediate context where all the parties involved can experience something authentic and culturally significant, and where such experience is relevant to each one's life.
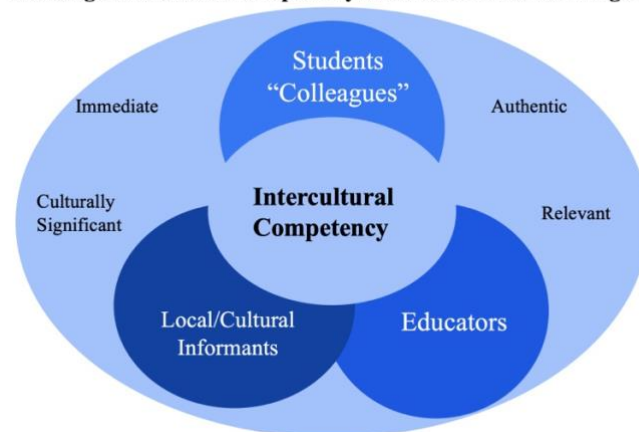
Figure 1: Conceptual framework for building intercultural competency in a place-based learning approach (Doi & Agullana, 2023)

Implementing a 5-Week Exploration and Research Course

This 5-week course was designed to add two more weeks to students' stay in a study abroad location. I added one week of conducting fieldwork before the 3-week open enrollment ESL program and another week of preparing and presenting their research projects after. Following the place-based learning conceptual framework (Doi & Agullana, 2023), I chose a series of locations and activities that had significance to our lives and could satisfy a variety of interest areas among interdisciplinary students. I co-taught the course with another ESL faculty member in the unit. Table 1 shows how this 5-week place-based learning course was aligned with the 3-week ESL program and how activities in the 5-week course were sequenced.

week 1	• course and safety orientation • 4 site visits
weeks 2-4	• 3-week ESL program • semi-independent group reearch • weekly research progress meeting (three times) • introduction to giving an oral presentation session
week 5	• presentation rehearsal • final presentations

Table 1: 5-week course design

During the site visits, students had opportunities to engage in activities specially prepared for them alongside local or cultural informants and interact with them. Students were encouraged to take notes during and after each visit. They were asked to identify which site was the most interesting for them at the end of the first week, and we grouped students according to their interests. In the next three weeks, while students participated in the ESL program, each group researched the topic of their choice and met with us once a week to check in on their research progress. Since we treated students as "colleagues" in their exploratory endeavors, we focused on checking if students needed any additional guidance in where to look for information and whether they were making progress in putting group presentation slides together.

We provided a set of questions for students to guide their semi-independent group research from weeks 2 to 4. The following are the guiding questions:

- What did you learn at your location?
- Why is that important?
- How does this affect the local ecosystem/environment?
- What can be done about it?
- How does Hawaiian culture come into play?
- What further research have you found on the topic?
- What do you suggest should be done to fix/preserve/bring awareness to the issue?

We implemented this add-on 5-week course in the summer of 2022. Based on the first iteration of the program, we implemented it again in the summer of 2023 with some changes when we welcomed another 15 students from the same partner institution. Changes included incorporating more university-related sites for visits to showcase how unique our university is and what sort of research is undertaken by different academic departments at the university. Additionally, in order to help students plan their actions more efficiently, we utilized a Learning Management System (LMS) prior to their arrival in Hawai'i and during the course.

Tables 2 and 3 show sites and activities covered in the course and research topics the students examined for their group projects in 2022 and 2023, respectively.

Site/Activity in 2022	Research Topic
Lecture on stream biodiversity by an aquatic biologist and stream biodiversity survey activity	Stream Biodiversity in Hawai'i and Japan
Hands-on workshop on microplastic by a non-profit organization at Bishop Museum	Ocean, Plastic & Hawai'i
Mānoa Heritage Center	Five Ways to Preserve Native Hawaiian Plants
University Insect Museum	Biocontrol in Hawai'i

Table 2: Sites/activities and research topics in 2022

Site/Activity in 2023	Research Topic
Lecture on stream biodiversity by an aquatic biologist and stream biodiversity survey activity	Conservation of Stream Biodiversity in Hawai'i and Japan
University Arboretum	Protecting Native Hawaiian Plants
Mohala Farms (organic farm)	Food Self-Sufficiency Rates in Hawai'i and Japan
Hawaii's Plantation Village	Hawai'i Pidgin Language
University Insect Museum	Insect Conservation in Hawai'i

Table 3: Sites/activities and research topics in 2023

Evaluation and Reflections

At the end of each iteration of the 5-week course, we conducted a course evaluation with the students. Given the small student enrollment number in the course, the sample size was small. For illustrative purposes, I will share the course evaluation results from the 2023 course. The

total number of students in the course was 15. However, some students missed outings and did not answer all the questions in the evaluation form.

The first part of the evaluation form was about sites and activities they participated in during the first week of the course. Figure 2 indicates an overall pattern of students' perceptions of how useful or interesting they found each site visit location or activity. The students responded on a scale of 1 (not useful/ interesting at all) to 5 (very useful/interesting). Overall, almost all the students who completed the questions about the site visit locations gave positive responses although they did not respond as positively to a visit at the insect museum as visits to the other sites. One of the challenges in designing the course was to select sites and activities that would be interesting to a majority of the interdisciplinary students, whose fields of study included physics, engineering, education, international laws, economics, and linguistics. I did not expect everyone to be completely satisfied with all the locations and activities, and it would be not an issue for me because I intended the first week of the course to be exploratory. Thus, I found it comforting to confirm that each of the students was able to find something that triggered his or her interests during the week-long fieldwork.
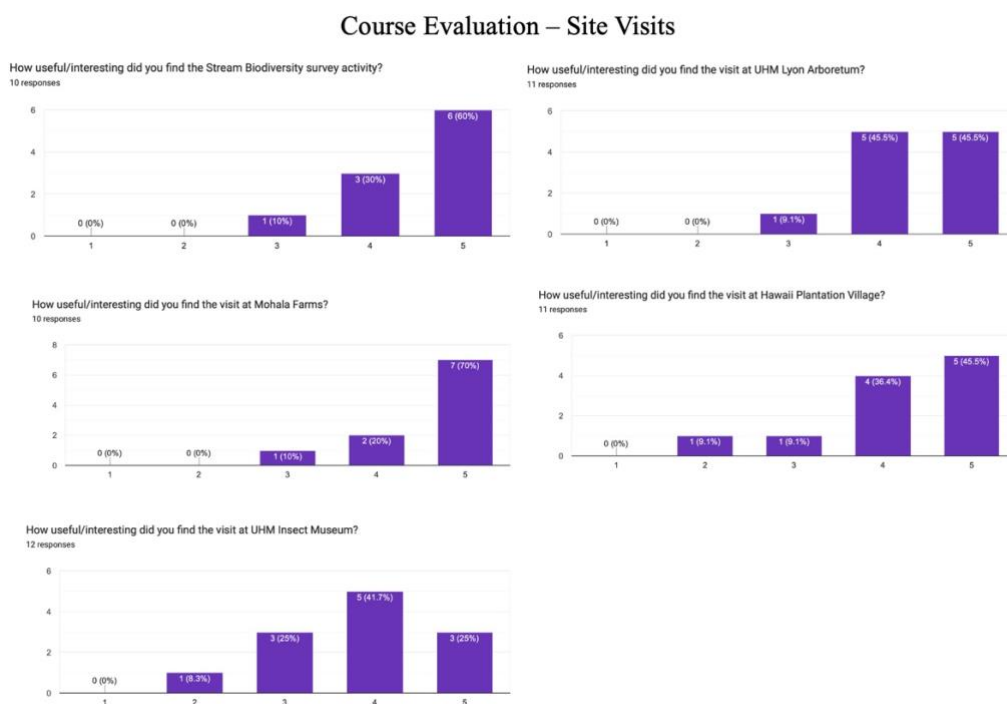
Figure 2: Course evaluation results (site visits)

Figure 3 shows the results of the second part of the course evaluation form. It focused on the semi-independent group research process and asked questions on students' self-evaluation and their evaluation of the effectiveness of the instructors. Generally, the students responded to these questions positively. Since we played the role of facilitators and treated the students as "colleagues" in the place-based research activities, the students might not have perceived the effectiveness of the instructors as much as they would have felt in regular ESL courses where the roles and relationships of instructors and students are clearly defined. It would have been interesting to include questions about the effectiveness of local cultural informants and experts they interacted with as well as the value they perceived in place-based learning activities while studying abroad. This would have provided a better understanding of

students' perceptions about engaging in "beyond ESL" activities in their study abroad program.

Course Evaluation – Group Research Process

Self Evaluation

How satisfied are you about the group work you did from week 2 to week 5?
12 responses

Effectiveness of the Instructors

How helpful/ effective were the instructors in helping you conduct your group research?
11 responses

How helpful/ effective were the instructors in assisting your preparation for the presentation?
11 responses
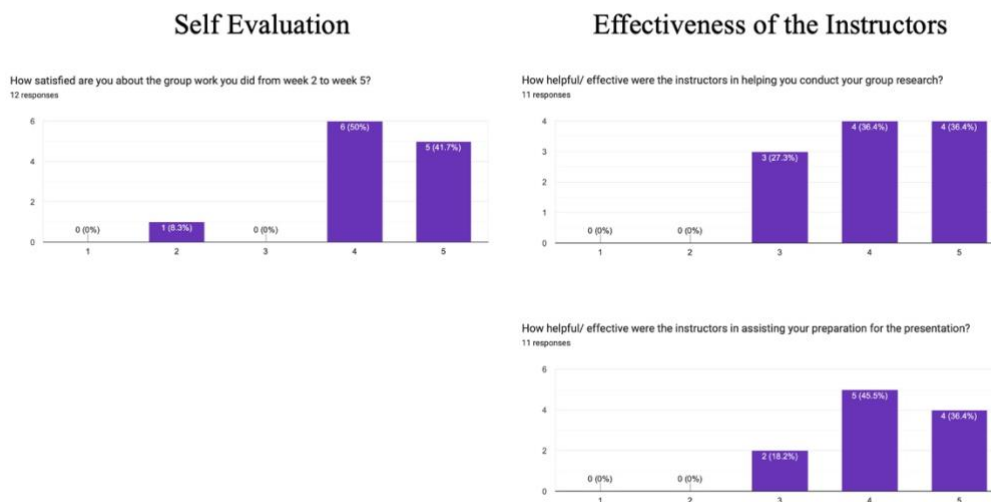
Figure 3: Course evaluation results (group research process)

One of the students left the following comment at the end of the course evaluation. It gave us a pat on our backs in designing and implementing a "beyond ESL" course following the place-based learning principles, and has motivated us to continue offering a course like this in the future.

> "I appreciate for giving me great opportunities to learn English and Hawaiian culture. This month was definitely the best in my life. I will tell my experiences to my friends, and come back to Hawaii someday."

Conclusion

Initially, it appeared challenging to create a new program option for international students with different academic majors while running existing ESL programs with limited resources available in our unit. However, by utilizing an existing open-enrollment program as a core of the 5-week study abroad program and providing a complementary program option to add, we were able to satisfy the requests made by our partner institution and sustainably expand our program offerings. In the past two years, a few other partner higher education institutions also showed strong interest in recruiting their students for a 5-week place-based learning course in combination with the 3-week ESL program. We are going to run another iteration of the course with a different theme this summer.

Based on my own experience in designing and implementing a place-based learning course, I would like to share some suggestions. When preparing a course, it is essential to invest a significant amount of time in preparation. This involves researching and identifying locations that align with the interests of students. This took more than a few months to prepare a place-based learning course in each iteration. It is also crucial to create a network of local and cultural experts who can provide insights and information to enrich the course. It is helpful to

get to know and build relationships with local and cultural experts by participating in activities organized by them and providing your service and time in such activities.

As for working with students, sharing clear expectations with them regarding their responsibilities is important, as is providing them with a course framework that includes timelines, requirements, and grading criteria in advance. Defining the relationship between students and instructors is also essential, and this definition should be shared with students on more than a few occasions. Engaging in dialogue with students, whether face-to-face, through emails, or via a LMS, is key to building a positive learning environment. It is also important to establish communication channels with local and cultural experts, which students can access if needed. Finally, encouraging students to think about how they can apply what they have learned to their future lives is an excellent way to foster critical thinking and promote lifelong learning.

There are many areas that we can improve in future implementations of the 5-week place-based learning course. I will continue to be creative to offer other "beyond ESL" programming options to meet the ever-changing needs of international study-abroad students and our international partner institutions.

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Collaborative Teaching-Learning in Classroom Research Based Setting and Its Impact

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Abstract

Education has evolved through the refinement of effective teaching methods, and technology has been vital. It enables teachers to use interactive whiteboards, virtual classrooms, and online learning platforms. Education has also become more personalized, allowing students to learn at their convenience and work on their metacognitive abilities. The shift towards collaborative teaching and learning techniques has been pioneered in the last few years, gaining considerable attention and being at the forefront of research. Its rapid adoption is due to its transformative potential that turns the learning environment into an interactive learning space; it implies inclusivity, participation and, most importantly, deep learning, and improving retention ability. This paradigm helps to identify and fill the gap between the real and virtual worlds, allowing learners rapid access to knowledge from any part of the world and leveraging the power of technology to firstly, make learning more engaging and effective and, secondly, foster creativity that is necessary for developing critical thinking and problem-solving skills. Technology has become the vehicle for course delivery and a place where everyone involved can meet.

Keywords: Collaborative Learning, Pedagogy, Peer Interaction, Research, Classroom

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Introduction

The collaborative teaching process involves two or more educators planning, organizing, instructing, and assessing a group of students collectively. The aim is to meet the diverse learning needs of students within one classroom, share perspectives and subject-matter expertise, combine appropriate teaching styles, and create an environment that fosters learning and diversity. Sharing responsibility reduces the burden on an individual and escalates each teacher's strengths so that the curriculum is covered more comprehensively and identifies learners' needs. Collaborative learning is how learners work together to solve problems, complete tasks, or understand new concepts. Collaborative learning encourages students to share ideas and think critically, building essential skills such as communication, problem-solving, and teamwork. Students construct and become part of knowledge creation instead of assuming the role of passive listeners.

However, there are some challenges when shifting to collaborative teaching and learning methods, i.e., a transformation is required at the individual, interpersonal, and institutional levels. Firstly, teachers must transition from a "sage on the stage" model to a "guide on the side" approach, and secondly, they must learn to share authority and responsibility and develop new skills to manage, facilitate, and assess collaborative activities. Similarly, students must adapt to an active learning role, honing their abilities to work effectively in teams, communicate their ideas, and negotiate interpersonal conflicts (Palloff & Pratt, 2005). Institutions must adopt this new approach, providing the necessary resources to help upskill teachers and students and invest in the expansion and development of infrastructure to facilitate collaborative teaching-learning.

Despite these challenges, the benefits of these collaborative techniques – role-playing, simulations, case studies, questioning techniques for collaborative discussions, small group projects, jigsaw activities, blogs, virtual teams, learning cycles, web quests, and debates – had a long-term impact on learners. Collaborative teaching-learning has significantly improved student achievement, engagement, and satisfaction. Additionally, collaborative approaches can help reduce stress (for students and faculty) and financial burdens on students by allowing them to share resources and materials. Such collaborative practices result in learning environments that are more inclusive, responsive, and effective.

In addition to academics, collaborative teaching and learning have a wide range of benefits and impacts (research and teaching), which are discussed in sections II, VI, and VII (Aldieri et al., 2017; Gillies et al., 2008; Laal & Ghodsi, 2012; Lubbe & Politis, 2023). It prepares students for the 21st-century workplace, where collaboration, communication, and problem-solving skills are highly valued. It cultivates community values and positive interdependence. Finally, it allows students to build social networks with their peers, which can be indispensable to thrive in this world of globalization. There is even potential to become a game changer, replacing the traditional hierarchy system to foster a culture of sharing, learning, and innovation.

The Benefits of Collaborative Learning

According to T. Pantiz (Panitz, 1999), D.W Johnson and R.T Johnson (Johnson & Johnson, 2009), the benefits of collaborative learning can be classified into three categories:

A. Social benefits
- Establishing a social support system for learners
- Diverse understanding among learners
- Develop a positive atmosphere for practicing cooperation
- Promoting learning and social belonging

B. Psychological benefits
- Augment learners' self-esteem
- Reduces anxiety
- Fosters positive attitudes towards teachers

C. Academic benefits
- Develops critical thinking skills
- Engages learners actively
- Improves classroom results and learning outcomes
- Reflects relevant problem-solving techniques by students
- Personalizes voluminous lectures
- Motivates learners in higher education institutes

The Benefits of Collaborative Teaching-Learning to Teachers

Collaborative student learning helps teachers analyze student work to improve instructional decisions and understanding. From the research perspective, teachers can conduct comparative research, get acquainted with the higher education system and policy-making, advance multidisciplinary research that facilitates the development of theoretical approaches and methods, distribute the responsibility of performing tasks, learning from, and helping each other, and broadening horizons of knowledge (Langer et al., 2003). Over an extended period, teachers discover how students construct the meaning of key concepts and skills. With the insights and skills gained through a collaborative teaching-learning system, teachers become more steadfast about selecting instructional and curriculum approaches, moving students towards appropriate learning outcomes.

The benefits of collaborative teaching-learning to teachers are:
- Commitment to and confidence in promoting student learning
- Analytical and reflective inquiry skills
- Professional knowledge
- Alignment among standards, instruction, and assessments
- Collaborative sharing of expertise
- Awareness and self-assessment

Classroom Seating Arrangements That Encourage Collaborative Teaching Learning Experience

Creating an appropriate classroom setting bolsters collaborative teaching and learning sessions. So, classroom seating arrangements such as roundtables, horseshoes, groups, or pairs can be effective techniques to encourage a collaborative teaching-learning process in a classroom setting (Figure 1). Teachers can plan and pre-work on the appropriate classroom seating arrangements conducive to active, student-driven learning processes. Traditional classroom seating involving rows of rigid "rows seating" arrangements should be avoided, as

communication between students is impossible. Furthermore, students in the first few rows or the middle are more actively engaged with teachers than students seated in the back rows.
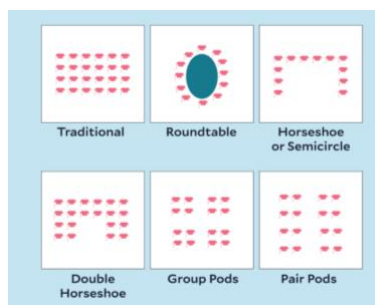
Fig.1. Classroom seating arrangements that encourage collaborative
teaching learning experience
https://poorvucenter.yale.edu/ClassroomSeatingArrangements

Transforming a Single Course Into a Collaborative Teaching and Learning Process

You can consider numerous strategies for collaborative teaching and learning practices in a physical classroom setting (Garrison, 2016; Gillies et al., 2008). The following are some methods that can be used in a face-to-face setting:

Round Table Discussions: Set up the class in a semicircular or circular arrangement to facilitate open discussion and equitable participation. Encourage pupils to share their opinions and participate in thoughtful discussion by posing challenging questions or introducing a topic for debate.

- Gallery Walk: Around the classroom, post examples of student work or information about a particular subject. Students can roam around, look at the exhibits, and offer comments or questions. This method promotes communication and knowledge exchange.
- Debates in class: Split the class into two or more teams and give them opposing viewpoints on a particular subject. Encourage an organized debate where students can express their opinions and counterarguments after letting them conduct research and prepare their arguments. This method develops persuasive communication and critical thinking abilities.
- Role-playing: Assign pupils to roles based on a hypothetical situation or real-life occurrence. They can then participate in role-playing games while adopting the viewpoint of various characters or personalities. This method encourages empathy, comprehension, and original problem-solving.
- Interactive Group Activities: Create group projects that demand students to cooperate to achieve a task or resolve a problem. Examples include collective art projects, science investigations, or model-building. This strategy promotes collaboration, communication, and the application of information in real-world situations.
- Simulations: Construct truthful simulations or scenarios that let students use what they have learned in real-world settings. This could be acting out professional scenarios, holding mock trials, or running a virtual company. Simulations improve one's capacity for critical thought, judgement, and problem-solving.
- Think-Aloud Pair Problem Solving: Put students into pairs and give them a problem to solve. Please encourage them to clarify their cognitive processes, including their

justifications and judgements, as they solve the problem. This method promotes metacognition and group problem-solving abilities.

- Peer Teaching and Tutoring: Assign pupils to instruct their classmates on a particular topic or ability. They can create presentations, demonstrations, or mini-lessons to convey their knowledge. By pushing students to organize and express their knowledge correctly, this method reinforces what they have learned.

- Cooperative Games: Include educational games for student collaboration to accomplish a common objective. These games may require planning, resolving conflicts, and working together. They offer a fun and exciting technique to encourage teamwork while reinforcing knowledge.

- Project-Based Learning: Assign lengthy assignments requiring students to collaborate to research, investigate, and produce a final product or presentation. This method promotes time management, cooperation, and self-directed learning.

- Collaborative technology tools can significantly improve teaching and learning in a classroom setting (Gillies et al., 2008; Roberts, 2004). The following are some well-liked tools that encourage student engagement and collaboration.

- Learning management systems (LMS) offer a central location for teachers to share materials, assignments, and announcements. Examples of LMS platforms include Moodle, Canvas, or Google Classroom. They frequently have forums, tools for turning in projects, and grading capabilities.

- Online collaboration suites include various collaborative applications, such as shared documents, spreadsheets, and presentations. Examples include Microsoft Office 365 and Google Workspace (previously G Suite). These tools allow students to collaborate and receive real-time feedback while working on the same assignment.

- Video conferencing tools: By enabling virtual face-to-face interactions, platforms like Zoom, Microsoft Teams, or Google Meet enable professors and students to communicate remotely. These solutions support live video and audio communication, screen sharing, and chat options for discussions and presentations.

- Online whiteboards: Interactive whiteboard applications like Jam board, Padlet, or Miro offer a virtual environment where students communicate, generate ideas, and collaborate on visual projects. These tools make real-time collaboration, sticky note sharing, drawing, and multimedia integration possible.

- Discussion and Forum Tools: Asynchronous student communication and conversations are facilitated through online discussion tools like Piazza, Slack, or Flipgrid. These resources give students a forum outside the classroom to express their opinions, share their views, and have in-depth debates.

- Collaborative Document Editing Students can edit and comment on the same document in real time using tools like Google Docs or Microsoft Word Online. Peer editing is encouraged, and writing and critical thinking abilities are improved.

- Social bookmarking: Students can save, arrange, and share online resources using tools like *Diigo* or *Wakelet*. These resources let students conduct collaborative research projects and share information, encouraging the evaluation of sources and developing group expertise.

- Tools like *Mentimeter, Kahoot, or Poll Everywhere* allow teachers to make interactive quizzes, polls, and surveys that engage students in the learning process in real time. These resources promote involvement, evaluate student learning, and offer quick feedback.

- Project Management Tools: Group projects can be planned and managed using tools like Trello or Asana. These technologies improve teamwork and project coordination by enabling students to collaborate, assign assignments, set deadlines, and track progress.

- Augmented reality (AR) and virtual reality (VR) tools Virtual or augmented reality experiences offered by immersive technology like Google Expeditions, Nearpod VR, or Merge Cube improve learning by bringing concepts to life. These resources allow for interactive learning and group investigation in various subject areas.
- It is crucial to choose instructional resources that fit your objectives, the subject matter, and the students' ages. To ensure students can use these collaboration tools effectively, ensure they have access to the necessary equipment and stable internet.
- Traditionally, a single-discipline course curriculum is highly specialized and focused on developing new knowledge within the same discipline. This type of course design offers no scope for collaborative teaching with other fields. Some examples include disciplines such as Physics, Chemistry, and Mathematics. However, collaborative teaching could be created in single-discipline courses involving multiple instructors with similar expertise (Fig.2). Multiple instructors could be engaged from the same institute/department or occasionally invited to deliver expert lectures covering specific topics in the same discipline.
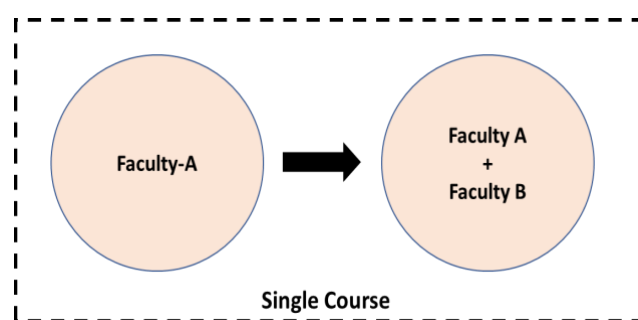
Fig.2. Transforming a single course into a collaborative teaching and learning process

Transforming Multiple Courses Into a Multidisciplinary Collaborative Teaching and Learning Process

There are advantages associated with employing multiple instructors in contrast to a single instructor for teaching single discipline courses. For example, different perspectives/viewpoints with deeper coverage of topics could be offered within the same discipline when multiple instructors are involved, which will be a fruitful learning experience for students.

Multidisciplinary course curriculum design employs knowledge from different disciplines to understand a particular topic. However, the usage of this knowledge remains distinct and does not blend. For example, if two-course fields are considered (A & B), a multidisciplinary approach would involve understanding these discipline perspectives independently to illustrate a common subject. As the course disciplines are independent, faculty A and B from respective fields could collaborate to define the common area of interest (Fig.3).
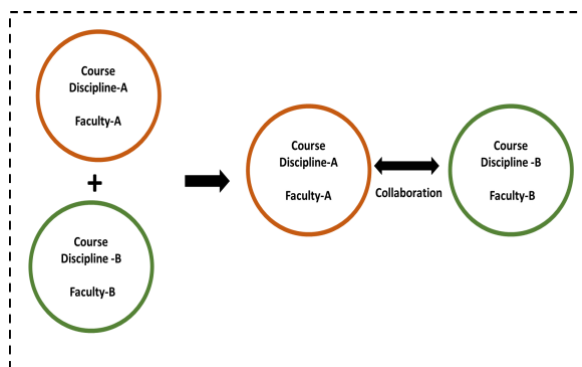
Fig.3. Transforming multiple courses into a multidisciplinary
collaborative teaching and learning process

For instance, machine learning and theoretical physics courses can be studied independently, adding to the student's overall expertise. In contrast, interdisciplinary course curriculum designs will overlap, creating new ideas and knowledge. Considering two-course disciplines (A & B), a multidisciplinary approach would involve understanding these disciplines' perspectives blended.
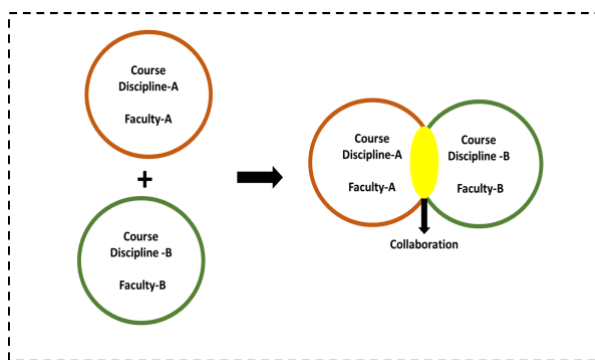
Fig.4. Transforming multiple courses into an interdisciplinary
collaborative teaching and learning process

To illustrate a new subject, dimension, or theme. Faculty A and B from respective fields could collaborate to present the latest knowledge and ideas created in the process (Fig.4). For example, the systems biology course is interdisciplinary. It involves biology, computation, and technology disciplines. The significant impact of this type of blended collaborative teaching would produce a new level of understanding and knowledge that will benefit students.

Traditional teaching-learning techniques have been based on a 'teacher-centric approach with a unidirectional teaching mode. The students learn based on the teachers' perception of the subject, limited to the learning materials and resources provided by the teacher. There are disadvantages associated with this approach. For example, a single teaching method is assumed to be suitable for all students in the classroom. However, this may not always work as students in the school belong to diverse social, cultural, and intellectual backgrounds.

In contrast, a student-centric approach is dynamic and evolutionary. It is a student-driven process through collaborative learning and teaching. For example, the teacher could share pre-reading materials to prepare students for a teaching session. In the classroom, the teacher could divide the students into groups randomly, and this group segregation could also be

student-driven at times. Group segregation would be followed by the teacher asking a series of questions, and students within the group discuss and come up with unique answers. This represents "Team-based Learning," which has several advantages compared to an individual learning approach. There are increased chances of "deep learning" in students, making them aware of leadership, responsibility, and interpersonal skills. There is scope for growth in terms of emotional intelligence and inculcation of social values.

The conventional teaching and learning process has only been based on explaining theoretical concepts in the classroom. Although this provides an understanding of the fundamental concepts, discussing or demonstrating their application is essential. The synergy of both these aspects would give a holistic teaching-learning experience. This blending approach has originated from the John Dewey Theory of "Experiential Learning." According to Dewey, students learn by active engagement with materials rather than a passive mode of unidirectional classroom listening. This is synonymous with the concept of "Learning by Doing."

Experiential learning could be achieved through many techniques, for instance, by including laboratory-associated practical sessions into the curriculum to demonstrate the concepts pre-taught in the classroom (Laal & Ghodsi, 2012). These practical sessions can also include demonstrations of the application and operation of scientific equipment. Further, Field trips or industrial visits could also be arranged during the semester, where students could understand how the 'real world' works and form networks. Similarly, bringing case studies into the curriculum can add more application value to the teaching-learning process. Furthermore, many teachers are involved in active research work in tandem with teaching. Therefore, this offers an opportunity to incorporate the research findings into their classroom lectures.

Information and Communication Technology (ICT) incorporates computers and telecommunication to depict information. These tools are practical for collaborative teaching-learning methodology and can be used anytime and anywhere (Barkley et al., 2014). Some examples include *Padlet* (https://padlet.com), *PollEverywhere* (http://www.polleverywhere.com), and *Mentimeter* (https://www.mentimeter.com/). These user-friendly tools can effectively promote collaborative teaching-learning in a classroom setting. For example, *Padlet* allows one to brainstorm ideas from a class collaboratively, and group activities can be assigned to prepare media on a web-based digital canvas. Similarly, *Poll Everywhere* is a web-based system that can create multiple-choice, open-answer polls that can be employed in classrooms to assess students' learning outcomes actively. Tools, including app diagrams (https://app.diagrams.net/), could be used by students to collaboratively draw and share graphs and flow charts online and offline. In addition, GAFE (Google Apps for Education: including Google Docs, Google Sheets, Google Drive, Google Forms, Google Slides, Google Meet, Google Sites, etc.) is a composite set of ICT tools that are excellent techniques for creating a collaborative teaching-learning experience in a classroom setting. However, for the successful employment of these ICT tools, classrooms must be provided with essential amenities such as consistent access to high-speed internet and the availability of laptops and computers. Many of these tools are also available in an app format, which can be downloaded easily on mobile phones and accessed in the classroom for a collaborative teaching-learning experience.

A Model for Creating Collaborative Teaching and Learning Process in a Research Setting

Traditionally, research work was mainly done by individual researchers. Ideas were brainstormed independently. However, in recent times, research has transitioned into a collaborative and group-driven process (Lubbe & Politis, 2023). Indeed, most of the published research papers have multiple authors from the same institute or other institutes. Sometimes, researchers from various countries collaborate to perform ground-breaking research work. Collaborative research has many advantages, including generating novel ideas and access to multiple technologies and expertise. Most importantly, collaborative research offers an increased pace in completing research projects through the division of labor.

So, how could one create a collaborative teaching-learning experience in a research setting? Generally, a faculty performs both teaching and research duties as they are two sides of a coin. Therefore, a collaborative model (Figure 5) could be generated and incorporated into the curriculum. Here, a group of students would be assigned to a teacher for their dissertation work. The students will be taught all the concepts related to the teacher's specific research area through tutorials conducted by the teacher. This will be followed up by students performing pre-research and collaboratively proposing project hypotheses, objectives, and work plans. This proposal would be presented as a group and assessed by peers and teachers. Following re-evaluation (if necessary), various directions of the project plan would be launched. Progress could be evaluated as a group during the project and whether the objectives and milestones are being met. Project results would be finalized and shared with other students and faculty, who evaluate again through peer and teacher assessments. At this stage, an external subject area expert could also be invited to assess the quality of the completed student group project. Notably, the role of the teacher would be only to guide and monitor (facilitator) the students in the group. Essentially, a design thinking approach ('Discovery,' 'Ideation,' 'Experimentation,' and 'Evolution') could be merged with this model.

This type of collaborative research work by students leads to tangible outcomes in forms such as the publication of a thesis, research paper(s), patent development, and increased placement opportunities.
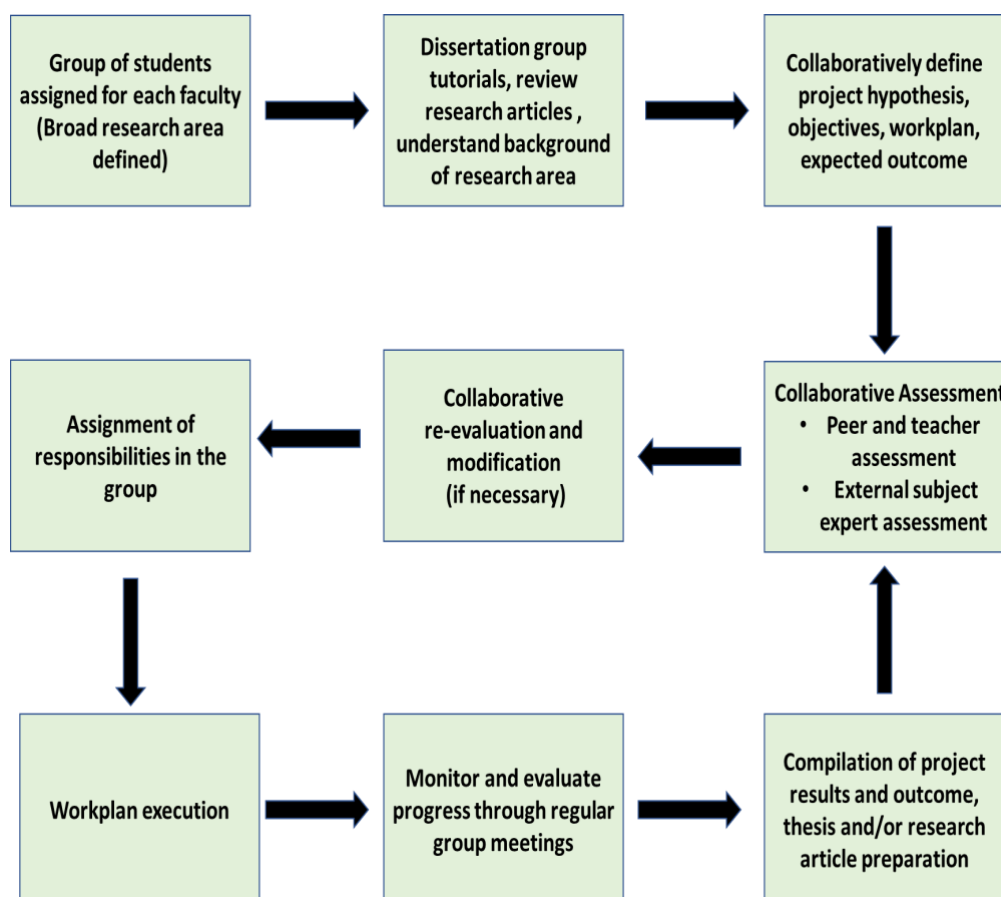
Fig.5. A model for creating collaborative teaching and learning process in a research setting

Conclusion

In the current scenario wherer advancement in research is becoming fast-paced, firstly, there is a need for both the students and faculty to be aware of contemporary trends and need to update themselves as one cannot rely on 'Textbook' knowledge alone for advancement in research; secondly, developing the skills required to review research articles critically is also necessary; and lastly, there is a need for a common platform to share and present research ideas. This is an essential aspect of the teaching-learning process in a research setting (Barkley et al., 2014; Gillies et al., 2008; Roberts, 2004). Moving towards this direction, the organization of Journal clubs and research forums are excellent techniques for fostering collaborations. Generally, Journal clubs are conducted weekly, and a fixed schedule of students and faculty members is prepared and shared. The scheduled presenter pre-shares the research paper being presented, following which thoughts and opinions about the research paper are discussed. Journal clubs could be differentiated based on the group's students' education level (undergraduate and graduate). For example, PhD students and faculty members could engage in advanced and complex research discussions. In contrast, for Masters students, the teachers will need to provide a certain level of training. For example, students could be divided into groups, and each group could be assigned to respective faculty members. Students would get hands-on research and read research papers about their area of interest. Students would prepare a presentation from this reading that peers and teachers could assess. The role of teachers would be only to assist and monitor the students. This type of collaborative teaching-learning experience would help the students discuss with peers and teachers to comprehend better the process of selecting, understanding, and reading research articles.

Scientific conferences, meetings, and seminars are organized in a research setting to share ideas and discuss research on a common platform, i.e., regional/national/international speakers could be invited to present their ongoing research work depending on the nature of these events and the funds involved. The attendees could also be from anywhere, and events could be single-discipline or interdisciplinary-oriented (Garrison, 2016). Through these events, students can learn about recent advances in the field and actively discuss them with the speaker and audience. There is ample scope for collaborative activities, including panel discussions, breakout sessions, poster presentation events, and social activities.

In contrast, workshops are hands-on training events. These sessions allow students to learn new skills to enhance their placement opportunities. Importantly, workshops provide students with a safe environment to undergo training and learn from their mistakes. Students can form a network and collaborate with like-minded professionals through both approaches.

Lab or research group meetings are scheduled as collaborative interactions regularly among members within a research group headed by a faculty. This is an efficient method of the teaching-learning process when it is an influential research group with diverse students. The research productivity of the group is enhanced with the sharing of research ideas central to both the group and the individuals. Feedback from peers and the faculty is provided to students to assess their progress in achieving academic and research objectives. Lab or research group meetings majorly aid students in developing communication, critical thinking, and collaborative skills.

Student internships provide a predetermined timeline-based professional learning experience in a research setting. Various pharma companies and faculty-run research labs often offer paid and unpaid student internship opportunities. This is a structured teaching-learning process with defined project objectives for students to gain work experience in the field. Student internships offer faculty a chance to initiate new research projects, develop skills and train new talent who may rejoin as future employees. Student internships could be brought into the academic curriculum, where students could present and discuss their internship learning experience with peers and teachers.

Key points :
- Collaboration among industry, researchers and academic institutions can improve research quantity and quality as well as citation
- Wider visibility is attained with international co-authorship as compared to other types of collaboration
- Extensive collaborations have more chances of getting published in top journals
- Necessary funding and past collaborative networks positively affect research output
- Facilitates funding opportunities and contributes to further developing professionalism and research competence
- Interdisciplinary and internal collaboration may yield high research productivity
- Collaboration provides access to research-based knowledge rather than in-house development
- Moreover, researchers involved in inter-department collaborations tend to be drastically more productive (productivity measures), collaborative (number of co-authorship relations) and institutionally significant compared to those who collaborate only with colleagues from their research departments
- Collaborating with industry can give access to resources, skills, and equipment that may be valuable for fulfilling the scientific potential of a line of research

- Supporting students' understanding of learning
- Encouraging peer discussion
- Supporting students' collaboration
- Active problem solver, contributor, and discussant
- High expectations of preparation for class
- Responsibilities and self-definition associated with learning interdependently
- Team learning is about values and essence rather than form, as looking at peers, self, and the community acts as an additional source of knowledge
- Exposure to different teaching approaches and techniques
- Offering different perspectives on course content
- Skill enhancement, critical thinking, and an elevated level of interest
- Collaborative teaching motivates a teacher
- Colleagues tend to share ideas and exchange information about content and activities that were either successful or challenging, so they learn from each other
- Colleagues also tend to get more reflective regarding their teaching and more collaborative to reach a consensus
- It allows for the division of labor and offers the opportunity for mentoring students

Collaborative learning requires students to take on new roles adapt, and develop skills different from those they are accustomed to using in conventional classrooms. Although learning these roles and skills may be achieved continuously in content-focused learning tasks, it will be helpful to introduce students to the shift in expectations early in the class. Collaboration has taken different forms in the 21st century. Today, multidisciplinary collaborative efforts in research and teaching are disseminated in response to the complexity of problems we face and the overwhelming amount of information available on any topic, and that is one of the reasons why collaborative research is being promoted widely in industries and universities. Collaborative teaching-learning techniques have paved the way for learning environments where teachers and students can learn from one another.

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Study of Career Education in Global Society

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Abstract

The diversification of employment has progressed, and the practice of lifetime employment, which is a characteristic of Japan, has decreased sharply by the impact of declining birthrate, aging society and structural changes in economy. Under these influences, the environment surrounding employment has been changing. The number of young people who leave their jobs within three years after graduating from university and who do not work are increasing. As human resource is an important resource in society, we worry that a shrinking labor force will make the economy less productive. There is a large gap between university and society, and young people who cannot smoothly become members of society increase. This situation has been a serious social problem in society. Career education is an important educational stage just before working in society. Looking at the current state of career education at Japanese universities, most of them are standardized and credit recognition is limited. Career education that will improve students' qualification and ability as professional and increase their interest and motivation for working is required. We will confirm the current situation and issues of career education from the materials, by "Career Programs at Universities" (2014), "Career Development Support and Career Education at Universities" (2016), and "Career Education Practical Courses at Universities" (2016) published by the Japanese Ministry of Health, Labor and Welfare and propose the direction and practical method in the accelerating global society. It will contribute to career education that can deal with diversity without being standardized.

Keywords: Career Education, Career Center, Career Develop Support, Global Society

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Introduction

Japan faces the effects of "Aging society with a declining birthrate", "Structural changes in industry and economy", and "Diversification and fluidity of employment". The practice of employment which Japan used to have in the past has decreased sharply. Under these influences, the environment surrounding job hunting and employment has been changing. As Japan considers human resources to be an important resource, we concern that a decline in the labor force will lead to a decline in economic productivity. The percentage of people who leave their jobs within three years after graduating from university tends to increase, and the number of NEETs (not in employment, education or training) and part-time workers also tends to increase. There is a large gap between university and society, and the increasing number of young people who cannot smoothly become members of society has become a social problem. Career education improves students' qualities and abilities as professionals, and increases their interest and desire to work. Looking at the current state of career education at Japanese universities, most of them are standardized and credit recognition is limited.

In this paper, we will confirm the current situation and issues of career education from the materials, by "Career Programs at Universities" (2014), "Career Development Support and Career Education at Universities" (2016), and "Career Education Practical Courses at Universities" (2016) published by the Japanese Ministry of Health, Labor and Welfare. Then we will propose the direction and practical method in the accelerating global society. It will contribute to career education that can deal with diversity without being standardized.

Progress and Current Status of Career Education in Japan

Career education in Japan was proposed in "Improvement of Connection between Primary/Secondary Education and Higher Education" by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) (1999). This report stated it was necessary to implement career education in order to facilitate smooth connections between schools and society, and start from the elementary school according to the developmental stages.

The Council of University reported that career education at university was to have a clear sense of purpose for the future, cultivate a view of work, acquire knowledge and skill related to work, and develop the ability and attitude to independently choose a career path based on the understanding of their own individuality for students (2000). Career education was proposed 24 years ago (1999) and has a relatively short history. It is still undergoing trial and error.

The content required for career education has changed with the times, and it has been introduced and practiced in various ways. In Japan, career education is promoted mainly by the government. Career education consists of two perspectives as the support for career development. First is to promote career development by cultivating the basic abilities and attitudes that are necessary for each student's social and vocational independence. Second is to develop the knowledge, skills, abilities and attitudes that are necessary for working at some or specific occupation.

MEXT has made some proposals regarding the quality assurance of university education and the relationship between university education and the abilities expected by society after

graduation. In 2003, the policy promotion of career education was accelerated in the "Youth Independence and Challenge Plan" (2003).

In 2008, it proposed that "Vocational Guidance (career guidance)" should be positioned appropriately in university educational activities. "Vocational Guidance (career guidance)" is to support students from the time of admission so that they can cultivate their own views on careers and work and develop the qualities and abilities necessary for a member of society. It supports the self-improvement of students throughout the educational activities of the university by providing course instruction such as course selection, consultation, other advice, and information provision, both inside and outside the curriculum according to the stage.

At the time of transition from university to society, students are required to make independent and autonomous choices. Career guidance, information provision and consultation systems regarding occupations and employment through career guidance and career centers are particularly important.

The Ministry of Economy, Trade and Industry has been promoting career education through the development of "Basic Skills for Working People" at universities (2006). It consists of three skills (12 elements): "ability to step forward," "ability to think," and "ability to work as a team." In addition to basic academic skills and specialized knowledge, it is important to consciously cultivate this "Basic Skills for Working People" in order to make good use of them.

The employment rate after graduating from university in Japan is 97.3% (Ministry of Health, Labor and Welfare and Ministry of Education, Culture, Sports, Science and Technology, April 2023). It means most of students find their job as soon as graduation. "Basic academic skills", "Specialized knowledge" and "Basic skills for working" are important to learn at universities in order to make good use of these skills and work with a diverse range of people in global society.

Issues of Career Education

In order to explore the specific content for guidance and future direction of career education, we will confirm the existing data and reports regarding current issues.

According to "Career Education Practical Courses at Universities" (Ministry of Education, Culture, Sports, Science and Technology,2016), the elements included in social and vocational independence as career education at university, and the skills necessary for a smooth transition from university to society and working are basic skills, and general abilities (human relationship, social abilities, self-understanding/self-management ability, problem-solving ability, career planning ability), logical thinking ability, creativity, ambition and sense of values, specialized knowledge/skills are mentioned.

According to the report, there are six issues in career education.

1) Career education is now recognized as an initiative that only the faculty and staff members can undertake in charge. Career education should position as university-wide program by all faculty and staff members.

2) Human resource is needed with flexible expertise and creativity. It can respond to the changes in the industrial structure with basic skills as a member of society and professional, based on the diversification of types of occupations, industries, and size.

3) Based on the current severe employment situation and the need for transition support after graduation due to the diversification of students, they need to confirm how to interact with society through their occupations with their knowledge and skills in their respective specialized fields. They need to get a clear awareness of issues and specific goals, and to acquire the ability to achieve them.

4) Each university need to clarify the policy of career education and share the understanding of faculty and staffs paying attention to the situation of each student. It is necessary to develop career education systematically and comprehensively throughout both inside and outside the university.

5) The educational functions expected of each university, and the actual situation of students are diverse. It is important to note that career education is not required uniform efforts from all universities.

6) It is important to implement in combination of group work, seminar-style classes, group surveys, practical training, presentations, task-based learning, and internships. It is important to effectively combine and implement activities both inside and outside the curriculum.

In order to explore the specific guidance content and future direction of career education, we will confirm the result of the existing survey on current issues. According to the "Survey on Grasping University Students' Views of Working People and Demonstrating Increased Awareness of 'Fundamental Skills for Worker'" (Ministry of Economy, Trade and Industry, 2009), companies point out that students' tenacity, teamwork, independence, and communication skills are severely lacking. However, students themselves answer that they are able to do these things well. There is a huge difference in awareness between the two sides.

According to "Survey on Current Status and Issues of Career Education and Employment Support" (Benesse Educational Research Institute, 2010), the current status and issues of career education at universities are conducted in relation to career education sponsored by career centers in universities. "distribution of career path booklets" (81%), "guidance course for nurturing vocational outlook (no credit)" (78.50%), "course aimed at developing general skills (no credit)" (56.9%), "Internship (without credits)" (53.2%), "Internship (with credits)" (48.6%), "Guidance class for cultivating a professional outlook (with credits)" (42.0%), "Class aimed at developing general-purpose abilities (with credits)" (32.0%).

Next, the subjects related to career education that are certified as university subjects and are being implemented are "internship (with credit)" (60.6%), "guidance for cultivating a view of work (with credit)" (56.9%), and "class (with credits) aimed at developing general-purpose abilities (with credits)" (54.3%).

The problems of students pointed out by the Career Center are "lack of writing skills necessary to create an entry sheet" (82.5%), "lack of ability to think and express themselves verbally, difficulty of interview guidance" (70.7%), "polarization between students who get multiple job offers and students who can't get any offers" (70.3%), "lack of basic academic

skills" (60.2%), "do not try to take action for job hunting" (53%), "do not have any experience to appeal to employment without their own ideas"(50.1%) "do not have any experience that can be appealed for employment" (49%), "lack of manners, and attitudes as members of society" (47.1%), "give up on job hunting" (43.8%), "find employment at only famous and large companies"(37.5%), and "cannot explain about their issues at Career Center" (37.4%).

Issues of career education are "It is difficult to link career education and undergraduate education" (56.4%), "Difficulty in understanding the importance of career education among faculty members" (55.7%), "It is difficult to plan a valid career education" (46.6%), "The goals and effects of career education are vague and unclear" (35.0%), "The results of career education are not linked to the improvement of employment skills" (20.1%).

Regarding future career education and support for employment, the most important points are "It is important to develop the basic of working abilities (problem solving through the development of thinking ability, expression ability, and ability to consider) " (90.4%), "It is important to deepen the cooperative relationship between Career Center and faculty members" (89.7%), "It is important to improve the professional skills of Career Center staff" (86%), and "It is important to plan integrated career education and employment support. Management is important" (84.7%), "Expansion of guidance from lower grades is necessary" (81.2%), "It is important for professors to improve their career education skills" (75.1%), "It is important to collaborate with high-quality private businesses" (61.1%).

The most common questions asked by students are about self-analysis (motivation/self-promotion) and employment exams (interview/writing). In the other hand, Carrer Center points up the lack of "basic skills as a member of society" and "basic academic skills" such as "tenacity", "teamwork", "independence", and "communication skills". This means that it is difficult to provide interview guidance as career education because of lack of basic skills, necessary writing skills, thinking ability and verbal expression skills. Before developing specialized abilities, it is necessary for students to develop self-analysis, basic academic skills, ability to think and express one's own opinions, and ability to consider one's own life plan. In the process of transitioning from a student to a worker, there are many students who are unable to independently and autonomously choose their own occupations. There is an urgent need for university-wide consideration of career education. In addition, the training of versatile abilities and the cooperative relationship between Career Center and undergraduate faculty members require time-consuming efforts from the beginning of admission.

Proposal Direction and Practical Method

In recent years, "how to quickly create products and services with new value" has being needed as an industrial competitiveness. At corporate sites, there is a strong demand for the ability to discover issues for creating new value, the ability to take action to solve them, and the ability to work in teams that fuse with different fields. On the other hand, the educational ability at home, community, club activities and group activities, which used to be a place to polish these abilities "naturally" is declining. The balance between demand and supply required in workplace and community has collapsed. In other words, though until now abilities required in workplace and community could been acquired "naturally" in the process of growing into an adult, it has now become the abilities that must be "consciously" cultivated.

The development of basic and versatile abilities is essential as a guidance item in career education. These are the basic skills necessary for social and vocational independence, regardless of any field or occupation. The specific content of this ability can be organized into the following eight abilities from the perspective of focusing on getting a job and manifesting in actual behavior.

Basic/General-Purpose Ability

1) Ability to form human relationships and society

This ability is the basic ability to live and work in relation to society. In modern society, where value is diversifying, it is necessary to have the ability to accept and cooperate with others. In today's rapidly changing world, people are required to participate in and adapt to society, while creating and building new society on their own if necessary. This ability means to understand and listen to other's thought, position, personality and opinion, accurately convey own thoughts, to accept situation and cooperate with others while fulfilling one's role, to participate in society actively for the future society. Specific elements include communication skills, teamwork, and leadership.

2) Self-understanding/self-management ability

This ability is the basic ability for career development and human relationship. In particular, self-understanding needs to be constantly deepened throughout the lifespan of building a variety of careers. While maintaining a mutual relationship with society, act independently based on a positive understanding of what you can do, what you feel meaningfully, and what you want to do, including your own future possibilities. The ability controls own thought and emotion, and is willing to learn for future growth. Specific elements include understanding one's own role, thinking positively, self-motivation, perseverance, stress management, and proactive behavior.

3) Problem-solving ability

This ability is necessary in order to work enthusiastically on what one should do. It is to move forward without being bound by conventional ways of thinking and methods at knowledge-based society and globalization. It is to discover and analyze various issues of work, to create appropriate plans to handle and resolve the issues. As society becomes more information-oriented, it is also important to acquire the ability to independently select, utilize information and information methods. Specific elements include understanding, selecting, processing of information, understanding essence, pursuing causes, problem discovery, planning, execution ability, and evaluation/improvement.

4) Career planning ability

This ability is necessary throughout life in order to live as a member of society or a professional. It is to understand the significance of working, position working based on the relationship with various positions and roles that one should fulfill, and while appropriately selecting and utilizing various information on diverse lifestyles. It is the ability to make independent decisions and build a career. Specific elements include understanding the significance and role of learning and working, understanding diversity, future planning, selection, action and improvement.

5) Logical thinking ability/Creativity
Logical thinking ability means developing the ability to think about things logically and come up with new ideas. Creativity is necessary in order to create and build a new society on one's own in a rapidly changing global society.

6) Motivation/Attitude
Motivation and attitude are extremely important when engaging in work and taking specific actions in society throughout life. Motivation and attitude lead to improv ability, and developing ability leads to motivation and attitude. The two elements are closely related in the sense that they may even enhance the situation.

7) Outlook on Life
Outlook on life is internal in individual and is important element related to motivation and attitude. There is a relationship in which people recognize value and decide to do something, and when they put that idea into action, it materializes in their motivation and attitude. It includes the work and vocational views that career education has traditionally fostered, such as "How do you live?" "Why do you work?" and "How do you work and occupation in your life?"

8) Specialized Knowledge/Techniques
No matter what kind of job or occupation, a certain level of expertise is required to perform the job. Having a specialty also allows individuals to demonstrate their individuality, so it is extremely important to choose the specialty while looking ahead to own future, and to develop the knowledge and skills necessary for it. Until now, specialized knowledge and skills have mainly been developed through in-house education and training in Japan. In the future, it will be necessary to consciously develop them at university, and from this perspective, it is necessary to review and enrich vocational education.

The basic effective teaching methods will be shown below.

1) Self analysis
Creating values maps and life plans. Think about each career through self-analysis rather than inputting knowledge.

2) Information gathering
Decide on a theme and conduct research books and other materials by internet and at libraries.

3) Lectures by external lecturers
We invite people from companies and alumni to give lectures. It is important to listen lectures directly from people who are active in the field.

4) Active learning
Active learning is not about acquiring correct knowledge, but rather learning how to approach problem solving through discussions (tasks) that have no correct answers. Through active learning, students can learn proactively and collaboratively to discover and solve problems.

5) Work experience
Develop career abilities through practical work experiences.

University is expected to engage in career education, taking into account the educational functions and the educational policies paying attention to the circumstances of each student. From the perspective of career education initiative at university, we aim to ensure a smooth transition from high school to university early in the first year, give freshman a sense of purpose for learning at university, and encourage them to think about their life and career after graduation and cultivate the foundation for implementing this. We provide guidance on career planning, setting specific goals until graduation, and developing a broad vocational awareness. Sophomore will develop the skills, attitudes, and problem-solving skills necessary to become socially and professionally independent. Next Career Support Stage will be shown below.

First Step for Freshman: Enhancing Career Awareness

Our university will provide a career design hand-book to all freshman immediately after enrollment so that they can think about their career design at an early stage. At the introductory seminar for freshman, seminar's professors use this at class due to think about their own career designs, future, set goals and create opportunities to put them into action. They will take a conduct vocational interest and personality to understand of occupation and deepen their vocational interests by worksheet. They will hear from junior and senior students who are job hunting about their own career development and job hunting. Group discussions will be held for the purpose of improving self-expression and deepening self-understanding. They will Learn how to write papers and emails as business communication.

Second Step for Sophomore: Gain Insight Into the Relationship Between Self and Society

Career education will provide opportunities to further deepen understanding of oneself and society, gain insight into the relationship between oneself and society, and think about one's future by incorporating assignments such as written expressions, presentations, and group discussions. They will develop an image of working in society by hearing experiences from graduates and workers working at companies. Through industry research, they narrow down the industries and occupations that suit them and want to work in. We will provide a pre-internship guidance on how to prepare for work and business manner.

Third Step for Junior: Internship Pre-training/Practical Training

Before participating in an internship, reconfirm the purpose and significance of the internship and conduct business manner exercise. Even if students understand business manners as explicit knowledge, they have to be able to act and speak smoothly. They will submit daily reports during the internship and the instructor will provide feedback that will be useful for training the following day. After completing the internship, they will report their experiences of the internship and learn how to utilize what they have learned in the future. In preparation for job hunting, students will learn how to do self-analyze and research companies, and will give shape to their career path. Through mock interviews and group discussions, they will develop the mindset to start job hunting. At the same time, they will participate in job hunting seminars by the university's career center and learn know-how.

Last Step for Senior: Support for Job Hunting

We will provide general support for job hunting and post-graduation. At the same time, we will provide guidance on how to prepare for working as a member of society through campus life.

Conclusion

Changes in the social environment surrounding careers, such as structural changes in industry and economy, and the diversification of employment are having a major impact. As the social environment surrounding careers changes, it is becoming increasingly difficult to find ideal role models who can help students think about their future, and even if they find the model, it may be outdated in 10 years. The purpose of career education is to give students an opportunity to think about their own future and the importance of learning, and to develop their ability and attitude to respond to change in order to independently carve out their own future with hope.

As we surveyed the current state of career education and explored issues, we became acutely aware of the importance of career education at universities. The second half of the four years at university overlaps with job hunting in Japan. At each university, it will be necessary for faculty members with different research fields and professional experience to teach students basic skills for working while linking them to their respective specialized fields. As a large number of diverse students are enrolling, we recognize that we will provide individual support for each student to develop an effective career education by sharing information about job hunting.

This paper provides the overview of the current state of career education for students, career centers, and companies based on the existing data, and the effective approach to career education. Career education in Japan is still at the stage of trial and error. In the near future, we would like to focus on verifying specific methods and the impact on students to provide more effective career education at universities.

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Integration and Utilization of Digital Technology in Music Education: Conceptual Case Studies Analysis

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Abstract

As student-centered methods, techniques, and applications have taken the place of traditional educational methods, techniques, and applications in the 21st century, the role of the teacher has altered. Teachers now "manage the process" and "guide" pupils in accessing information rather than "source and share the information." A teacher today who wants to effectively guide his students must keep up with technological advancements in his profession, learn its application in the classroom, and incorporate it into his lessons. A large portion of this digital technology is freely accessible through internet downloads, the software bundled with the purchase of PCs, and applications for some mobile phones. A conceptual framework is developed in this research article. Case 1 studied software used and deemed to be beneficial in music education and the usage of the software in music education. Case 2 investigated the perceptions and practices of music teachers in secondary schools concerning digital technology and how they are changing their work in their classrooms. This study demonstrates the use of five themes that have been found in the literature on pedagogic change brought on by teachers' adoption of digital technologies and software's applicability in music education. These themes offer an effective and efficient educational process for both teachers and students.

1. Introduction

In the contemporary educational landscape, characterized by student-centered learning and the omnipresence of digital technology, the role of the music educator has undergone a significant transformation. As traditional teacher-centric methods fade, educators have emerged as facilitators and guides, empowering students to become independent learners and navigate the vast seas of information readily available at their fingertips (Johnson, 2014; Bates, 2019). In this dynamic context, digital technology reigns supreme, offering a plethora of tools and resources capable of revolutionizing music education experiences. This research paper delves into the transformative potential of digital technology by analyzing two conceptual case studies, shedding light on its integration and utilization in music classrooms (Fisher et al., 2006; Greenhow et al., 2016).

The first case study focuses on the multifaceted world of music education software, dissecting its benefits and practical applications within the classroom (Hsu, 2011; McPherson, 2012). By identifying and exploring various software programs categorized by function and educational purpose, this investigation aims to equip music educators with practical strategies for incorporating technology into their curriculum. Examples delved into may include notation software like Finale or Sibelius for composition and arranging, ear training tools like EarMaster or MusicTheory.net for honing aural skills and music theory mastery, performance platforms like GarageBand or Logic Pro X for fostering creative expression through digital music projects, and even interactive learning games like Piano Maestro or SimplyPiano that inject a dose of fun and engagement into the learning process. By delving into the specific functionalities and pedagogical applications of these diverse software tools, this case study seeks to empower music educators with practical strategies for leveraging technology to create impactful learning experiences for their students.

The second case study takes a more introspective approach, venturing into the lived experiences of music educators themselves. By scrutinizing the perceptions and practices of music teachers navigating the integration of digital technology in their classrooms, this investigation aims to shed light on the real-world implications of this shift. Examining teachers' perspectives toward technology allows us to understand their level of comfort, perceived challenges, and envisioned opportunities associated with implementing these tools in their daily practices (Vavrus et al., 2017; Mishra & Koehler, 2006). Analyzing their pedagogical adaptations further illuminates the concrete ways technology is reshaping music education, offering insights into how educators are utilizing these tools to differentiate instruction, foster collaboration and communication among students, enhance assessment practices, and ultimately elevate student engagement and motivation (Koehler & Mishra, 2008; Dede, 2010). Applying the five prevalent themes within the literature on technology-driven pedagogic change - teacher self-efficacy, collaboration and communication, differentiation and individualization, student engagement and motivation, and assessment and feedback - to this case study provides a valuable framework for examining the practicalities and nuances of technology integration in diverse music classrooms (Ertmer & Gorski, 2012; Mishra & Koehler, 2006).

By weaving together these two distinct case studies, this research paper paints a multifaceted picture of digital technology's potential to transform music education. Through detailed software exploration and in-depth analysis of teacher experiences, it aims to provide music educators with valuable insights and practical strategies for harnessing the power of technology in their own classrooms. Ultimately, this investigation seeks to contribute to the

ongoing dialogue on technology integration in music education, paving the way for a future where digital tools empower educators and students alike to create vibrant, engaging, and impactful learning experiences.

2. Background of the Study

The 21st century's educational landscape is characterized by a shift towards student-centered learning and the ubiquitous presence of digital technology. This dynamic shift has significantly impacted music education, as traditional teacher-centric methods give way to student-driven exploration and learning. Music educators today act as facilitators and guides, empowering students to navigate the vast sea of information readily available at their fingertips and actively construct their own knowledge (Johnson, 2014; Bates, 2019). In this context, digital technology emerges as a powerful tool, offering a plethora of resources and avenues for enhancing music education experiences.

Several factors highlight the need for investigating the integration and utilization of digital technology in music education:
- Evolving Student Needs: 21st-century students are digital natives, accustomed to a world saturated with technology. Music education must adapt to cater to their unique learning styles and preferences, capitalizing on their familiarity and ease with digital tools.
- Enhanced Engagement and Motivation: Digital technology can inject an element of fun and interactivity into music learning, leading to increased student engagement and motivation. Tools like interactive games, simulations, and collaborative platforms can foster a sense of ownership and active participation in the learning process.
- Differentiation and Individualization: Technology facilitates differentiated instruction, allowing educators to cater to diverse learning styles and abilities within a single classroom. Adaptive learning platforms, personalized feedback mechanisms, and individualized learning pathways can ensure that each student progresses at their own pace and receives the support they need to succeed.
- Collaboration and Communication: Digital tools can break down classroom walls, fostering collaboration and communication among students and beyond. Online platforms enable students to share their work, participate in group projects, and connect with musicians and communities around the world, enriching their learning experiences.
- Creative Expression and Exploration: Technology opens doors to new avenues for creative expression in music. From digital composition and recording to interactive performance platforms, students can experiment with music in innovative ways, pushing the boundaries of their artistry and exploring diverse musical styles.

Despite the immense potential of digital technology, challenges remain in fully integrating it into music education. These challenges include:
- Teacher preparedness and confidence: Not all music educators possess the necessary skills and confidence to effectively utilize digital tools in their classrooms. Professional development programs and ongoing support are crucial in equipping educators with the necessary skills and knowledge.
- Access to technology and infrastructure: Equitable access to technology and reliable internet infrastructure is essential for ensuring that all students can benefit from digital learning opportunities. Addressing the digital divide remains a critical challenge in many educational contexts.

- Technology integration strategies: Effectively integrating technology into the curriculum requires careful planning and consideration of learning goals. Educators need to develop robust pedagogical strategies that leverage the strengths of technology without compromising the core principles of music education.

Investigating these challenges and opportunities is crucial for maximizing the potential of digital technology in music education.

2.1 Research Question

This research paper aims to answer the following overarching question: How can the integration and utilization of digital technology enhance music education experiences for both students and teachers?

To address this question, the paper will delve into two specific sub-questions:
- Case Study 1: What are the benefits and practical applications of music education software in enhancing student learning and promoting engagement?
- Case Study 2: How are music teachers adapting their perceptions and practices to integrate digital technology in their classrooms, and what are the challenges and opportunities associated with this shift?

By exploring these sub-questions through an analysis of two conceptual case studies, the paper seeks to provide valuable insights and practical strategies for music educators navigating the integration of digital technology in their classrooms.

Table 1. Focus As per the Case Study

Case	Focus	Supportive Studies
Case 1: Software in Music Education	Benefits and applications of music education software	Hsu, H. Y. (2011). The effects of using music creation software on music composition skills and attitudes of elementary school students in Taiwan. International Journal of Technology in Education and Science, 1(1), 59-65. * McPherson, B. (2012). The impact of using GarageBand in a high school general music class. International Journal of Music Education, 30(3), 329-340. * Wilkinson, A. (2014). Making music and meaning with iPads: Exploring the intersection of music composition apps, creativity, and learning. Music Education Research, 16(2), 106-122.
Case 2: Teacher Perceptions and Practices	Music teachers' perspectives and practices regarding digital technology integration	Vavrus, L., Linley, E., & Jacobson, K. (2017). Music teachers' perspectives on technology integration: A case study of two elementary schools. Arts Education Policy Review, 118(3), 114-128. * Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: Learning to teach with technology. CNET. * Koehler, M. J., & Mishra, P. (2008). Introducing TPACK: The technological pedagogical content knowledge framework. In Handbook of research on technology in education (3rd ed., pp. 29-49). Routledge.

3. Conceptual Framework

A Framework for Integrating Digital Technology into Music Education to Enhance Student Engagement and Learning.
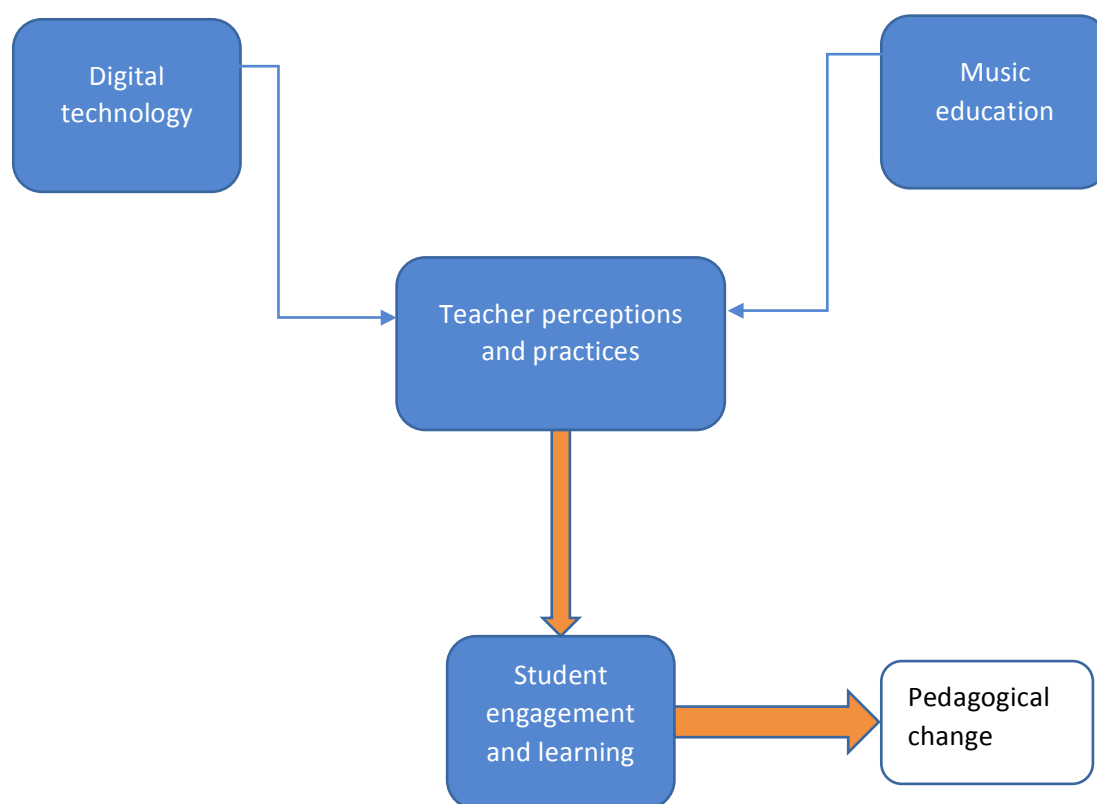
Fig.1: Hypothetical Representation of Conceptual Framework

Key Concepts:
- Digital technology: Encompass various forms of technology relevant to music education, including software, hardware, online resources, and digital tools.
- Music education: Represent the diverse aspects of teaching and learning music, including theoretical knowledge, practical skills, performance, composition, and appreciation.
- Teacher perceptions and practices: Reflect music educators' beliefs, attitudes, and approaches to incorporating digital technology in their classrooms.
- Student engagement and learning: Capture the impact of digital technology on student motivation, participation, and outcomes in music education.
- Pedagogical change: Illustrate the ways in which digital technology can transform teaching and learning practices in music education, leading to more student-centered, interactive, and differentiated instruction.

4. Research Methodology

This research adopts a qualitative approach, utilizing two conceptual case studies to delve into the integration and utilization of digital technology in music education. Case 1 focuses on music education software, employing document analysis of existing research on software benefits and applications, complemented. Case 2 investigates teacher perspectives and

practices. This interview data will be analyzed thematically, identifying major themes related to teachers' perceptions, adaptations, and experiences with technology integration. Both case studies draw upon existing literature to enrich the analysis and provide context for interpreting findings. This multi-faceted approach allows for a nuanced understanding of the complex interplay between digital technology, teacher perceptions, and student learning in music education.

5. Literature Review

The landscape of music education is undergoing a significant transformation spurred by the ubiquitous presence of digital technology. As student-centered learning takes center stage, music educators find themselves navigating a paradigm shift, transitioning from traditional instruction to facilitating learner exploration and knowledge construction with the aid of digital tools (Johnson, 2014; Bates, 2019). This review delves into the burgeoning research on digital technology integration in music education, exploring its multifaceted potential for enhancing learning experiences for both students and educators.

5.1 Several Compelling Factors Highlight the Urgency of Investigating This Integration

5.1.1 Evolving Student Needs

21st-century students, digital natives accustomed to a technology-rich world, demand learning experiences that resonate with their technological fluency and preferences. Music education must adapt to cater to these unique learning styles and foster a sense of ownership and active participation through interactive tools and platforms (Fisher et al., 2006; Greenhow et al., 2016).

5.1.2 Enhanced Engagement and Motivation

Digital technology injects an element of fun and interactivity into music learning, studies have shown. Tools like game-based learning platforms, simulations, and collaborative music creation apps not only stimulate student interest but also promote deeper engagement and a desire to learn beyond the classroom (Hsu, 2011; McPherson, 2012).

5.1.3 Differentiation and Individualization

Technology acts as a powerful equalizer, facilitating differentiated instruction and catering to diverse learning styles and abilities within a single classroom. Adaptive learning platforms, personalized feedback mechanisms, and individualized learning pathways ensure that each student progresses at their own pace and receives the support they need to succeed (Ertmer & Gorski, 2012; Dede, 2010).

5.1.4 Collaboration and Communication

Digital tools break down classroom walls, fostering collaboration and communication among students and beyond. Online platforms enable students to share their work, participate in group projects, and connect with musicians and communities around the world, enriching their learning experiences and providing valuable opportunities for peer feedback and knowledge exchange (Koehler & Mishra, 2008).

5.1.5 Creative Expression and Exploration

Technology opens doors to new avenues for creative expression in music. From digital composition and recording platforms to interactive performance environments, students can experiment with music in innovative ways, pushing the boundaries of their artistry and exploring diverse musical styles (Wilkinson, 2014).

5.2 Despite the Immense Potential, Challenges Remain in Fully Integrating Digital Technology Into Music Education. These Challenges Include

5.2.1 Teacher Preparedness and Confidence

Not all music educators possess the necessary skills and confidence to effectively utilize digital tools in their classrooms. Professional development programs and ongoing support are crucial in equipping educators with the necessary skills and knowledge (Mishra & Koehler, 2006).

5.2.2 Technology Integration Strategies

Effectively integrating technology into the curriculum requires careful planning and consideration of learning goals. Educators need to develop robust pedagogical strategies that leverage the strengths of technology without compromising the core principles of music education (Koehler & Mishra, 2006).

6. Discussion: The Evolving Landscape of Music Education in the Digital Age

The integration of digital technology into music education presents a vibrant tapestry of opportunities and challenges, demanding a critical discussion on its transformative potential and the realities of implementation. This research, informed by two conceptual case studies, joins a burgeoning dialogue among scholars and educators grappling with the complexities of navigating this evolving landscape.

As Mishra and Koehler (2006) posit within their Technological Pedagogical Content Knowledge (TPACK) framework, effectively harnessing technology for enhanced learning necessitates teachers possessing not only digital skills but also a deep understanding of how these tools align with pedagogical practices and the specific content of music education. Our Case 1 delves into the diverse functionalities of music education software, echoing McPherson's (2012) findings on the positive impact of tools like GarageBand on student engagement and composition skills. This aligns with Hsu's (2011) research indicating the potential of software to foster creativity and enhance student attitudes towards music learning. However, acknowledging the concerns raised by Vavrus et al. (2017) regarding teacher preparedness and confidence is crucial. As highlighted by Mishra and Koehler (2006), robust professional development programs and ongoing support are essential to empower educators with the necessary skills and pedagogical strategies to fully leverage the potential of these tools.

Building upon this, Case 2 illuminates the lived experiences of music teachers navigating technology integration, echoing Johnson's (2014) emphasis on student-centered learning in the digital age. The emerging themes of collaboration and communication resonate with Koehler and Mishra's (2008) work on the transformative power of technology to break down

classroom walls and connect students with global communities. Furthermore, the identified theme of differentiation and individualization aligns with Ertmer and Gorski's (2012) assertion on technology's ability to cater to diverse learning styles and provide personalized learning pathways. Yet, acknowledging the challenges identified by Bates (2019), such as ensuring equitable access to technology and infrastructure, remains critical.

Ultimately, this research contributes to the ongoing discourse on technology integration in music education by highlighting both its benefits and the complexities of implementation. By delving into specific software applications and teacher experiences, it provides valuable insights and practical strategies for educators navigating this transformative journey. As Greenhow et al. (2016) suggest, embracing the opportunities presented by technology while addressing the existing challenges can pave the way for a future where music education thrives in the digital age.

However, this research also opens doors for further investigation. Future studies could explore the long-term impact of technology integration on student learning outcomes, investigate the effectiveness of specific pedagogical approaches in a technology-rich environment, and delve deeper into the challenges faced by educators in diverse contexts. As we continue to learn and adapt, we can collectively shape a future where music education flourishes, nurtured by the harmonious blend of tradition and innovation in a digital world.

Table 2. Key Findings and Implications of the Music Education

Case Study	Focus	Key Findings	Implications for Music Education
Case 1: Music Education Software	Benefits and applications of music education software	* Enhances student engagement and motivation through interactive tools and games. * Facilitates differentiated instruction and individualized learning pathways. * Fosters creativity and exploration in composition, recording, and performance. * Supports collaboration and communication through online platforms and music creation apps. * Requires teacher confidence and effective pedagogical strategies for integration.	* Educators should explore diverse software options aligned with learning goals. * Professional development programs on technology integration are crucial. * Pedagogical strategies should leverage software strengths without undermining core music education principles.
Case 2: Teacher Perceptions and Practices	Music teachers' perspectives and practices regarding digital technology integration	* Teachers' perceptions range from excitement about new possibilities to concerns about challenges and workload. * Adaptation involves balancing new tools with traditional methods and addressing existing skill gaps. * Challenges include access to technology, infrastructure, and time constraints. * Collaboration and peer support play a vital role in successful integration.	* Teacher voices and concerns should be acknowledged and addressed. * Resources and support structures for technology integration are essential. * Building communities of practice can foster collaboration and knowledge sharing.

7. Conclusion

This research has delved into the dynamic interplay between digital technology and music education, uncovering a symphony of opportunities and challenges. Through the lens of two conceptual case studies, we have witnessed the potential of software applications to ignite student engagement, nurture creativity, and facilitate differentiated learning. We have also acknowledged the concerns of music educators navigating this evolving landscape, grappling with resource limitations, skill gaps, and the need to balance innovation with tradition. However, from this confluence of possibilities and complexities, a resonant conclusion emerges: the future of music education lies in embracing harmony. This harmony calls for educators to become skilled conductors, equipped with the knowledge and confidence to leverage digital tools within a robust pedagogical framework. It necessitates the building of

orchestras, not through uniformity, but through collaboration, where experienced educators support and learn from one another as they adapt to the changing rhythms of the digital age.

Furthermore, this harmony cannot exist in isolation. Schools and educational institutions must provide the infrastructure and resources to ensure equitable access to technology, echoing the sentiments of Bates (2019) about bridging the digital divide. Policymakers should invest in professional development programs, empowering educators with the necessary skills and pedagogical strategies to effectively integrate technology without compromising the core principles of music education. Ultimately, the digital symphony of music education holds the potential to create a transformative and inclusive learning experience for all students. By fostering a spirit of collaboration, providing adequate resources, and prioritizing professional development, we can empower educators to become skilled conductors, guiding their students to explore the limitless possibilities of music in a world where technology and tradition harmonize in joyful resonance.

This research may be just one note in the vast composition of understanding technology's place in music education, but it serves as a reminder that by working together, we can ensure that the future of music education is not a cacophony of challenges, but a harmonious symphony of learning, creativity, and joy.

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Thai Students Developing Intercultural Sensitivity as Study-Abroad Program Buddies

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Abstract

Several empirical studies have examined the intercultural sensitivity of visiting overseas students in various study-abroad contexts. However, research on the intercultural sensitivity of native hosting students, including in buddy programs, where visiting students and local students are paired for purposes of intercultural exchange is lacking. Although such programs can have have positive effects on participants, others warn that social relationships (between visitors and host nationals) can be unbalanced and superficial. Thus, understanding the factors that both facilitate and impede domestic students' intercultural sensitivity development in contexts involving buddy programs requires further investigation. The current project aims to examine the differential effects of intergroup contact on the willingness to interact between Japanese and Thai students, while investigating any change effects on hosts' intercultural sensitivity that occur. This paper provides an outline of the intended study.

Keywords: Intercultural Sensitivity, Intercultural Development, Buddy Programs

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Introduction

Given the limited domestic opportunities for Japanese university students to engage in intergroup contact, one promising treatment area for examining intercultural sensitivity is through STSA programs (defined as 1~8 weeks in length by Gaia, 2015). In spite of the fact that STSA programs are becoming increasingly popular in Japan (JASSO, 2019), relatively few STSA studies have measured Japanese sojourners' intercultural learning experiences (Koyanagi, 2018) and even fewer still have examined hosts' development. With the increase in STSA popularity and its recognition as a high-impact practice, finding ways to appropriately measure hosting students' intercultural sensitivity, in particular, is necessary.

Buddy programs involve placing students into intergroup pairings for various purposes including language practice, intercultural development, friendship, and for increased cross-culture support. While research on buddy programs have demonstrated that several positive effects on participants can occur in study-abroad programs (Nilsson, 2003), others warn that social relationships (between visitors and host nationals) can be unbalanced and rather superficial (Compiegne, 2021). Consequently, when left unchecked, these superficial relationships may end up hindering intercultural growth rather than promoting it. Thus, better understanding the factors that both facilitate and impede domestic students' intercultural sensitivity development in contexts involving buddy programs requires further investigation.

The purpose of this study is to examine the intercultural development of participating Thai student hosts in a STSA program. The following are the key research questions in this study:
1) What differences, if any, in intercultural sensitivity development occur for hosting students in a STSA buddy program?
2) How can study-abroad educators provide more effective development for international students to engage in intergroup contact?

Study Context

This study is being conducted between a Thai university in northern Thailand and a Japanese university in central Japan. This mixed-methods study will use several quantitative instruments in a causal model design (see the 'proposed model' below). Written surveys and semi-structured pre/post interviews will inform the qualitative perspective. Participants will be recruited through convenience sampling. Appropriate ethical clearance has already been received (No. 19-091) and all interested participants will be required to give informed consent.

The following is the proposed project model:
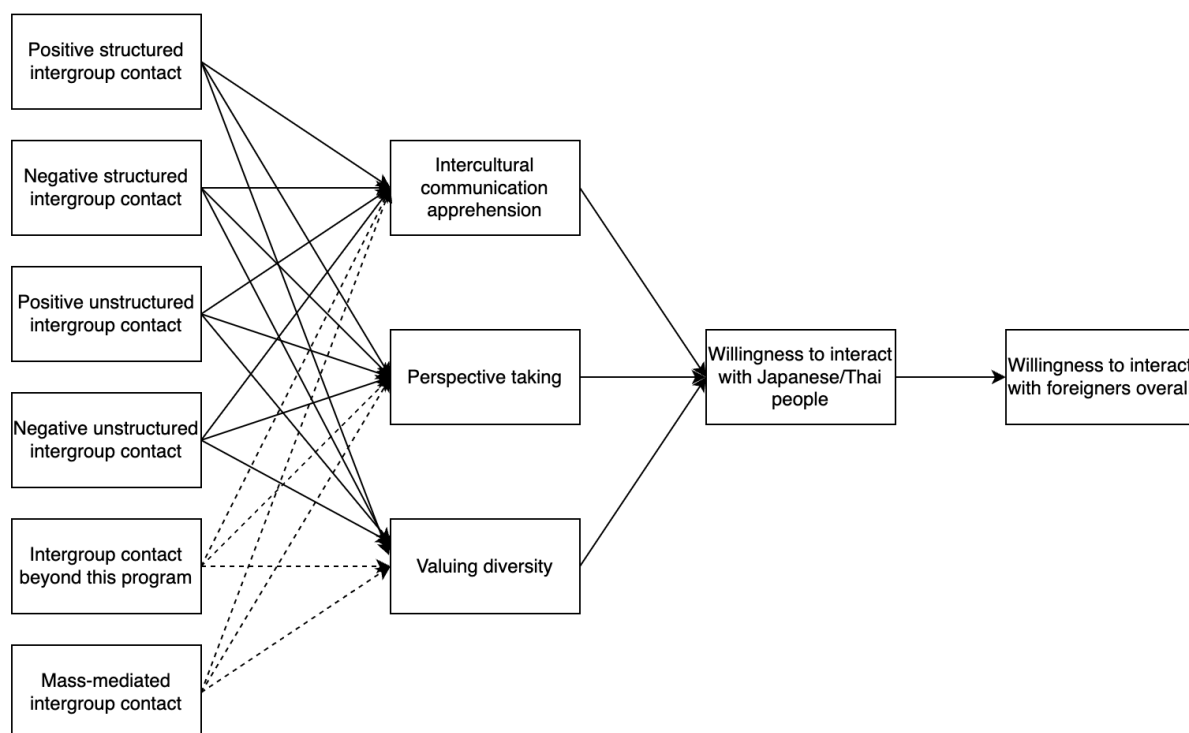
There are three distinct stages to this research project, which are outlined as follows:

Stage	Objectives
1	Data collection: literature review, needs analysis questionnaires, interviews
2	Data analysis of initial model: refinement of variables, structural equation modeling
3	Data analysis of refined model: multi-group structural equation modeling

Stage 1: Data collection.
The researcher will begin with an extensive literature review of current intergroup contact theories and practices, and establish how this relates to the Japanese and Thai study-abroad context. Data will also be collected through a detailed needs analysis questionnaire. Analysis of the data will aim to reveal: 1) students' self-perceived intercultural attitudes, and 2) their self-perceived agency towards developing competence in intergroup contact situations. The purpose of this first phase is to then help to refine the selection of appropriate variables and items, as outline in the proposed model above, for the next stage of the study.

Stage 2: Data analysis of initial model.
Initially a pilot study will be conducted using Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) to confirm the structures of each scale and their fit. Items that don't fit will be removed from the model.

Stage 3: Data analysis of refined model.
Quantitative data will also be collected after refining the piloted instrument in Stage 1 and Stage 2. Structural Equation Modeling will also be used to test the model fit.

Conclusions

This study proposes an original model of how a STSA program affects the international outlook of Thai university hosting students in a buddy program. This model should be one of the first attempts to quantitatively assess these beneficial effects, through a systematic evaluation of the variables that lead to them. It is anticipated that results from this study will contribute to better understanding hosts' intercultural sensitivity development through STSA programs.

Universities need to intentionally provide intercultural education opportunities beyond second language (L2) development through value-added "learning outcomes above and beyond that which may be achieved in domestic or traditional campus-based courses" (Tarrant, Rubin & Stoner, 2014, p. 141). Therefore, understanding how even STSA programs can lead to increased attitudes, knowledge and skills for effective intercultural communication is necessary given the increase recently of these programs. From a practical standpoint, this research is expected to provide clues for language teachers, coordinators, and other stakeholders to better support students' intercultural sensitivity development domestically and abroad.

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Strengthening and Supporting Social Emotional Development

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Abstract

Social-emotional learning (SEL) for students plays a crucial role in student success and well-being. This research investigates the challenges in social emotional development among students in the post-pandemic learning environment, specifically for a charter school in Southeast Los Angeles. According to the National Center for Education Statistics, 87% of public schools have reported the negative impact distance learning had on social emotional development. The literature review discusses the already existing research supporting the idea that implementing SEL has positive benefits for students' well being and success. With schools now completing their second year back in person, the need to continue developing social-emotional skills is crucial. I used this research to create an intervention that incorporates weekly goals and daily reflections to address three targeted areas; problem-solving, relationship building, and empathy. Intervention methods focus on weekly goals through community meetings and role playing scenarios. Progress was measured through a series of qualitative and quantitative data collection tools, including self-reflection, personal goal setting, and the collection of reported classroom incidents. The data concludes that Universal Design within SEL is effective in developing social skills as it provides opportunities for self-regulation. Post intervention data indicated that students increased their understanding of empathy, yielding a drop in classroom incidents, which then optimized instructional time. However, ongoing support and multiple intervention rounds are needed to ensure sustained progress. The findings offer insight for educators, emphasizing the need for SEL practices that are relevant, consistent, and inclusive for all students in the post-pandemic learning environment.

Keywords: Distance Learning, SEL, Relationships, Intervention, Empathy

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Introduction

I am a third grade teacher in a charter school located in Southeast Los Angeles. One aspect of my job that I enjoy the most is being able to develop relationships with the students, and fostering those relationships between them as well. A dilemma I have encountered over the past couple of years working here is that the social emotional development and relationship building are not happening as much as expected. There is almost a resistance to trying to socialize with students outside of the friends they have already. There is also a noticeable difference in the way students interact with one another and problem solve situations in social settings such as recess or PE. Extreme cases involve behaviors such as immediately getting physical when someone upsets them rather than using words or other problem solving techniques. The goal of my research and implementation of intervention is to foster better relationship building and problem solving skills amongst peers.The goal of the literature review for me is to know what solutions research already suggests are available, and how can it be restructured to be both culturally sustaining and relevant to post pandemic learning.

A common theme found throughout the literature was that a Social Emotional Learning curriculum, when implemented with guidance and consistency, will yield positive school wide results. Because of this, I feel it justified to create a school wide professional development to share future findings with educators at my school site. Another common theme between the literature was that a strong SEL curriculum is directly linked to improved academic success amongst students. The literature also suggests that there is a need for adjustment and reframing in order to include more culturally sustaining practices for social-emotional learning.

Problem

I feel there is not enough Social Emotional support for students who were most affected by distance learning; they were more socially isolated during critical years needed for socialization skills. According to the National Center for Education Statistics, 87% of public schools have reported the negative impact the pandemic had on social emotional development during distance learning. Zieher, Cipriano, Meyer, & Strambler (2021), among others, suggest that there are still details and statistics emerging as to what the full extent of the effects of COVID-19 have been on students' well-being. However, there is no doubt that there was a heavy impact on social, emotional, and academic growth. To gather more site specific data, I have engaged in family meetings to discuss these noticed behaviors, and families share that there is consistency with what they are seeing as far as social development and coping skills. There is a small group of students that are my main focus as I see this behavior more strongly in them, but this is something that has affected the majority of students. To better understand this issue, I have gathered data including rule talks and other disciplinary documentation taken throughout the year.

Social emotional development is important for both relationship building and problem solving. According to Gehlbach & Chuter, (2020), "before students can benefit from social relationships, they need to develop skills and adopt behaviors that will facilitate their social connections to others" (p. 5). However, one of the biggest challenges educators face when implementing a strong SEL curriculum is the lack of support or consistency in the way it is utilized. There is a need for SEL to be easily woven into existing routines while also providing aligned guidance from administration and school leaders. Mahfouz & Anthony-Stevens (2020) suggest that in order to achieve this, there needs to be clear pre- and in-

service teacher training that outlines the goals and what that practice looks like. Reinforcing this idea, Chu & DeArmond, (2021), state, "A cohesive approach also makes it easier for the networks to support SEL implementation across schools" (p. 7). SEL should not be viewed as an "add on" but rather an existing part of school life. While this is an important aspect of making SEL implementation possible, there is also a need to create a more sustainable and relevant method of utilizing SEL in our post pandemic schooling. Tesar (2021) suggests that COVID-19 and distance learning offered an opportunity for educators and school leaders to rethink what policies and methodologies look like going forward.

Social-Emotional learning can be restructured in a way that is relevant and reflects students' lived experiences. Mahfouz & Anthony-Stevens (2020) discuss a study done at a school that serves mainly Native American students and the deficit thinking that was present amongst teachers when discussing students' needs. Furthermore, the issue is compounded among students that are bilingual or identified as multilingual. "In the pursuit of educational equity, we believe biases must be acknowledged and inequitable practices must be eliminated; only then can school environments cultivate the interests and talents of students from diverse backgrounds" (Mahfouz & Anthony-Stevens, 2020, p. 61). A core aspect of social-emotional learning is the capacity to establish relationships with others. This is a skill that will benefit students both in and out of the academic setting. Researchers have posed the questions, "What if the goal of teaching and learning with youth of color was not ultimately to see how closely students could perform White middle-class norms, but rather was to explore, honor, extend, and, at times, problematize their cultural practices and investments?" (Alim & Paris, 2017, p. 3). Solutions to this issue also include the use of additive approaches when working with multilingual students. Flores & Rosa (2015), build on this idea by saying, "the goal of additive approaches is to valorize students' diverse linguistic repertoires by positioning their skills in languages other than Standard English as valuable classroom assets to be built on rather than handicaps to be overcome" (p. 153). Utilizing this approach not just for language learning but SEL will positively impact the success of that curriculum.

Darling-Hammond & Cook-Harvey (2018) discusses the importance of whole child teaching and providing a positive learning environment which includes allowing students to learn social emotional skills as well as academics. Schools need to promote development in an academic setting as well as how it connects to the community. A universal design for learning (UDL) approach to SEL is also a key component of making goals and outcomes feel attainable for students. Relationships between students and teachers are crucial for SEL success, "for optimal student outcomes to occur, we hypothesize that students must feel a social bond with their teacher and (at least some) peers, they must be motivated to engage in learning tasks, and they must sufficiently self-regulate to remain motivated to pursue these tasks" (Gehlbach & Chuter, 2020, p. 4). Self-regulation increases the capacity students have for reflecting on choices and correcting as needed. How powerful would the SEL curriculum be if students had a say in what they need to work on? What would be the impact of a student creating a self-reflection guide for how well they feel they have reached their goals? This skill would be transferable in early childhood, elementary, and high school settings.

As mentioned above, research into how deeply the effects of COVID-19 and distance learning have had are still manifesting. However, the literature discussed above did offer insight into the solutions available. In order to combat deficit thinking as well as misalignment, teachers need specific pre- and in- service training. My solution to this would be implementing school wide professional development throughout the year. Utilizing research and data that manifests in my classroom, I would want to see how transferable this

would be into the whole school implementation. It could also be helpful to utilize different grade level findings. For example, what works for 3rd grade may look very different in kindergarten.

In building off of the UDL approach, the specific intervention I want to implement is having a specific, weekly goal introduced during community meetings. In researching possible interventions, the findings from Zieher, Cipriano, Meyer, & Strambler (2021) were helpful in implementing SEL with students. They found that having activities in which students were identifying emotions, labeling emotions, managing emotions, managing behaviors, social problem solving, empathy/perspective-taking independently, students were more likely to respond.

Intervention

From the findings mentioned above, I plan to have daily reflections for students to work on independently during the closing circle to share how they felt they did in maintaining our weekly goal. This can be as simple as asking "how well do you feel you did with our weekly goal?" Then, students will be allowed to use words or pictures to describe situations throughout the day while keeping the goal in mind. This allows for self-regulation and guidance on how we can turn it around for the next day.

Next steps for implementation involve utilizing the existing community meeting block for the introduction of our weekly goal. I want to target 3 specific areas for growth. They are ways to problem solve issues with peers, communication during recess, and how actions impact the way we make others feel. These three specific areas align with the issues I have seen manifesting within the classroom. My research question is as follows: What is the effect of specific, targeted weekly goals on student interactions as measured by how successful students feel when reflecting on their goal. Data will also include the frequency in which classroom incidents occur through the collection of rule talk and other disciplinary documentation. Further development and data tracking was as follows.

The intervention was a three week process, with one week dedicated to each identified area of need. Each week began with a Mindset Monday meeting in which students engaged in role playing scenarios. Students were able to discuss personal experiences related to the weekly goal and how they would have changed the outcome. The weekly mindset was projected every morning when students walked in as well as every afternoon during reflection time. Students filled out that reflection daily.

The following were the topics of our Mindset Monday meetings:
> Week 1: How can we solve problems ourselves before asking the teacher for help?
> Week 2: How can we work with friends we have not had a chance to work with this year, and how does that make us a good team?
> Week 3: How do our words or actions make others feel?

Sentence stems for daily reflection included:
> I was successful today when…
> I want to work on…
> I saw others…

Post intervention responses indicated that students made some growth in understanding certain skills and dealing with problems more independently. A positive result was that there were zero responses indicating that they needed help in the area of empathy and understanding how they make others feel. While there were responses indicating they were unsure about problem solving and relationship building, this data offered more insight into what skills needed more intervention.

Conclusion

The results of this intervention has led me to the conclusion that Universal Design within Social Emotional Learning is effective in helping students develop social goals. The purpose of providing agency and opportunities to self-regulate was to ensure goals felt attainable and relevant. The pre and post intervention data does support that this is an effective strategy in students developing social emotional goals. However, the data also indicates that there is a need to extend the amount of time spent on each skill, ensuring students have multiple opportunities to practice and reflect on their learning. Moving forward, the goal will be to provide earlier intervention for target skills, and allow for multiple rounds of intervention to ensure sustained progress.

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Crucial Conversations With Adult Learners: Addressing Academic Remediation, Mental Health Concerns, and Lapses in Professionalism

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Abstract

In the intricate landscape of modern education, effective communication is paramount, particularly when engaging in crucial conversations with adult learners. This conceptual framework delves into the significance of these conversations, exploring their role in addressing academic remediation, mental health concerns, and lapses in professionalism. By examining the impact of such discussions on adult learners' educational experiences, this study provides valuable insights into fostering a supportive and inclusive learning environment. Drawing upon a comprehensive review of the literature, the authors present evidence-based strategies for engaging in successful crucial conversations. These strategies are designed to empower educators and facilitators to navigate challenging topics with adult learners, facilitating meaningful dialogue and promoting positive outcomes. To that end, they are showcased through three case studies that highlight the use of Crucial Conversations with adult learners. By promoting crucial conversations through open dialogue, mutual understanding, and collaborative problem-solving, educators can create a learning environment that values diversity, encourages growth, and supports the holistic development of adult learners (Grenny, 2022). This research underscores the need for ongoing professional development in communication and conflict resolution skills, empowering educators to navigate challenging conversations and contribute to the overall success of adult learners.

Keywords: Adult Learners, Crucial Conversations, Remediation, Mental Health, Professionalism

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Introduction

Adult learners occupy diverse backgrounds, experiences, and motivations, thereby bringing unique needs and facing distinct challenges within educational settings (Fenwick & Tennant, 2020). Recognizing the significance of fostering growth and success among this population, crucial conversations have emerged as a vital tool for supporting adult learners. These conversations, characterized by their focus on high-stakes and emotionally charged issues, serve as transformative opportunities for addressing critical aspects of adult learners' educational journey (Grenny et al., 2022). This conceptual framework delves into the significance of crucial conversations in three specific areas that significantly impact adult learners: academic remediation, mental health concerns, and lapses in professionalism. Through an examination of existing research and insightful case studies derived from workplace scenarios, this article seeks to shed light on effective strategies for engaging in these conversations and fostering a supportive learning environment that facilitates adult learners' growth and development. By understanding the role of crucial conversations in these key areas, educators and practitioners can equip themselves with the necessary tools to create inclusive and effective learning environments for adult learners.

Literature Review

Academic Remediation and Crucial Conversations

Academic remediation refers to the process of providing additional support and resources to adult learners who require assistance in meeting educational standards. Crucial conversations centered around academic remediation involve discussing areas of improvement, goal setting, and providing constructive feedback (Cheong et al., 2022). According to a study by Grenny (2009), crucial conversations in academic remediation can enhance self-awareness, clarify expectations, and promote personalized learning plans. Engaging in these conversations requires active listening, empathy, and establishing clear objectives for adult learners.

According to Dweck (2006), cultivating a growth mindset, where learners believe in their capacity to improve through effort and learning, can positively influence academic outcomes. In addition, educators should employ strengths-based approaches when engaging in crucial conversations about academic remediation (Bourgeois-Law et al., 2018). Recognizing and building upon a learner's strengths can provide a solid foundation for their learning journey. By acknowledging their existing skills and abilities, educators can create a supportive environment that encourages students to apply their strengths to areas that require improvement (Dornan et al., 2019). This approach not only boosts confidence but also instills a sense of empowerment in learners, motivating them to tackle academic challenges with enthusiasm.

Moreover, developing effective learning strategies is crucial when addressing academic remediation. Students who struggle academically often benefit from tailored approaches that cater to their individual learning styles and needs (Hamman, 2018; Housel, 2020). Educators should take the time to understand each student's preferred learning methods and provide them with the necessary tools and techniques to enhance their learning experience. This may involve simulated and experiential learning, mentorship and coaching, peer collaboration, or integrating technology into their learning.

Chou et al. (2019) highlights the importance of creating an open and non-judgmental space during crucial conversations about academic remediation. Establishing an atmosphere of trust and respect enables students to comfortably share their challenges and seek assistance. Encouraging open dialogue allows educators to gain valuable insights into the specific hurdles students face, enabling tailored interventions and support. This collaborative partnership between educators and students fosters academic growth and success.

Mental Health Concerns and Crucial Conversations

 Mental health concerns significantly impact adult learners' educational experiences (Lipson & Eisenberg, 2018). Crucial conversations focused on mental health aim to address stress, anxiety, depression, and other emotional challenges that can hinder learning. Studies by Alsubaie et al. (2019) and Kumagai, Jackson, & Razack (2017) highlight the importance of creating an emotionally safe and inclusive environment that encourages the disclosure of mental health concerns among adult learners. They found that crucial conversations that prioritize active listening, empathy, and the provision of appropriate resources can help reduce the stigma associated with mental health and promote well-being.

Incorporating mental health support services and awareness within educational settings is crucial. Yusufov et al. (2019) conducted a meta-analysis positive impact of integrating well-being initiatives into adult education programs. Wellness integration enhances learners' academic success and overall well-being by providing them with the necessary support to address their mental health concerns. Yusufov et al. (2019) found that while many approaches can be helpful, it is essential to tailor the approach to the particular person or group of persons. To that end, these supportive interventions can be navigated by engaging in crucial conversations that focus on the mental health of the adult learner. Crucial conversations should be conducted with sensitivity and respect, ensuring that learners feel heard, understood, and supported.

Additionally, it is important to recognize that mental health concerns among adult learners are diverse and multifaceted (Wolgast et al., 2020). These concerns can stem from various factors such as personal experiences, societal pressures, financial stress, and life transitions. These factors can significantly impact their mental well-being and hinder their educational experiences. Therefore, it is important for educational settings to acknowledge the complexity of mental health issues among adult learners and provide tailored support that addresses their unique circumstances. By fostering a supportive and empathetic learning environment, educational institutions can empower adult learners to seek help without stigma and promote overall well-being alongside their academic growth.

Lapses in Professionalism and Crucial Conversations

Lapses in professionalism, such as disruptive behavior or ethical violations, can negatively impact the learning environment and the experiences of adult learners. These instances can create a sense of unease, hinder effective communication, and impede the acquisition of knowledge and skills (Guerrasio et al., 2019). In Grenny's (2009) article, he argues that in crucial conversations, emotions run strong, and outcomes have significant consequences, holding the key to transforming disruptive behavior. Engaging in crucial conversations about professionalism involves setting expectations, addressing concerns, and promoting accountability. The author emphasizes that rather than ignoring or avoiding such

conversations, educators must engage in them skillfully to address the root causes of disruptive behavior and create a culture of respect and collaboration.

Similarly, Kaslow et al. (2018) researched the evolution of remediation at their institution and highlighted the use of crucial conversations in the context of physician-resident remedial teaching. The study explores the evolution of teaching strategies for physician residents who require additional support to meet competency standards. The authors emphasize that crucial conversations, including a written learning plan and individual support, have played an important role in providing effective feedback and addressing professionalism, along with other related issues, in a constructive and supportive manner. They argue that engaging in these conversations allows educators to identify areas of improvement, set goals, create a safe environment for growth, and develop personalized remediation plans for physician-residents. Fostering a culture of professionalism contributes to a positive learning environment where adult learners can embrace constructive feedback and enhance the overall educational experience for adult learners.

Considerations for Educators

In the realm of adult education, educators face a multitude of challenges when engaging with their learners. From addressing academic remediation to navigating mental health concerns and handling lapses in professionalism, adult educators must possess a diverse skill set to effectively facilitate learning and foster a supportive environment. By examining these considerations, educators can gain valuable insights and strategies to better support their adult learners on their educational journey. This section focuses on crucial conversations with adult learners, highlighting the importance of open and respectful dialogues to tackle these complex issues.. Through proactive communication and understanding, adult educators can create an inclusive and empowering learning environment that promotes growth, resilience, and success for all learners.

Strategies for Conducting Successful Crucial Conversations

To ensure the effectiveness of crucial conversations with adult learners, it is essential to employ specific strategies. Grenny et al. (2022) discussed the "CRIBS" framework as part of training for crucial conversations, which encompasses four key elements for effective collaboration. This structure serves as a guide to fostering successful collaboration by promoting purpose-driven communication and innovative strategizing. The framework emphasizes the importance of committing to seek mutual purpose, recognizing the underlying purpose behind the strategy, inventing a shared purpose, and engaging in creative brainstorming to devise innovative strategies (Grenny et al., 2022). This framework provides a guide for educators to navigate crucial conversations successfully. Additionally, active listening, empathy, and respect for cultural differences are critical elements in establishing trust and rapport during these conversations. By tailoring the delivery of information to meet the unique needs of adult learners, educators can create a more engaging and impactful learning experience. Ongoing feedback and reflection play a vital role in the continuous improvement of crucial conversations. Educators should encourage learners to provide feedback, share their insights, and collaborate on finding solutions.

Often, crucial conversations regarding lapses in professionalism can be challenging and evidence-based models can be helpful if navigating this critical dialogue. Kaslow et al. (2018) emphasize the significance of using evidence-based techniques, such as the DESC

(Describe, Express, Specify, Consequences) model, to navigate these conversations effectively. This model provides a structured approach allowing educators to express concerns objectively and collaboratively find solutions. DESC emphasizes the importance of accurately describing the specific instances or behaviors that are of concern. This helps in providing clear and specific feedback to the trainee. Delisle et al. (2016) suggest that using specific examples of lapses in professionalism increases the probability that an educator's feedback can be clear and avoid being unambiguous. The model encourages expressing the impact and emotions associated with the observed behavior, highlighting the importance of open and honest communication. This includes specifying the desired changes and expectations, outlining the professional standards that need to be met. Lastly, the model addresses the consequences or potential outcomes of not addressing the professionalism issues, such as implications for patient care and professional reputation. By using the DESC model, professionals can structure their crucial conversations effectively, ensuring that trainees understand the concerns, receive clear guidance, and have a clear understanding of the consequences of their behavior. Ultimately, these evidence-based techniques support the growth and development of adult learners, ensuring they have the best possible educational experiences (Vaughn, Allen, Kologi, & McGowan, 2015).

Fostering a Supportive and Inclusive Learning Environment

Crucial conversations should be embedded within a broader framework that supports a positive and inclusive learning environment for adult learners. This includes cultivating a culture of collaboration, providing resources for mental health education, and promoting professional development opportunities for educators. Research Chemosit, & Rugutt, (2020) emphasizes the importance of collaborative partnerships between educators, support staff, and administrators to address the needs of adult learners holistically. Collaboration fosters a sense of shared responsibility and allows diverse perspectives to be heard and valued. By working together, these stakeholders can identify common goals and develop strategies to address challenges and promote growth.

Collaboration enables the gathering of knowledge, skills, and experiences among educators, support staff, and administrators, ultimately leading to more effective solutions for adult learners. Through collaborative efforts, individuals can leverage their unique strengths and expertise to create a comprehensive support system for adult learners, ensuring their holistic development. Moreover, collaboration fosters a sense of ownership and accountability, as each stakeholder actively participates in the decision-making process and takes responsibility for the outcomes, further enhancing the effectiveness of the learning environment.

Ongoing professional development plays a vital role in equipping educators with the necessary skills and knowledge to engage in effective crucial conversations (Boeren,2017; Merriam, 2018). Training programs can provide educators with tools and techniques to navigate difficult conversations, manage conflicts, and promote constructive dialogue. By investing in continuous learning opportunities, educational institutions demonstrate their commitment to creating a supportive environment for both educators and learners (Boeren, 2017). In addition to equipping educators with skills for engaging in crucial conversations, ongoing professional development enables them to stay updated with the latest research and to access new strategies that can enhance their instructional methods and improve student outcomes (Housel, 2020). Professional development opportunities not only empower educators to navigate difficult conversations and manage conflicts effectively but also foster a culture of collaboration and growth within educational institutions (Boeren, 2017). By

engaging in continuous learning, educators can share their knowledge and experiences, exchange ideas, and collectively work towards improving teaching and learning practices.

In addition to fostering a culture of collaboration and professional development, it is essential to provide resources for mental health support. Engaging in crucial conversations can be emotionally challenging, and individuals may experience stress or anxiety as a result. Offering access to counseling services, mental health professionals, or employee assistance programs can help educators navigate these conversations while prioritizing their well-being. Implementing regular mental health check-ins and workshops specifically tailored for educators can further enhance their well-being and equip them with coping strategies for managing stress and anxiety. Also, establishing peer support networks or mentorship programs within educational institutions can create a sense of community and enable educators to share their experiences and seek guidance from one another. Providing comprehensive training on self-care and resilience can empower educators to prioritize their mental health and effectively manage the emotional demands of their profession. A supportive environment that recognizes and addresses the emotional impact of crucial conversations can contribute to more effective and empathetic communication.

Collaborative partnerships, professional development, and mental health support are integral components of a broader framework that promotes a positive and inclusive learning environment for adult learners. By prioritizing these aspects, educational institutions can empower educators to engage in crucial conversations effectively, foster growth and understanding, and ultimately enhance the overall learning experience for adult learners.

Case Studies

Following the completion of medical school, medical students embark on specialty training known as physician residency, which constitutes a part of Graduate Medical Education (GME). Eastern Virginia Medical School (EVMS) engages in a variety of efforts to assist residents who are in academic remediation, experience mental health concerns, or experience professionalism concerns. Often, these efforts will include crucial conversations which can help to navigate personal, family, and work-related stressors along with increasing their overall well-being and personal growth. The following three scenarios demonstrate specific instances of using crucial conversations to promote wellness. These scenarios involve a physician resident who is on academic remediation, a resident who is experiencing mental health concerns, and a resident who is struggling with professionalism. It is important to note that the names, demographics, and situations presented are amalgamations of resident experiences and do not correspond to specific individuals. While these scenarios are related to counselor education and medical education, this framework can be transferred to any educational profession.

Shannon, a dedicated first-year family medicine resident, faced significant challenges in passing one of her assessments, leading to her enrollment in an academic remediation program. Recognizing the importance of effective communication and dialogue in addressing academic difficulties, the faculty engaged in the crucial conversations (Grenny, 2022) Framework as a solution. These conversations involved open and honest discussions between Shannon, her mentors, and faculty members to explore the underlying reasons for her struggles and develop strategies for improvement. Through crucial conversations, Shannon was able to express her concerns, receive constructive feedback, and collaborate on identifying areas for growth. This was initially challenging because she had more time to

study in medical school. Shannon found that making adjustments to her study style and when she studies helped her to retain the learning material. The use of crucial conversations proved instrumental in fostering effective communication, trust, and mutual understanding, enabling Shannon to improve her approach to studying and to pass her assessment which helped her to advance the next year of residency.

Thomas, a second-year Obstetrics and Gynecology (OBGYN) resident, finds himself grappling with mental health concerns that manifest as anxiety before engaging in specific medical procedures. In order to address this issue, his faculty mentor implemented a crucial conversations approach, employing the CRIBS framework (Grenny et al., 2022) as a solution. During the critical conversation, Thomas was encouraged to share his anxieties related to specific OBGYN procedures. The first step was to create psychological safety, ensuring that Thomas felt heard, understood, and supported. Next, the conversation focused on identifying the gap between Thomas's current state and his desired state of managing anxiety effectively. Through open dialogue, the root causes of his anxiety were explored, such as lack of experience or fear of making mistakes. After understanding the underlying issues, the conversation shifted towards brainstorming solutions. Various strategies were discussed, including mentorship from senior OBGYN residents during procedures, stress management techniques, and counseling support. The goal was to equip Thomas with tools and resources to cope with his anxiety and build confidence in performing procedures. Finally, actionable steps were set to implement the agreed-upon solutions. This approach not only provided him with the necessary support but also fostered a culture of open communication and well-being within the OBGYN residency program, ultimately benefiting both Thomas and his patients.

Mark, a third-year psychiatry resident, is facing concerns regarding his professionalism. He has been consistently late for rotations and has been submitting patient notes past the deadline. These issues have raised concerns among his colleagues and supervisors regarding his reliability and commitment to his duties as a resident. To address this sensitive matter constructively, Mark's faculty advisor employed the DESC model (Kaslow et al.., 2018). During the conversation, the faculty member described Mark's performance issues and provided specific instances of his lack of punctuality and failure to complete patient notes on time. This description served to highlight the significance of professionalism within the field of psychiatry. By expressing these concerns and including specific details, the faculty advisor aimed to help Mark gain a better understanding of the impact his actions were having on his professional reputation and how it aligned with his aspiration of progressing in his residency. The faculty advisor approached the discussion with a supportive and non-judgmental tone, offering practical suggestions to address the identified issues. These recommendations included implementing time management techniques, refining prioritization skills, and seeking assistance whenever necessary. The faculty advisor also helped Mark to process the potential consequences of not making improvements in his professionalism. Additionally, they explored personal and professional challenges that may have been impacting Mark's performance, and the faculty advisor offered appropriate resources, such as mentorship or counseling, to address those issues. As a result, Mark was able to follow through with the professionalism improvement strategy and make the needed improvements.

Conclusion

In conclusion, this study highlights the importance of crucial conversations in supporting the growth and success of adult learners in educational settings. These case studies demonstrate the application of crucial conversations in academic remediation, mental health concerns, and

professionalism, highlighting the benefits of open communication, trust, and mutual understanding. Academic remediation crucial conversations focus on improvement, goal setting, and constructive feedback, promoting self-awareness and personalized learning plans. Mental health crucial conversations create a safe environment to address emotional challenges, reduce stigma, and provide appropriate resources (Maxfield, 2009). Dialogue regarding professionalism aims to establish expectations, address concerns, and promote accountability, using evidence-based techniques for effective communication. Educators must consider individual needs, cultural differences, and diverse perspectives to create a supportive and inclusive learning environment. Ultimately, crucial conversations facilitate meaningful connections, personalized support, and transformative learning opportunities for adult learners in diverse educational contexts.

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Development of Learning Design That Amplifies Self-Regulation and Peer Interaction Among Elementary School Students in a Two-Dimensional Metaverse

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Abstract

The two-dimensional metaverse (2D-Metaverse) has been gaining momentum as a platform for executing "personalized and collaborative learning" in an online environment, in Japanese elementary education, within the purview of Society 5.0. Vital elements of this pedagogical approach are children's self-regulation and peer interaction. However, empirical studies targeting these aspects within a 2D-Metaverse are sparse. This study aims to devise a learning design that amplifies self-regulation and peer interaction among children in a 2D-Metaverse, as part of a "personalized and collaborative learning" framework. The study employed a 2D-Metaverse-based "individualized and collaborative learning" model, with 26 children from Nagasaki and Fukushima prefectures participating. The lesson design is predicated upon the concept of "reconstruction of disaster-affected areas." This pedagogical approach is architected to facilitate students' autonomy within the 2D-Metaverse, enabling them to freely navigate, as opposed to adhering stringently to instructor-led directives. The 2D-Metaverse utilized was "oVice," a web-based virtual space service. A subsequent evaluative survey, employing a 5-point Likert scale, probed the children's self-perception of "self-control" during the self-regulation learning performance phase, and their awareness of social presence through peer interaction. Owing to a non-normal distribution per the Shapiro-Wilk test, the Wilcoxon signed rank test was utilized to investigate discrepancies between each survey item and the median rating. The outcomes illustrate a positive appraisal of self-regulation and peer interaction among participants. Thus, the successful design of a pedagogical program fostering "individualized optimal learning and collaborative learning," and promoting self-regulation and peer interaction in the 2D-Metaverse, can be asserted.

Keywords: Metaverse, Self-Regulation, Peer Interaction, Elementary School

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Introduction

We are confronted with the imperative of an educational framework that caters to the unique learning requisites of each pupil within an ever-evolving societal landscape, particularly in this epoch, referred to as Society 5.0. Society 5.0 epitomizes a hyper-intelligent community. In Japan, consequently, there exists an exigency to amalgamate self-directed learning with collaborative learning modalities. In the realm of 'self-directed learning', pedagogical approaches are meticulously tailored to the distinct traits and educational advancement of each learner, with a pronounced focus on nurturing competencies and aptitudes. Conversely, 'collaborative learning' cultivates interpersonal skills and honors individualism through collective educational experiences. The reverence for diversity coupled with the application of Information and Communication Technology is pivotal to this educational transformation. By actualizing education that is congruent with developmental stages, we are poised to unlock the full potential of every child. We dwell in the unpredictable epoch of Society 5.0. To thrive in this era, a radical shift in educational methodologies is indispensable.

Society 5.0 is conceptualized as a human-centric society that harmonizes economic progression with the amelioration of societal challenges through a framework that intricately intertwines cyberspace and the physical realm. This concept was introduced in Japan's 5th Science and Technology Basic Plan as the envisaged future society, succeeding the chronological progression from the hunting society (Society 1.0), through the agricultural (Society 2.0), industrial (Society 3.0), to the information society (Society 4.0). A quintessential example of the fusion between cyberspace and physical reality is the metaverse. The metaverse holds immense potential for transformative educational practices in this contemporary epoch. Figure 1 shows the conceptualization of Society 5.0.

Figure 1: Conceptualization of Society 5.0 (Cabinet Office 2024)

We shall delve into the discourse on the metaverse. Lee (2021) posits that the metaverse represents an extraordinary realm, a confluence where virtual and tangible realities coalesce and evolve symbiotically. The Metaverse Roadmap delineates four distinct categories of the metaverse: augmented reality, lifelogging, mirror world, and virtual reality. Augmented reality engenders an intelligently interactive environment. Lifelogging encompasses the

technologies dedicated to the compilation, archival, and dissemination of daily experiences and data. Mirror worlds accurately replicate our tangible environment, concurrently assimilating and providing pertinent information about the external milieu. In the educational sphere, mirror worlds manifest as virtual educational platforms, exemplified by videoconferencing systems like Zoom, Webex, Google Meet, and Teams, and two-dimensional metaverse spaces such as Gather.town. Virtual reality, on the other hand, constructs an immersive world grounded in digital data. An illustrative instance of a virtual reality tool in education is Zepeto, which enables educators to select a classroom layout, initiate a session, invite participants, and engage through voice and messages within this digital classroom setting. Figure 2 shows the taxonomy of the metaverse.
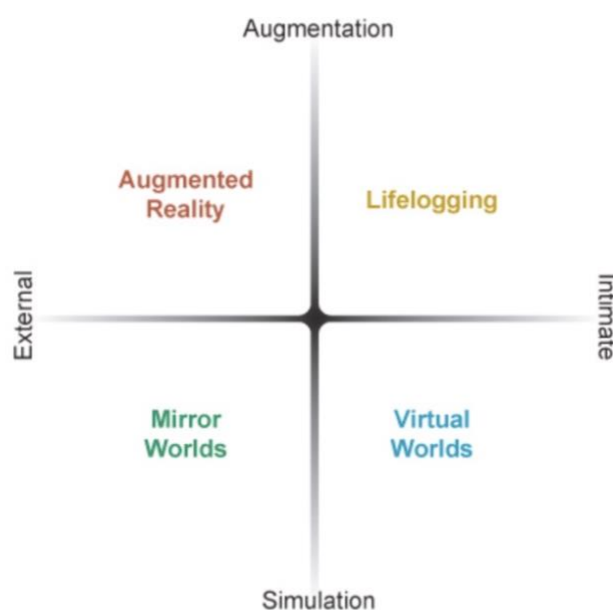
Figure 2: The taxonomy of the metaverse (World Wide Web Consortium 2008)

In this context, our attention pivoted towards the two-dimensional metaverse. This 2D-Metaverse is conceptualized as an online, virtual environment wherein avatars navigate freely across a bidimensional plane (Kurata, 2023). My focus on the 2D-Metaverse is driven by three primary reasons. Firstly, it fosters a more profound sense of social presence compared to traditional videoconferencing tools, potentially enhancing interactive learning experiences. Secondly, it provides an avenue for sharing self-directed, autonomous learning experiences with peers, which could further the amalgamation of self-regulatory and interactive learning in a digital context. Thirdly, its high usability is conducive to augmenting participant engagement, thereby empowering children to be proactive contributors to their educational journey (Sriworapong et al, 2022., McClure and Williams, 2021).

Numerous instances demonstrate the educational applications of the two-dimensional metaverse. Herein, we aim to elucidate the primary objectives of its utilization. The initial purpose serves as a support mechanism for children who are unable to attend traditional schooling. An exemplar of this is the case where a child, eager yet unable to participate in conventional classes, utilized this system as a haven for safe engagement. The second objective is to furnish a gamified learning experience. This is evidenced by scenarios where conversational interactions are intertwined with interactive games and multimedia resources, offering learners an informal, yet educationally enriching, game-based learning environment

(Zhao and McClure, 2022). The third aim is to augment online education. Traditional online learning, often reliant on videoconferencing tools, frequently lacks opportunities for individualized contact or peer-to-peer interaction. In contrast, the 2D-Metaverse enhances the realism of interactive experiences and facilitates self-regulated learning within a real-time, virtual classroom setting.

In the realm of elementary education, there exists a noteworthy instance of employing the two-dimensional metaverse: a preservice teacher's experimental lesson that amalgamates self-regulated and interactive learning methodologies (Nakashoji and Kurata, 2023). From these exploratory studies, we have articulated a series of considerations and concepts pertinent to the design and implementation of lessons in elementary schools utilizing the 2D-Metaverse framework. Nonetheless, the actual feasibility of integrating self-regulated and interactive learning within elementary school curricula remains an area of uncertainty. It is imperative, therefore, to first devise a lesson plan that seamlessly interweaves self-regulated and interactive learning elements within the context of the 2D-Metaverse. Figure 3 shows a Screen image of 2D-Metaverse.
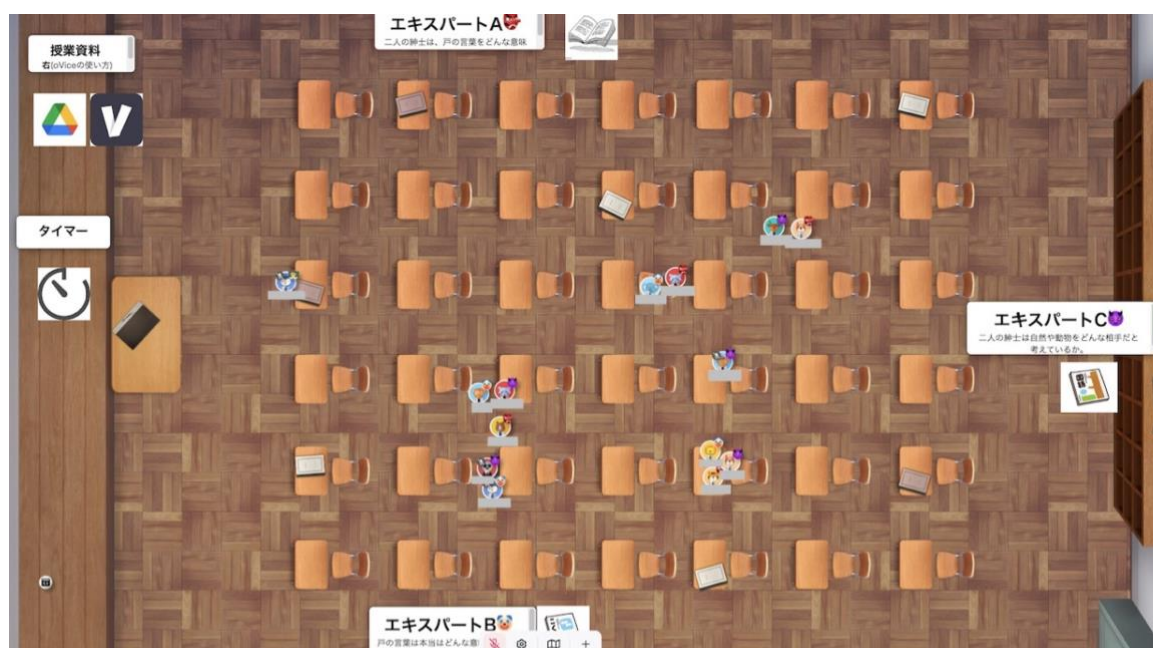
Figure 3: A screen image of 2D-Metaverse

The objective of this research is to develop an educational design that enhances self-regulation and peer interaction among children within a two-dimensional metaverse environment. To realize this goal, we have established two methodologies. The first entails the creation and implementation of a learning framework that synergizes self-regulated and interactive learning. The second involves examining children's self-awareness of 'self-control' during phases of self-regulated learning, as well as their perception of social presence during interactions with peers.

Learning Design

Initially, we contemplated a lesson structured around the concept of weathering, focusing on the theme of Nagasaki's atomic-bombed relics. The objective of our meticulously crafted lesson is to elucidate how the denizens of Nagasaki accomplished the city's reconstruction through the endeavors of seven pivotal individuals who were instrumental in this process.

Moreover, it aims to highlight the gradual diminution in public awareness of the realities associated with the atomic bombing and the subsequent rebuilding efforts. This educational experience is tailored for 26 young learners hailing from the prefectures of Nagasaki and Fukushima. The setting for this learning endeavor is oVice, a two-dimensional metaverse platform.

This educational practice is segmented into two distinct learning phases. The initial phase entails preparatory activities prior to the lessons, while the second phase encompasses the lessons conducted within the two-dimensional Metaverse. During the preparatory study phase, the students engage in two primary activities: firstly, they conduct research on the seven individuals who played a pivotal role in the reconstruction of Nagasaki; secondly, they reflect upon and organize their thoughts regarding the person or persons who left the most significant impression on them. Within the lessons in the 2D-Metaverse, the learning process unfolds through a series of structured activities:

1. Engaging in an open-ended discussion about the individuals who left a lasting impact.
2. Participating in pair or group conversations to deliberate on the commendable efforts of those who tirelessly worked for Nagasaki's reconstruction, subsequently documenting these discussions in the chat feature.
3. Freely posing questions to one another, drawing upon the opinions expressed in the chat.
4. Conducting an unrestricted dialogue on the reasons behind the limited public knowledge of the individuals who devoted themselves to rebuilding Nagasaki.
5. Collaboratively sharing the outcomes of these discussions with the larger group.

A noteworthy aspect of this learning environment is that children are afforded the liberty to move and converse freely within the two-dimensional Metaverse. It is pertinent to mention that the duration of each lesson is set at 60 minutes.

Methods

In our research, we employed two distinct methodologies. The initial method was the implementation of a questionnaire. This questionnaire was administered to a specific demographic, comprising 26 children who participated in the lesson. The timing of its deployment was strategically planned for after the completion of the practice session. The questionnaire was designed in a 5-point Likert scale format and was facilitated through the use of Google Forms. The delineation of the scoring system is as follows: 5 very agree 4 agree, 3 neutral, 2 disagree, and 1 very disagree. The second method involved the collection of comments. The target demographic, timing, and tools for this method mirrored those used in the questionnaire. However, the format diverged, allowing for free-form text responses, enabling participants to provide more detailed and nuanced descriptions of their experiences.

We formulated a set of 11 questionnaire items focusing on the 'awareness of social presence':
1. The 2D-Metaverse is great for conversing with others.
2. I don't mind introducing myself in the 2D-Metaverse.
3. I felt like I was learning along with everyone else in lesson.
4. I don't mind participating in discussions in the 2D-Metaverse.
5. During lesson, the teacher helped me feel comfortable learning with my peers.
6. The teacher was supportive of our conversations during lesson.

7. Conversations in the 2D-Metaverse are less natural than in the classroom. (invert scale)
8. In the 2D-Metaverse, the conversation is unnatural compared to a phone call. (invert scale)
9. Conversations in the 2D-Metaverse are unnatural compared to those in a videoconference. (e.g. ZOOM) (invert scale)
10. I don't mind interacting with my peers in the 2D-Metaverse.
11. I feel that my opinions and ideas are conveyed well to others in the lesson.

The first query assessed the suitability of the 2D-Metaverse for facilitating conversations with others. The second probed the respondents' comfort level with self-introduction within this virtual space. The third item explored the sensation of communal learning experienced during the lesson. The fourth item investigated the respondents' willingness to engage in discussions in the 2D-Metaverse. The fifth focused on whether the teacher's presence enhanced the comfort level of learning alongside peers. The sixth item evaluated the teacher's supportiveness in fostering conversations during the lesson. The seventh, eighth, and ninth items, which employed an inverse scale, compared the naturalness of conversations in the 2D-Metaverse to those in a traditional classroom, over a phone call, and in a videoconference setting such as Zoom, respectively. The tenth item delved into the ease of peer interaction within the 2D-Metaverse. Lastly, the eleventh item examined how effectively the participants felt their opinions and ideas were communicated to others during the lesson.

In addition, we devised four questionnaire items to gauge 'self-perception of self-control':
1. In the 2D-Metaverse, compared to videoconferencing (e.g., ZOOM), I was able to act as I wished.
2. I was able to act while paying attention to the activity time during the lesson.
3. In the 2D-Metaverse, compared to videoconferencing (e.g. ZOOM), I was able to have conversations with people I wanted to talk to.
4. I was able to decide how to act in lesson by myself.

The first item evaluated the degree of autonomy experienced in the 2D-Metaverse compared to videoconferencing platforms like Zoom, particularly in terms of acting according to one's own wishes. The second item focused on the ability to modulate actions while being mindful of the allotted activity time during the lesson. The third item compared the ease of initiating conversations with desired individuals in the 2D-Metaverse against traditional videoconferencing settings. The fourth item assessed the extent to which participants felt they could independently decide their course of action during the lesson.

Results and Discussion

On the appointed day of the educational session, all 26 pupils partook in the lesson. The provided image captures a moment during this session. Remarkably, the lesson unfolded seamlessly without any technical glitches, adhering strictly to the preconceived design. Subsequent to the lesson, every participant completed the questionnaire. Figure 4 shows an example of a screen in practice using the 2D-Metaverse.

Table 1 delineates the outcomes pertaining to 'awareness of social presence'. Initially, an analysis was conducted to ascertain if the survey data exhibited a normal distribution. However, the Shapiro-Wilk test indicated a non-normal distribution, prompting the application of the Wilcoxon signed-rank test to examine variances between individual survey

items and the median score of 3. This analysis revealed a predominantly positive response from the majority of participants across all 11 items.

Figure 4: An example of a screen in practice using the 2D-Metaverse

Questionnaires	5	4	3	2	1	Test
The 2D metaverse is great for conversing with others.	8	9	6	1	2	**
I don't mind introducing myself in the 2D metaverse.	9	10	2	4	1	**
I felt like I was learning along with everyone else in lesson.	11	9	3	2	1	**
I don't mind participating in discussions in the 2D metaverse.	15	5	4	1	1	**
During lesson, the teacher helped me feel comfortable learning with my peers.	15	6	3	2	0	**
The teacher was supportive of our conversations during lesson.	13	9	2	2	0	**
- Conversations in the 2D metaverse are less natural than in the classroom.	10	8	5	2	1	**
- In the 2D metaverse, the conversation is unnatural compared to a phone call.	13	5	3	4	1	**
- Conversations in the 2D metaverse are unnatural compared to those in a videoconference (e.g. ZOOM)	8	6	7	4	1	*
I don't mind interacting with my peers in the 2D metaverse.	15	5	3	0	3	**
I feel that my opinions and ideas are conveyed well to others in class.	12	10	2	2	0	**

- : value inversion / Test : Wilcoxon signed rank test (compared to median 3), **$p<.01$, *$p<.05$

Table 1: The outcomes pertaining to 'awareness of social presence'

The findings for item 1, labeled " The 2D-Metaverse is great for conversing with others." revealed that 8 respondents strongly agreed (scoring 5), 9 agreed (scoring 4), 6 remained neutral (scoring 3), 1 disagreed (scoring 2), and 2 strongly disagreed (scoring 1), results that significantly surpassed the median rating 3 ($p<.01$). The findings for item 2, labeled " I don't mind introducing myself in the 2D-Metaverse." revealed that 9 respondents strongly agreed (scoring 5), 10 agreed (scoring 4), 2 remained neutral (scoring 3), 4 disagreed (scoring 2), and 1 strongly disagreed (scoring 1), results that significantly surpassed the median rating 3 ($p<.01$). The findings for item 3, labeled " I felt like I was learning along with everyone else in lesson." revealed that 9 respondents strongly agreed (scoring 5), 11 agreed (scoring 4), 3 remained neutral (scoring 3), 2 disagreed (scoring 2), and 1 strongly disagreed (scoring 1), results that significantly surpassed the median rating 3 ($p<.01$). The findings for item 4, labeled " I don't mind participating in discussions in the 2D-Metaverse." revealed that 15 respondents strongly agreed (scoring 5), 5 agreed (scoring 4), 4 remained neutral (scoring 3), 1 disagreed (scoring 2), and 1 strongly disagreed (scoring 1), results that significantly surpassed the median rating 3 ($p<.01$). The findings for item 5, labeled " During lesson, the teacher helped me feel comfortable learning with my peers." revealed that 15respondents strongly agreed (scoring 5), 6 agreed (scoring 4), 3 remained neutral (scoring 3), and 2 disagreed (scoring 2), results that significantly surpassed the median rating 3 ($p<.01$). The findings for item 6, labeled "The teacher was supportive of our conversations during lesson." revealed that 13 respondents strongly agreed (scoring 5), 9 agreed (scoring 4), 2 remained neutral (scoring 3), and 2 disagreed (scoring 2), results that significantly surpassed the median rating 3 ($p<.01$). The findings for item (value inversion) 7, labeled "Conversations in the 2D-Metaverse are less natural than in the classroom." revealed that 10 respondents strongly agreed (scoring 5), 8 agreed (scoring 4), 5 remained neutral (scoring 3), 2 disagreed (scoring 2), and 1 strongly disagreed (scoring 1), results that significantly surpassed the median rating 3 ($p<.01$). The findings for item (value inversion) 8, labeled "In the 2D-Metaverse, the conversation is unnatural compared to a phone call." revealed that 13 respondents strongly agreed (scoring 5), 5 agreed (scoring 4), 3 remained neutral (scoring 3), 4 disagreed (scoring 2), and 1 strongly disagreed (scoring 1), results that significantly surpassed the median rating 3 ($p<.01$). The findings for item (value inversion) 9, labeled "Conversations in the 2D-Metaverse are unnatural compared to those in a videoconference (e.g. ZOOM)" revealed that 8 respondents strongly agreed (scoring 5), 6 agreed (scoring 4), 7 remained neutral (scoring 3), 4 disagreed (scoring 2), and 1 strongly disagreed (scoring 1), results that significantly surpassed the median rating 3 ($p<.05$). The findings for item 10, labeled "I don't mind interacting with my peers in the 2D-Metaverse." revealed that 15 respondents strongly agreed (scoring 5), 5 agreed (scoring 4), 3 remained neutral (scoring 3), and 3 strongly disagreed (scoring 1), results that significantly surpassed the median rating 3 ($p<.01$). The findings for item 11, labeled "I feel that my opinions and ideas are conveyed well to others in class." revealed that 12 respondents strongly agreed (scoring 5), 10 agreed (scoring 4), 2 remained neutral (scoring 3), and 2 disagreed (scoring 2), results that significantly surpassed the median rating 3 ($p<.01$).

Table 2 delineates the outcomes pertaining to 'self-assessment of regulatory behavior.' Subsequently, the methodology for analysis is consistent with the previously delineated procedure. Consequently, it was ascertained that a preponderance of participants harbored affirmative views across all 4 items. The findings for item 1, labeled "In the 2D-Metaverse, compared to videoconferencing (e.g., ZOOM), I was able to act as I wished." revealed that 14 respondents strongly agreed (scoring 5), 7 agreed (scoring 4), and 5 remained neutral (scoring 3), results that significantly surpassed the median rating 3 ($p<.01$). The findings for item 2, labeled " I was able to act while paying attention to the activity time during the lesson."

revealed that 9 respondents strongly agreed (scoring 5), 5 agreed (scoring 4), 7 remained neutral (scoring 3), 3 disagreed (scoring 2), and 2 strongly disagreed (scoring 1), results that significantly surpassed the median rating 3 ($p<.05$). The findings for item 3, labeled "In the 2D-Metaverse, compared to videoconferencing (e.g. ZOOM), I was able to have conversations with people I wanted to talk to." revealed that 11 respondents strongly agreed (scoring 5), 8 agreed (scoring 4), 4 remained neutral (scoring 3), 2 disagreed (scoring 2), and 1 strongly disagreed (scoring 1), results that significantly surpassed the median rating 3 ($p<.01$). The findings for item 4, labeled "I was able to decide how to act in lesson by myself" revealed that 9 respondents strongly agreed (scoring 5), 13 agreed (scoring 4), 3 remained neutral (scoring 3), and 1 disagreed (scoring 2), results that significantly surpassed the median rating 3 ($p<.01$).

Questionnaires	5	4	3	2	1	Test
In the 2D metaverse, compared to videoconferencing (e.g., ZOOM), I was able to act as I wished.	14	7	5	0	0	**
I was able to act while paying attention to the activity time during the lesson.	9	5	7	3	2	*
In the 2D metaverse, compared to videoconferencing (e.g. ZOOM), I was able to have conversations with people I wanted to talk to.	11	8	4	2	1	**
I was able to decide how to act in lesson by myself	9	13	3	1	0	**

Test : Wilcoxon signed rank test (compared to median 3), **p<.01, *p<.05

Table 2: The outcomes pertaining to 'self-assessment of regulatory behavior'

Moreover, the analysis encompassed children's perspectives drawn from their open-ended responses. The opinions pertaining to interactive learning included statements such as:

"I relished the opportunity to engage with a diverse array of individuals."

"The digital interface provided an immediate sense of ease, devoid of the apprehension typically associated with in-person encounters."

"It afforded me the possibility to converse with distant peers whom I desired to communicate with."

These findings indicate that children were capable of interacting with a multitude of participants within the 2D-Metaverse environment. However, there was an observation stating, "When I approached someone for a conversation, they sometimes moved away, oblivious to my intent." This incident underscores the challenges posed by the absence of social cues in the 2D-Metaverse relative to direct interpersonal interactions.

Concerning self-regulated learning, one remark was:

"I had the autonomy to approach peers I wished to engage with."

This suggests that children had the agency to initiate information exchanges with selected peers, exercising self-direction and self-regulation. Conversely, there were expressions of uncertainty, such as "I occasionally felt directionless," and "Locating a conversational partner

proved challenging." These sentiments highlight the necessity for educators to provide individualized support tailored to the children's self-regulatory capabilities.

Conclusions

The pedagogical framework instituted in this research demonstrates the capacity to enhance self-regulatory behaviors and peer-to-peer engagement, encapsulating the integration of self-directed and collaborative learning within the 2D-Metaverse. Nevertheless, it necessitates the provision of guidance for learners who exhibit uncertainty in navigating this milieu, as well as the development of strategies to address the distinctive dynamics characteristic of the metaverse.

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Creating Inclusive Curriculum: Incorporating LGBTQ+ Perspectives and Concepts in Counselor Education Courses

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Abstract

This conceptual framework examines the critical importance of incorporating LGBTQ+ perspectives and concepts into counselor education courses to foster inclusivity, cultural competence, and social justice among future mental health professionals. The authors provide an in-depth exploration of the societal context surrounding LGBTQ+ individuals, highlight the challenges they face in seeking mental health support, and emphasize the pivotal role of counselors in providing affirming care. Drawing upon theoretical frameworks, practical strategies, and counselor education experiences, this study presents a compelling argument for the urgent need to actively incorporate LGBTQ+ perspectives and concepts into counselor education curricula. Additionally, the framework explores two case studies showcasing the positive outcomes of implementing inclusive curriculum, further emphasizing the transformative potential of such an approach within the counseling profession.

Keywords: Inclusivity, LGBTQ+, Counselor Education

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Introduction

In the field of counseling, the creation of inclusive curricula that addresses the unique needs and challenges faced by diverse populations is of paramount importance (Gess & Doughty Horn, 2018). Among these populations, individuals who identify as lesbian, gay, bisexual, transgender, and queer/questioning (LGBTQ+) have historically faced significant barriers to accessing competent and affirming mental health care. Therefore, it is essential for counselor educators to proactively incorporate LGBTQ+ perspectives and concepts into counselor education courses, equipping future mental health professionals with the knowledge, skills, and attitudes necessary to provide culturally sensitive and inclusive counseling services.

This study delves into the historical and societal context surrounding LGBTQ+ individuals, shedding light on the pervasive impact of heteronormativity, stigma, and discrimination on their mental health and well-being. Drawing from literature and research, this conceptual framework highlights the critical role of counselors in challenging these systemic barriers and offering affirming care to LGBTQ+ clients (Bettergarcia, Matsuno,& Conover, 2021). Case studies will also be used to demonstrate the transformative impact of incorporating LGBTQ+ perspectives and concepts into counselor education. Additionally, practical strategies for integrating LGBTQ+ content into counselor education courses will be explored. These strategies include the development of LGBTQ+-inclusive syllabi, the use of case studies and role plays that address LGBTQ+ issues, and engaging students in critical discussions and self-reflection. The study also discusses potential challenges and resistance that may arise when incorporating LGBTQ+ content and suggests approaches to address these challenges, such as faculty development, fostering open dialogue, and addressing misconceptions and biases.

Literature Review

A wealth of literature emphasizes the vital role that counselors play in confronting and dismantling systemic barriers that hinder the well-being and mental health of LGBTQ+ clients (Abreu, et al., 2022 ; Astramovich, & Scott, 2020; Parker-Barnes, McKillip, & Powell, 2022). The literature consistently demonstrates that LGBTQ+ individuals face unique challenges related to their sexual orientation, gender identity, and expression, which can lead to increased rates of mental health disparities, discrimination, and social marginalization. These systemic barriers manifest in various domains, such as healthcare, education, employment, and legal systems, creating an urgent need for counselors to provide affirmative care.

Minority Stress Model

The Minority Stress Model provides a valuable framework for understanding the impact of societal discrimination on the LGBTQ+ community (Meyer, 2015). This model highlights the unique stressors experienced by sexual and gender minority individuals as a result of their marginalized status within society. Numerous studies have consistently documented the detrimental effects of societal discrimination on the mental health of LGBTQ+ individuals (Addis et al., 2009; Et al.; McDonald, 2018). The constant exposure to prejudice, stigma, and microaggressions can lead to increased levels of stress, anxiety, depression, and suicidal ideation. The Minority Stress Model posits that these mental health disparities arise from the chronic stressors experienced by LGBTQ+ individuals due to their marginalized status, including the concealment of their sexual orientation or gender identity, fear of rejection or violence, and internalized homophobia or transphobia (Meyer, 2015).

Discrimination against the LGBTQ+ community also significantly impacts social support networks and identity formation (Hinton, et al., 2022). LGBTQ+ individuals often face challenges in finding acceptance within their families, communities, and workplace environments, which can lead to feelings of isolation and rejection (Newcomb et al., 2019). The Minority Stress Model emphasizes that a lack of social support can exacerbate the negative effects of discrimination, amplifying stress levels and further impairing mental well-being (Meyer, 2015). Conversely, the presence of strong support systems, such as LGBTQ+-affirming networks, can act as a protective factor against the harmful consequences of societal discrimination (Meyer, 2015).

Beyond mental health, the Minority Stress Model also underscores the influence of societal discrimination on the physical health of LGBTQ+ individuals (Meyer, 2015; Romanelli, & Hudson, 2017). Research has revealed higher rates of substance abuse, smoking, and alcohol consumption among sexual and gender minority individuals, often as a coping mechanism to deal with the stressors resulting from discrimination (Valdiserri et al., 2019). Additionally, LGBTQ+ individuals are more likely to face barriers to healthcare access, including discriminatory practices, lack of culturally competent care, and provider bias, leading to disparities in physical health outcomes (Nadal et al., 2016). These findings consistently highlight the adverse effects on mental health, social support, and physical well-being among sexual and gender minority individuals. Understanding these experiences is crucial for developing interventions and policies that promote equality, inclusivity, and support for the LGBTQ+ community.

Counselors Role

In recent years, there has been a growing body of research exploring the impact of counselors who actively challenge systemic barriers and provide affirming care for LGBTQ+ clients. These studies consistently highlight the significance of creating safe and inclusive spaces where individuals from the LGBTQ+ community can feel supported and understood. For instance, Israel et al. (2008) conducted a study examining the experiences of LGBTQ+ clients in counseling settings. The findings revealed that clients who perceived their counselors as actively addressing systemic barriers reported higher levels of comfort and trust in the therapeutic relationship. This underscores the importance of counselors' willingness to acknowledge and challenge systemic barriers, such as heteronormativity and cisnormativity, which can marginalize and invalidate LGBTQ+ clients' experiences.

Additionally, research has shown that affirming care from counselors plays a vital role in fostering a sense of safety and inclusivity for LGBTQ+ individuals seeking therapy. A study by McCullough et al. (2017), investigated the impact of affirming counseling practices on the psychological well-being of transgender and gender-nonconforming clients. The results indicated that clients who received affirming care reported lower levels of psychological distress and higher levels of self-acceptance. These findings suggest that when counselors actively affirm clients' diverse gender identities and expressions, it can contribute significantly to their overall therapeutic experience. By offering non-judgmental support and understanding, counselors create an environment where LGBTQ+ clients can explore their identities and concerns without fear of stigma or discrimination. Literature consistently demonstrates the crucial role that counselors play in challenging systemic barriers and providing affirming care, ultimately leading to safer and more inclusive spaces for LGBTQ+ clients in therapy (Astramovich, & Scott, 2020; O'Shaughnessy, & Speir, 2018; Troutman, & Packer-Williams, 2014).

Affirmative care involves recognizing and validating the diverse identities and experiences of LGBTQ+ individuals, understanding the impact of social and cultural factors on their well-being, and actively advocating for their rights and access to resources. By utilizing evidence-based practices, such as cognitive-behavioral therapy, family systems therapy, and trauma-informed approaches, counselors can address the specific mental health needs of LGBTQ+ clients and facilitate their personal growth and resilience.

Inclusivity in Counselor Education

Recognizing the importance of fostering culturally competent counselors who can provide affirming and inclusive care to diverse clients, scholars and practitioners have emphasized the need for counselor education programs to address the specific needs and experiences of LGBTQ+ individuals (Pieterse et al., 2009). Several studies have highlighted the positive impact of integrating LGBTQ+ perspectives into counselor education courses, such as increased knowledge, awareness, and sensitivity among trainees, enhanced therapeutic skills, and the development of a more inclusive professional identity (Bidell, Markus, 2013; Rivers & Swank, 2017; Rutter et al., 2008). These findings underscore the value of preparing future counselors to work effectively with LGBTQ+ clients and advocate for their rights and well-being.

Despite the growing recognition of the importance of LGBTQ+ inclusivity in counselor education, various challenges persist in the implementation of such curricula. Research indicates that resistance from faculty, societal stigmas, and a lack of standardized guidelines pose significant barriers to the integration of LGBTQ+ perspectives in counselor education courses (Gess, & Doughty Horn, 2018; Moe, et al.,2021; Rivers, & Swank, 2017). Faculty resistance may stem from personal biases, discomfort, or a lack of familiarity with LGBTQ+ issues, leading to a reluctance to engage with or incorporate relevant content into their teaching. A lack of cultural competency among counselor educators was identified by multiple researchers as one of the obstacles to enhancing LGBTQ+ counselor competency (Bidell, 2013; Farmer, 2017; Gess & Horn, 2018). In correlation, societal stigmas often stem from long-held biases and misconceptions about LGBTQ+ individuals, making it challenging for counselor education courses to address these perspectives effectively (Hansbury & Bennett, 2013). Overcoming these stigmas requires a concerted effort to foster inclusivity and understanding within educational institutions and society at large (Carvalho, & Guiomar, 2022). This is especially true for the Council for Accreditation of Counseling and Relational Educational Programs (CACREP). the absence of standardized CACREP (2016) guidelines and competencies for LGBTQ+ inclusion in counselor education curricula creates inconsistencies across programs and undermines the systematic implementation of LGBTQ+ content (Minton, Morris, & Bruner, 2018). While there have been updated competences from ACA's LGBTQ+ division, SAIGE (ALGBTIC, 2009), it continues to be left to each training program whether or not to acknowledge LGBTQ+ clients as part of the terms "diverse populations" or "multicultural groups" used by CACREP (2016). This leads programs to omit or have an ambiguous stance in preparing students to work with the LGBTQ+ population. As a result, counselor educators face the challenge of navigating these barriers and finding effective strategies to overcome them, ensuring that LGBTQ+ perspectives are adequately integrated into counselor education courses.

Considerations for Educators

The research presented so far in this conceptual framework provides a comprehensive examination of the broader societal context surrounding the minority stress model, the counselor's role in providing LGBTQ+ affirming care, and inclusivity in counselor education. This next section will delve into the significance of integrating LGBTQ+ perspectives and concepts into counselor education courses, with the aim of cultivating inclusivity, cultural competence, and social justice among future mental health professionals. Drawing upon theoretical frameworks, practical strategies, and real-life counselor education experiences, the case studies will provide context on the pressing need to actively incorporate LGBTQ+ perspectives and concepts into counselor education curricula. Furthermore, this framework will delve into strategies for inclusivity in counselor education. By exploring these considerations, educators can better equip themselves to foster a more inclusive and compassionate learning environment that prepares future mental health professionals to be effective advocates for LGBTQ+ individuals.

Case Studies

 Incorporating LGBTQ+ perspectives and concepts into counselor education courses is a crucial yet challenging endeavor that requires intentionality and cultural awareness. The following two scenarios demonstrate specific instances of including LGBTQ+ affirming concepts into counselor education courses. These scenarios focus on a counseling theories course and a diagnosis course. It is important to note that the names, demographics, and situations presented are amalgamations of education experiences and do not correspond to specific individuals. While these scenarios are related to counselor education, this framework can be transferred to any educational profession.

This case study explores the impact of implementing an inclusive curriculum in a counseling theories course. Specific focus will be on students' awareness of the unique concerns faced by LGBTQ+ individuals, as well as the curriculum's influence on their confidence and competence in providing affirming care. The aim was to create an educational environment that fosters cultural sensitivity, empathy, and competence as it pertains to theoretical understanding and implementation.

This counseling theories course historically utilized a curriculum which primarily focused on traditional theories and approaches, neglecting to adequately address the specific needs and concerns of LGBTQ+ individuals. Recognizing this limitation, Dr. Smith sought to implement a more inclusive and comprehensive curriculum that encompassed a range of diverse populations, with a particular emphasis on LGBTQ+ issues. To introduce an inclusive curriculum, Dr. Smith revised the syllabus to incorporate additional content related to LGBTQ+ concerns within each relevant counseling theory. The topics included understanding sexual orientation and gender identity, challenges faced by LGBTQ+ individuals, affirmative therapy approaches, and ethical considerations in working with this population. The instructor also invited guest speakers from local LGBTQ+ organizations to share their personal experiences and provide real-world perspectives on how to integrate affirming practices into their theory.

In addition to the theoretical aspects, the curriculum incorporated experiential learning activities. These activities included case studies, role-playing exercises, and group discussions focused on scenarios that highlighted experiences from LGBTQ+ and other marginalized

populations. For example, the class engaged in a round robin activity that allowed the students to take turns in providing Cognitive Behavioral Therapy (CBT) to a mock transgender client. The client's presenting issue was distress from family's rejection based on the mock client's gender identity and the client's inability to regulate corresponding emotions. The specific event highlighted an argument that happened during a thanksgiving meal which led to shouting, crying, and intense emotionality. The aim was to encourage students to apply their knowledge, explore their biases, and develop skills in providing affirming care to LGBTQ+ clients through specific theories. In post course surveys, students reported an increased awareness, competence, and increased confidence in the integration of Counseling theories and of LGBT+ affirming concepts as a result of the inclusive curriculum.

In a counseling course focused on diagnosis, Professor Anderson recognized the need to broaden the curriculum to include diverse perspectives. The course primarily covered mental health disorders, but lacked a comprehensive exploration of the unique challenges faced by LGBTQ+ individuals. Professor Anderson believed that incorporating LGBTQ+ case studies would not only promote inclusivity but also enhance students' understanding of intersectionality and the complex dynamics affecting LGBTQ+ mental health. To that end, Professor Anderson presented a case study on James who identifies as gay and experiences symptoms of an anxiety disorder. He is a 25-year-old gay recently came out to his conservative family and is also questioning his gender identity. James reports that religion has been a bit part of his life since he was a kid and contradicts his newly discovered identity, thereby creating internal distress. He experienced anxiety symptoms, including constant worry, restlessness, and difficulty sleeping. The case study explored the various factors that contribute to James's anxiety, including societal homophobia and transphobia, fear of rejection, and internalized shame.

During the class session, Professor Anderson presented the case study to students, encouraging them to analyze James's experiences through an intersectional lens. The discussion revolved around how societal stigma and discrimination can exacerbate anxiety symptoms in LGBTQ+ individuals. James's identity complicated the diagnosis of Generalized anxiety disorder but provided a good example of how to consider cultural context when rendering a diagnosis. The class also explored the unique challenges faced by LGBTQ+ individuals in terms of acceptance, coming out, and finding support networks. Students were prompted to consider the impacts of societal norms, family dynamics, and cultural backgrounds on LGBTQ+ mental health. Student surveys suggested that students felt more confident about incorporating LGBTQ+ identity in the diagnosis process as a result of the inclusive curriculum.

Strategies for LGBTQ+ Inclusivity

Creating LGBTQ+-inclusive syllabi, incorporating case studies and role plays that address LGBTQ+ issues, and facilitating critical discussions and self-reflection are essential strategies to promote LGBTQ+ inclusivity and awareness in educational settings. First, developing LGBTQ+-inclusive syllabi involves integrating readings, resources, and discussions that explore LGBTQ+ history, literature, and social issues. This approach ensures that LGBTQ+ voices and experiences are represented and validated, promoting a more inclusive learning environment. Moreover, educators can invite guest speakers from the LGBTQ+ community to share their personal experiences and insights, fostering a deeper understanding of the challenges and perspectives faced by LGBTQ+ individuals. Secondly, using case studies and role plays that address LGBTQ+ issues, allows students to engage with real-life scenarios and challenges faced by LGBTQ+ individuals. Incorporating inclusivity in this way helps to

challenge stereotypes and misconceptions about the community, fostering a more nuanced and informed perspective. It also empowers students to critically analyze societal norms and structures, encouraging them to actively contribute to dismantling barriers faced by LGBTQ+ individuals in their future personal and professional endeavors. Consequently. Students are equipped with to problem solving skills that are culturally alert and context specific. Lastly, engaging students in critical discussions and self-reflection provides an opportunity for them to examine their own beliefs, biases, and prejudices. These discussions foster an open and respectful dialogue where students can share their perspectives, challenge stereotypes, and learn from diverse viewpoints while evaluating their own attitudes and behaviors. Moreover, creating a safe and non-judgmental space for LGBTQ+ affirming discussions allows students to build meaningful connections with their peers, promoting empathy and solidarity among classmates. It also empowers LGBTQ+ students by validating their experiences and perspectives, boosting their self-esteem and sense of belonging within the academic community. By immersing students in these experiences, they can gain insight into the complexities of LGBTQ+ lives and become advocates for equality and social justice.

Conclusion

Incorporating LGBTQ+ content in educational settings may encounter potential challenges and resistance due to various factors such as cultural norms, personal beliefs, and misconceptions. One of the main challenges is the existence of bias and prejudice against LGBTQ+ individuals, which can lead to resistance from some students or faculty members who may hold discriminatory views. This resistance can manifest in the form of objections to including LGBTQ+ content in curriculum or reluctance to engage in open discussions on the topic.

To address these challenges, it is crucial to invest in faculty development programs that promote inclusivity, cultural competency, and awareness of LGBTQ+ issues. Providing resources, workshops, and training sessions can help educators gain a better understanding of LGBTQ+ identities, history, and experiences. Additionally, fostering open dialogue within the academic community can create a safe space for students, staff, and parents to express their concerns, ask questions, and share their perspectives. This can be achieved through forums, panel discussions, or guest speakers who can offer different viewpoints and experiences related to LGBTQ+ topics.

Another essential approach is addressing misconceptions and biases head-on. Educators can proactively address common myths or stereotypes surrounding LGBTQ+ individuals and provide accurate information to dispel misconceptions. This can be done through classroom discussions, guest presentations, or the inclusion of LGBTQ+ narratives in relevant subjects such as history, literature, or social studies. Additionally, implementing an inclusive curriculum should begin at CACREP (2016) standards. Specifically, CACREP should push to acknowledge LGBTQ+ clients as part of the terms "diverse populations" as referenced in their 2016 standards (CACREP, 2016). Doing this would create the necessary momentum for individual programs to prioritize inclusive curriculum that is specific, intentional, and impactful. Overall, addressing challenges and resistance when incorporating LGBTQ+ content requires a multifaceted approach that involves faculty development, fostering open dialogue, and actively combating misconceptions and biases. By promoting inclusivity and providing accurate information, institutions can create an environment that celebrates diversity in counselor education and supports the well-being of LGBTQ+ clients.

In conclusion, the urgency and ethical responsibility lie with counselor educators to actively incorporate LGBTQ+ perspectives and concepts into counselor education curricula. This conceptual framework highlights the transformative potential of inclusive curriculum in fostering cultural competence, enhancing therapeutic relationships, and ultimately improving mental health outcomes for LGBTQ+ clients. By embracing this imperative, counselor educators can play a vital role in advancing inclusivity and social justice within the counseling profession.

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The Effects of a Course-Based Mindfulness Intervention on College Student Perfectionism, Stress, Anxiety, Self-Compassion, and Social Connectedness

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Abstract

Rising perfectionism within post-secondary students could be a reason for their mental health challenges. Recent attention is being given to mindfulness-based interventions as a promising avenue for mitigating high perfectionism and improving socio-emotional well-being. The objective of this study was to examine the impact of 8 weeks of a mindfulness course (compared to a non-meditating control group). Variables of interest were mindfulness, multidimensional perfectionism (self-oriented, other-oriented, and socially prescribed), stress, anxiety, self-compassion, and social connectedness. Students self-enrolled into a mindfulness class at a college in Alberta, Canada ($n = 15$). The experimental sample included ages 18-54 ($M = 25.27$, $SD = 11.47$) and were 96.7% female. A control group was recruited from first- and second-year psychology classes ($n = 30$), ages ranging from 17-38 ($M = 21.70$, $SD = 5.36$) and 70% identifying as female. Students completed in person surveys near the beginning of the term and again after 8 weeks. ANOVAs, paired samples t-tests, and linear regression analyses indicated that college students practicing mindfulness evidenced lower perfectionism (self-oriented and other-oriented types), stress, and anxiety, along with higher mindfulness and self-compassion. Perplexing results suggest two routes to social connection, as both the mindfulness and control groups increased in social connection, although for the control group, it seems this was motivated by higher stress and self-criticism. Findings from the current study are impressive (given the small sample size and the high stress time of the post-test). Integrating mindfulness curriculum can enhance socio-emotional well-being for post-secondary students.

Keywords: Anxiety, Mindfulness, Multidimensional Perfectionism, Self-Compassion, Social-Connectedness

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Introduction

Researchers such as Curran and Hill (2019), and Raeis and associates (2019) are pointing to rising rates of perfectionism in post-secondary students as playing a role in their challenges with adjustment to post-secondary education. Social and economic effects of the COVID-19 pandemic have only exacerbated these problems, with students feeling more anxious and socially isolated than they were before the pandemic (e.g., Copeland et al., 2021; Flett, 2021; Labrague, 2021; Patterson et al., 2021; Verma et al., 2021; Tasso et al., 2021; Elharake et al., 2022). Given the current situation, it is of value to incorporate mental health enhancing practices into the curriculum. Flett (2021) points to cultivating mindfulness as one way to combat the rising mental health concerns in young people.

Mindfulness is characterized by an attitude of acceptance, patience, curiosity, gratitude, warmth, and love (Siegel, 2007). Mindfulness meditation utilizes the breath as the focal point of awareness; by focusing on the breath, one disengages from thoughts and feelings entering the mind (Feldman et al., 2010). Dr. Jon Kabat-Zinn established the Mindfulness Based Stress Reduction (MBSR) program in 1979, which has demonstrated effectiveness in the treatment of chronic pain, anxiety, and depression (Shapiro et al., 2005; Kabat-Zinn, 2013; Stahl & Goldstein, 2019). Some have investigated the impact of similar programs on the well-being of students.

Caldwell and associates (2010) examined the effects of a mindfulness course on 166 college students and found that throughout the 15-week semester participants improved in levels of mindfulness, perceived stress, sleep quality, self-regulatory self-efficacy, and mood. Similarly, Bamber and Kaenzle Schneider (2016) conducted a review and synthesis of research on the effects of mindfulness on levels of stress and anxiety in college students. Their review indicated that in most studies, mindfulness was associated with lower anxiety (33 of 40 studies) and lower perceived stress (25 of 34 studies) in college students.

Curran and Hill (2019) conducted a meta-analysis on perfectionism levels between the years of 1989 and 2016 and found that multidimensionality has been steadily increasing over time in American, Canadian, and British college students. Lunn and colleagues (2023) compiled a meta-analysis examining the relationship between perfectionism and symptoms of obsessive-compulsive disorder (OCD), depression, and anxiety among young people (ages 6 – 24): the studies reviewed pointed to a relationship between perfectionism and symptoms in OCD, depression, and anxiety, which they argue underscores the need for interventions aimed at reducing perfectionism and its potential negative consequences in youth.

Perfectionism can be divided into three differentiated groups, including self-oriented perfectionism (SOP), other-oriented perfectionism (OOP), and socially prescribed perfectionism (SPP) (Hewitt & Flett, 1991; Hewitt & Flett, 1993). SOPs have exceptionally high standards of themselves and are highly self-critical when they fail to reach perceived perfection (Stoeber, 2014; Stoeber, 2015). OOPs are highly critical of others if they do not reach the set perfectionistic standards (Stoeber, 2014; 2015). SSPs believe that if they are not perfect or do not strive for perfection, others will be critical of them (Stoeber, 2014).

In addition to the negative intrapersonal effects of perfectionism (e.g., anxiety), researchers are also finding perfectionism is associated with adverse interpersonal outcomes such as social anxiety, disconnection, hostility, and loneliness (e.g., Mohammadian et al., 2018; Hewitt et al., 2020; Wang et al., 2022).

Short and Mazmanian (2013) tested university students' levels of mindfulness, multidimensional perfectionism, worry, rumination, and positive and negative affect. They found that students with high levels of mindfulness were lower in SPP, stress, anxiety, depression, and negative affect. Short and Mazmanian's study (2013) was a one-time testing period without a control group, making it difficult to surmise whether individuals significantly changed over time. Vidic and Cherup (2019) investigated the effects of a 7-week mindfulness-based relaxation class on 35 college students' levels of stress, resilience, self-efficacy, and perfectionism in comparison to a control group of 36. Results revealed enhanced resilience and self-efficacy as well as lower stress for the mindfulness group after the intervention. However, no significant results were revealed for the effect of mindfulness on perfectionism. Conversely, James and Rimes (2018) evaluated 8 weeks of mindfulness-based therapy compared to cognitive behaviour therapy on perfectionistic post-secondary students and found that the mindfulness group experienced superior benefits such as lower levels of perfectionism and stress, as well as greater self-compassion. The helpful effects of mindfulness for reducing the negative impacts of perfectionism persisted at the 10 week follow up (James & Rimes, 2018).

Self-compassion involves three components: 1) giving kindness toward oneself; 2) seeing our own experiences as a greater human experience; and 3) maintaining a balanced awareness regarding painful thoughts and feelings (Neff, 2003; Neff, 2011). Research has indicated that increased levels of self-compassion decrease levels of self–criticism, stress, anxiety, neuroticism, neurotic perfectionism, and depression (Neff, 2003; Neff et al., 2007). Centeno and Fernandez (2019) found that college students participating in a mindfulness program evidenced greater scores on self-compassion as compared to a class that did not participate in the mindfulness intervention. Serrao and colleagues (2022) investigated the effects of 12 weeks of mindfulness on 23 college students' levels of, stress, anxiety, and self-compassion as compared to a control group of 21 students. Those in the mindfulness condition evidenced lower levels of perceived stress however, in this study no differences were found between the mindfulness group and the control group on measures of anxiety and self-compassion.

The Current Study

Research suggests that mindfulness has intrapersonal benefits on college students, such as decreasing stress and anxiety while improving mood. Evidence, however, is mixed when it comes to the impact of mindfulness on levels of perfectionism and self-compassion (e.g., Serrao et al., 2022). Furthermore, little research exists on the interpersonal benefits of mindfulness in college students, such as its ability to enhance social connectedness. Therefore, the objective of the current study was to add to this body of research by exploring the effects of 8-weeks of a mindfulness course on college students' levels of mindfulness, multidimensional perfectionism (SOP, OOP, and SPP), stress, anxiety, self-compassion, and social connectedness (compared to a non-meditating control group).

In line with existing research, it was hypothesized that participants who practice mindfulness would experience intrapersonal benefits such as a decrease in SOP, OOP, SPP, stress, and anxiety, as well as an increase in mindfulness and self-compassion in comparison to the control group. Furthermore, participants in the mindfulness course were expected to evidence increased social connectedness. To test these hypotheses, the impact of a mindfulness meditation course taught by a certified Mindfulness-Based Stress Reduction (MBSR) practitioner at a community college in Central Alberta, Canada, was evaluated relative to a non-meditating control group. Although the mindfulness course offered ran for a total of 15

weeks, assessments were conducted before and after 8 weeks of mindfulness practice, this is a common timeframe used in many mindfulness courses and studies.

Method

Participants (*N* = 45) were recruited from predominantly first- and second-year undergraduate students at a post-secondary institution in Central Alberta, Canada. Students in the experimental group (*n* = 15) self-selected into an in-person mindfulness class for credit (the course is open to students from various programs). Participants in this group were18-54 years old (*M* = 25.27, *SD* = 11.47) and 96.7% female (the remaining percent did not select "female", "male", "other", or "prefer not to say"). A control group (*n* = 30) was recruited from first- and second-year psychology classes (also open to students from a variety of programs), ages ranging from 17-38 (*M* = 21.70, *SD* = 5.36) and 70% being female. The sample was predominantly White (over 90%), but this is representative of the lack of ethnic diversity within the region.

The mindfulness course was co-taught by a faculty member who is a long-time mindfulness practitioner (trained by Dr. Jon Kabat-Zinn in MBSR). The instructor incorporated mindfulness meditation, body-scan, loving-kindness, mindful eating, mindful movement, and education about mindfulness and its applications. Participants in both mindfulness and control groups completed a self-report questionnaire at pre–test and again at post-test (8 weeks apart).

Materials

Multidimensional Perfectionism Scale (MPS) (Hewitt & Flett, 1990). The scale is a 45-item self-reported questionnaire that measures the individual's levels of perfectionism on 3 dimensions: self-oriented, other-oriented, and socially prescribed perfectionism with an internal consistency of α = .88, α = .71, and α = .81, respectively (Hewitt & Flett, 1990).

Freiburg Mindfulness Inventory (FMI) (Walach et al., 2006). The FMI is a reliable (α = .86) and valid self-reported measure that is highly correlated with the long version r = .95 (Walach & et al., 2006). The 14-item short version is on a Likert scale that measures the individual's experience of mindfulness from 1 (rarely) to 4 (almost always) (Walach et al., 2006).

Self-Compassion Scale-Short Form (SCS-SF) (Raes et al., 2011). This scale is a 12-item self-reported measure with a 1 (almost never) to 5 (almost always) Likert scale. This measure has been found to have an internal consistency of α =.86 with near perfect correlations with the long version, the Self Compassion Scale (Raes et al., 2011).

Depression, Anxiety and Stress Scale (DASS) (Lovibond & Lovibond, 1995). The DASS is a 42-item questionnaire which includes three self-report scales designed to measure the negative emotional states of depression, anxiety, and stress. Each of the three scales contains 14 items, divided into subscales of 2-5 items with similar content. For the purposes of this study the depression scale was removed. This scale has been found to be both reliable and valid among clinical and non-clinical populations α = .84, α = .87, respectively (Akin & Centin, 2007).

Social Connectedness Scale-Revised (SCE-R) (Lee, et al., 2001). The SCE-R includes 10 positively worded items and two negatively worded items to complement the initial eight

items (which were also modified to indicate mild deficiencies in the need for belonging). The scale demonstrates adequate internal item reliability α = .92 and is more normally distributed in comparison with the original Social Connectedness Scale since the SCE-R has lower mean item scores, kurtosis, and skewness (Lee, et al., 2001).

Results

Comparing the two groups (Mindfulness vs Control) at pre-test, a one-way ANOVA was conducted which showed significant differences in SOP ($F(1,43)$ = 13.71, p = .001); the mindfulness group displayed significantly higher SOP (*M* = 62.27, *SD* = 11.47) at pre-test compared to the control group (*M* = 72.39, *SD* = 6.87). Otherwise, the groups were equal across most of the measures and the control group was deemed adequate for comparison in the study.

At post-test a one-way ANOVA was conducted between groups (Mindfulness vs Control), and significant differences were found regarding mindfulness ($F(1,43)$ = 6.50, p = .014) and self-compassion ($F(1,43)$ = 13.56, p = .001). The mindfulness group displayed higher mindfulness (*M* = 42.05, *SD* = 2.43) and self-compassion (*M* = 41.55, *SD* = 6.55) when compared to the control group, respectively (*M* = 37.33, *SD* = 6.94) and (*M* = 33.81, *SD* = 6.70). Significant differences were also found for SOP ($F(1,43)$ = 23.33, p = .001), OOP ($F(1,43)$ = 13.44, p = .001), and stress ($F(1,43)$ = 4.54, p = .039). The mindfulness group displayed significantly lower SOP (*M* = 57.20, *SD* = 12.10), OOP (*M* = 50.00, *SD* = 9.78), and stress (*M* = 10.65, *SD* = 4.49) compared to the control group, respectively (*M* = 79.36, *SD* = 15.55), (*M* = 61.46, *SD* = 15.55), and (*M* = 17.01, *SD* = 11.07). Furthermore, marginal differences were found in anxiety ($F(1,43)$ = 3.69, p = .061). At post-test the mindfulness group was marginally lower in anxiety (*M* = 11.00, *SD* = 5.58), in comparison to the control group (*M* = 17.01, *SD* = 11.66).

Independent sample t-tests within the mindfulness group comparing pre- and post-test revealed that the post-test mindfulness group increased significantly in mindfulness (*M* = 42.05, *SD* = 2.43), and social connectedness (*M* = 91.93, *SD* = 7.43) at post-test compared to pre-test, respectively (*M* = 35.44, *SD* = 1.63), $t(28)$ = -8.75, *p* < .001, and (*M* = 74.20, *SD* = 6.73), $t(28)$ = -6.85, *p* < .001. Additionally, t-tests revealed that the mindfulness group was significantly lower in OOP (*M* = 50.00, *SD* = 9.78), SPP (*M* = 54.67, *SD* = 13.64), and stress (*M* = 10.65, *SD* = 4.49) at post-test compared to pre-test, respectively (*M* = 60.20, *SD* = 8.92), $t(28)$ = 2.98, *p* < .006, (*M* = 65.53, *SD* = 5.50), $t(28)$ = 2.86, *p* < .010, (*M* = 16.67, *SD* = 8.87), $t(28)$ = 2.34, *p* < .029 (refer to Table 3). Therefore, from pre-test to post-test the mindfulness group demonstrated increased mindfulness and social connectedness, while also showing decreased OOP, SPP, and stress.

Independent samples t-tests within the control group comparing pre- and post-test revealed that the control group was significantly higher in SOP (*M* = 79.36, *SD* = 15.55) and social connectedness (*M* = 86.76, *SD* = 20.83) at post-test, respectively (*M* = 72.39, *SD* = 6.87), $t(28)$ = -2.45, *p* < .030, (*M* = 70.69, *SD* = 6.46), $t(28)$ = -4.037, *p* < .001. Results indicated a significant decrease in self-compassion for the control group at post-test (*M* = 33.81, *SD* = 6.70), compared to pre-test (*M* = 40.77, *SD* = 4.37), $t(28)$ = 4.77, *p* < .001. These results show that the control group increased in SOP and social connectedness, while decreasing in self-compassion from pre-test to post-test.

Discussion

Findings of the current study offer support for the efficacy of mindfulness in reducing perfectionism and its deleterious effects: after 8 weeks of mindfulness practice, the mindfulness group significantly decreased in OOP, SPP, and stress, while increasing in social connectedness. The hypotheses that mindfulness practice would increase mindfulness and self-compassion, as well as reduce stress and anxiety, were supported. At post-test, the mindfulness group demonstrated greater mindfulness and self-compassion and lower stress and anxiety in comparison to the control group.

As people practice mindfulness, they may have decreased unrealistic standards for others (OOP), as well as decreased beliefs that they are required to strive for perfection in response to others' expectations (SPP). It is compelling to argue that with mindfulness practice, these types of perfectionisms decrease, and in turn, individuals increase their ability to experience social connection. Mindfulness may help individuals to initiate and maintain satisfying relationships due to being more observant, less judgmental, perfectionistic, and socially anxious, perhaps enhancing social connections (Block & Wulfert, 2000; Abdollahi et al., 2022; Shofiyah & Sovitrina, 2022).

Given that both the mindfulness group and control group increased in social connection, current findings suggest there could be two pathways to social connection. For the control group, elevated stress (e.g., end of term pressure) might increase self-criticism and decrease self-compassion; promoting social connection through feelings of insecurity and need of validation from others. This route to social connection might be based on a value of others over self or a devaluing of the self, which leads one to place higher value on the needs of others or increase their dependence on others. Unfortunately, these motives for social connection may be routed in lack of self-worth and dependence, which can lead to unhealthy or abusive relational dynamics such as social comparison, competition, neediness, or jealousy (e.g., Yip & Kelley, 2013). Alternatively, mindfulness may allow individuals to increase in social connectedness through a different route that is driven by increased self-compassion. If individuals decrease excessive standards placed on self and others, they may derive a deeper sense of non-contingent self-worth in their nonjudgmental acceptance of self, which they can direct to others as well (Neff, 2011). This form of social connectedness could be driven by a sense of security, stable self-worth, common humanity, and value for both self and others, which would lead to healthier, more balanced relational dynamics (Neff, 2011).

More research is needed to better understand the impact of mindfulness on perfectionism types. For example, individuals with high SOP may be inclined to attach perfectionistic standards onto their mindfulness practice; this contradicts the rationale of mindfulness as a non-striving practice without standards or expectations. Furthermore, individuals with high OOP may utilize being mindful as an unreasonable standard to judge others by (i.e., judging those who do not practice mindfulness or perceiving others as not being mindful enough). Depending on how they approach the practice, mindfulness practice may not be as potentially beneficial for individuals with high SOP since they may not acquire the ability to accept themselves without judgment or hesitation, nor embrace non-striving; and for individuals with high OOP as mindfulness practice may provide more reason to judge others. Thus, mindfulness may potentially feed the negative impacts of SOP and OOP in individuals who are particularly high in these types of perfectionism, which may result in increased anxiety and decreased social connectedness. A larger sample would allow the exploration of how

mindfulness practices differ for those who are high or low in the different types of perfectionism.

Future research could explore more targeted mindfulness interventions aimed at improving the well-being of more at-risk student populations such as Indigenous, LGBTQ2S+, and international students who may need additional support and tools. For example, a recent study by Xiong and associates (2022) researched the effects of a mindfulness-based well-being group on international students' well-being and discovered improvements in trait mindfulness, increased positive mental health, and decreases in perceived discrimination and psychological distress.

Conclusion

The current study investigated intrapersonal and interpersonal effects of a mindfulness class on college students as compared to a control group; specifically, the study explored how mindfulness affects multidimensional perfectionism (SOP, OOP, and SPP), stress, anxiety, self-compassion, and social connectedness. After 8 weeks of mindfulness practice, participants in the mindfulness group scored lower on SOP, OOP, stress, and anxiety; and higher in mindfulness, self-compassion, and social connectedness. Findings suggest practicing mindfulness provides various intrapersonal and interpersonal benefits to students and it is worthwhile to integrate mindfulness curriculum into post-secondary settings.

Acknowledgements

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Automation or Innovation? A Generative AI and Instructional Design Snapshot

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Abstract

Advances in generative artificial intelligence (AI) are transforming possibilities across industries, including instructional design. Tools like ChatGPT can draft objectives, assessments, and content rapidly. This mixed-methods study surveyed 144 instructional designers on current adoption, tasks, benefits, and concerns regarding generative AI integration. Analysis revealed widespread mainstream usage with 83% leveraging ChatGPT. Accelerating efficiency ranked as the top benefit, with 67% achieving moderate-to-significant time savings that allow more strategic work. Additional gains centered on accelerated content drafting, feedback, and ideation. However, key challenges included verifying accuracy, addressing ethical risks, formulating effective prompts, and lacking personalization. While meaningful automation freed up instructional designer capacity, truly customized innovation still requires human oversight. Guidelines must shape practical, responsible applications. Though comfort levels remain polarized and generative AI capabilities are immature, participants reported that generative AI brings notable workflow improvements. Though not a solution to all course development challenges, AI may help focus instructional design talent on more creative and complex design opportunities.

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Introduction

Artificial intelligence (AI) attained prominence across societies and industries through machine learning achievements in computer vision, language processing, robotics, and more (Kaplan & Haenlein, 2019). Recently a subset of AI approaches called generative models have demonstrated increasing aptitude for creative tasks like writing prose, composing songs, and painting images after learning patterns from substantial training data. Generative AI can be defined as a technology that leverages deep learning models to generate human-like content in response to complex and varied prompts that include instructions and questions (Lim et al., 2023). Prominent examples include systems like DALL-E for generating images from text captions and ChatGPT for interactive conversational responses to user prompts on diverse topics. These groundbreaking technology tools are viewed by many as potential methods of producing immediate feedback, providing intelligent tutoring, and personalizing responses to prompts (Weng & Chiu, 2023).

Given the foreseeable impact of ChatGPT and other generative AI tools on instructional design (ID) (Gibson, 2023), the prospect of leveraging AI for automating repetitive course development tasks is appealing amid regular demands on ID tasks like analysis, design, and evaluation. However, appropriate human oversight must guide the integration of generative AI (Wiley, 2023). This study investigates the current state of generative AI adoption and perceptions among 144 instructional designers. The analysis focuses specifically on usage rates, prescribed tasks, comfort levels, benefits, concerns, and best practices.

Literature Review

Generative AI encompasses subsets of language-focused models like GPT-3 (ChatGPT), image creators including DALL-E 2 and Stable Diffusion, speech synthesis through tools like Replika, and others designed uniquely for niche domains (Bommasani et al., 2022). In common is generative AI's ability to generate previously unseen, original artifacts like text, art, or audio from user prompts.

ChatGPT and other generative AI tools have proven capable of creating course content suitable for eLearning and instruction, saving instructional designers precious time and resources (Hardman, 2023). While generative AI has the potential to transform education and distance learning (Bozkurt & Sharma, 2023) concerns remain about how to use these tools responsibly and ethically. For instructional design applications, Wiley (2023) suggests that human-centered generative AI could enhance the generation of draft course material like discussion prompts, formative assessments, and learning outcomes.

This study aims to detail current usage behaviors among 144 instructional design professionals across tasks, impacts on efficiency, concerns, and guiding practices. Findings provide a snapshot of adoption amid this rapidly evolving area of technology. The study's research questions include:
1. How are instructional designers using generative AI to automate aspects of the ID workflow?
2. What opportunities or advantages have instructional designers discovered when using generative AI during the ID workflow?
3. What challenges have instructional designers experienced when using generative AI during the ID workflow?

4. What best practices have instructional designers adopted when using generative AI during the ID workflow?

Methodology

A 12-question Qualtrics survey combining Likert scale ratings and open-ended responses was administered in December 2022 to 144 instructional designers. Recruitment employed snowball sampling seeking participants across higher education, K-12, non-profit organizations, government, and corporate roles. Respondent locations spanned 42 U.S. states and international regions including India and Canada. Most were experienced instructional designers, with 77% reporting over five years of developing courses and 73% were age 40 or older. The demographic information appears in Table 1.

Table 1: Demographic Information

Roles	Percentage
Instructional Designer	78%
ID Supervisor/Technologist/Specialist	15%
Other (faculty, trainers)	7%
Organizations	
Higher Education	71%
K-12	14%
Corporate	10%
Government	3%
Consulting	2%
Experience Level	
5-20+ years	77%
< 5 years	23%
Age Range	
40-59 years old	73%
30-39 years old	24%
60+ years old	18%
21-29 years old	10%

The open-ended survey responses describing participants' experiences and perspectives were analyzed qualitatively. This involved coding the responses to identify key themes in the data. An open coding approach was initially used to capture all unique ideas, and then a second stage grouped codes into higher-level concepts. Finally, selective coding focused the analysis on core themes that addressed the research questions around benefits, challenges, and effective practices using generative AI tools (Haradhan, 2018).

Results

Current Adoption Levels

Of 144 respondents using generative AI tools to some degree presently, ChatGPT led among named systems at 83% share followed distantly by other tools like Claude (6%) and Copilot (2%). Overall, 64% reported frequent or very frequent current usage. AI tool application

centered predominantly around drafting learning objectives, developing assessments, content research, and outlining course structure. Table 2 summarizes AI tools utilized and common AI tasks assigned by instructional designers.

Table 2: AI Tools Utilized and Prescribed Tasks

Top AI Tools Used	Result
ChatGPT	83%
Claude	6%
Other (Bard, Copilot, etc.)	11%
Common AI-Assigned Tasks	
Drafting Learning Objectives	64%
Developing Assessments	56%
Content Research	47%
Course Structure Outlines	48%

These core instructional design stage activities point to leveraging the acceleration of generative AI for rapidly developing draft artifacts to speed workflow efficiency.

Efficiency, Quality, and Future Growth Factors

Beyond usage rates, key adoption indicators include perceived improvements in efficiency, output quality, and continued growth potential. Regarding increased efficiency from incorporating AI tools, 67% reported moderate to very significant gains, freeing up designer capacity. A slim majority (58%) believed AI modestly enhances course quality, though over one-third saw no measurable improvements. However, despite split perceptions on quality gains, strong majorities saw ongoing value in AI integration with 66% expecting moderate to high increases in future usage driven by greater adoption. Table 3 summarizes perceptions on efficiency, quality, and growth.

Table 3: Perceptions on Efficiency, Quality, and Growth

Efficiency Gains	Result
Moderate/Significant	67%
Slight/No Gains	33%
Quality Improvements	
Agree/Somewhat	58%
Neutral or Disagree	42%
Future Usage Growth	
Moderate/High Expected	66%
Limited/No Increase Expected	9%

While quality enhancement remains uncertain currently, participants cited generative AI's efficiency in freeing instructional designers to focus on more creative and strategic initiatives.

Benefits and Challenges

Survey responses highlighted both useful advantages and ongoing obstacles that instructional designers encounter when adopting generative AI tools like ChatGPT. In terms of benefits,

participants repeatedly mentioned saving time and increased ease of use as main benefits. When asked openly about their biggest AI successes, frequent answers included:

1. Faster drafting and revision cycles (16 mentions)
2. Accelerated content development (32 mentions)
3. Better research and summarization (15 mentions)
4. Enhanced idea generation (15 mentions)
5. Writing assistance on objectives and rubrics (7 mentions)

Some respondents specifically remarked on generative AI's ability to help get past creative lulls, reduce fatigue, and use AI to supplement limited bandwidth on teams. Comments included:

> *"AI has allowed me to develop content more expediently and efficiently. We are a small department with two instructional designers serving a faculty of 500."*

> *"I spent 30-40 hours creating three course scenarios...I then prompted AI to design something similar; I had the same material (and similar quality) in less than an hour."*

> *"Automatically generating closed captions is amazing, and then another pass with ChatGPT to create a transcript saved me hours."*

Despite many advantages, participants also identified key challenges that offset some of the AI optimism:

1. Verifying accuracy of outputs (19 mentions)
2. Bias risks and ethical concerns (10 mentions)
3. Difficulty engineering effective prompts (9 mentions)
4. Lack of learner personalization and context (5 mentions)
5. Financial costs with advanced tools (5 mentions)

Comments from participants included:

> *"Working on prompt engineering is key."*

> *"Developing prompts that work adequately has been a struggle."*

> *"(AI) does not always demonstrate good pedagogy strategies. It needs to be heavily edited to be used..."*

> *"The output is too generic, and (AI) lacks the emotional intelligence to provide actionable suggestions."*

Participants identified that while meaningful benefits around simplified workflows exist, responsible oversight integrating human judgment helps balance AI's current limitations when applying generative AI tools.

Guidelines and Best Practices

When asked what specific best practices guide ethical, responsible AI usage, only 2% indicated their organizations have formalized policies or expectations. The most common best practices cited by participants included:

1. Combining AI outputs with human expertise – 23%
2. Verification processes on generated content before acceptance – 21%
3. Setting realistic expectations on capabilities – 6%
4. Transparent disclosures regarding AI usage – 6%
5. Advocating for formal ethical usage policies – 2%

These precautions, as cited by the participants, are an attempt to ensure AI is used carefully and ethically. Participants framed AI as a helpful tool as long as instructional designers stay responsible for risks and final decisions.

Comfort Levels

Participants revealed discomfort in relying on generative AI tools independently without additional verification. Only 17% claimed moderate to high comfort levels trusting generative AI outputs compared to 49% reporting no comfort at all. Table 4 summarizes the participants' comfort levels.

Table 4: Comfort Levels

Comfort Level	Percentage
Comfortable/Very Comfortable	6%
Moderately Comfortable	17%
Somewhat Comfortable	28%
Not At All Comfortable	49%

For most participants, combining generative AI use with continued human guidance proves essential until capabilities and ethical protections are better established.

Conclusion

This study aims to detail current usage behaviors among 144 instructional design professionals across tasks, impacts on efficiency, concerns, and guiding practices. The survey findings show the accelerating adoption of generative AI tools like ChatGPT among instructional designers for key tasks like objectives, assessments, and prototyping. Efficiency enhancements bring some welcome relief for repetitive ID tasks. Key limitations center on crafting effective prompts and enhancing human aspects of pedagogy like emotional design, ethical usage, and personalization. Fact-checking what AI creates and customizing generic outputs remains vital. Humans still need to govern use to protect vulnerable groups and balance complex societal impacts. Effective practices emphasize verifying, setting expectations, and transparency.

Implications point to maximizing respective AI and instructional designer strengths through human-AI collaboration. Transparency, expectations-setting, and unbiased augmentation remain vital. As capabilities advance exponentially, extensive research must continue

tracking AI developments, particularly those that would benefit learner accessibility and engagement.

Limitations of this exploratory snapshot include sample size and self-reported data. As the generative AI landscape unfolds rapidly, broader, ongoing mixed methods studies should new investigate developments to better inform adoption and best practices.

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Crossover Effects of Education on Health and Health Behavior Among Married Couples

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Abstract

This study presents an empirical analysis of not only the effect of education on the health behaviors and health status of married couples but also the crossover effect of education between married couples. First, basic statistics show that wives perform better vis-à-vis dietary health behaviors, whereas husbands perform better with regard to exercise and medical checkups. Furthermore, the crossover effect between educational levels is more pronounced for the effect from wives to husbands than vice versa. Among various health behaviors, medical checkups showed the clearest effect of educational background, and crossover effect was confirmed for both husbands and wives.

Keywords: Health Behavior, Health Status, Crossover Effect, Married Couples

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1. Introduction

According to the Simplified Life Tables of the Ministry of Health, Labor and Welfare (MHLW; 2021), the average life expectancy for men and women is 81.47 years and 87.57 years, respectively, typifying a decrease of 0.09 years for men and 0.14 years for women compared to the previous year. This is believed to be due to the manner in which the new coronavirus infection shortens life expectancy, while mortality from malignant neoplasms and pneumonia has decreased. The difference in life expectancy between men and women is 6.10 years, representing a decrease of 0.05 years from the previous year. However, a comparison of life expectancy with that of other countries is considered difficult, primarily because the basic period and methods of creating life expectancy data differ among countries. However, according to the Simplified Life Tables of the MHLW (2021), Japanese women's life expectancy has maintained the first position since 1985, except for 2011, the year of the Great East Japan Earthquake, and the gap between Japan and other countries has been widening. The length of life expectancy for men is also in the top position, along with Switzerland and Iceland.

This study confirms the effect of an individual's education and the crossover effect of the spouse's education on various health behaviors and health statuses in this social context.

Studies on the impact of the education of married individuals on spousal health have been mainly conducted abroad. On the one hand, Jaffe et al. (2006) analyze the impact of an individual's and their spouse's education on cardiovascular disease in married couples. The analysis reveals that the husband's education does not affect the wife's morbidity, but the wife's education does affect the husband's morbidity after controlling for his own education. The study also finds that the husband's (wife's) education is associated with the wife's (husband's) morbidity. Furthermore, the study examined the effect of the education gap between couples and found that the risk of morbidity increases when a highly educated woman partners with a less educated man. On the other hand, Guo et al. (2020), using twin data between two time points in their analysis, find that the years of education of the wife reduce the husband's consumption of tobacco and alcohol, increase the frequency of exercise, reduce the probability of being overweight, and reduce the number of chronic diseases. Using China's educational reforms as an instrumental variable, Fu et al. (2022) find that more years of education increased subjective health conditions and decreased the probability of being overweight, smoking, and alcohol consumption.

In a domestic study, Sato (2017) uses a matching method to examine the effect of education on health and finds that college graduates have not only better subjective health and lower rates of obesity, alcohol consumption, and smoking but also higher rates of sports activity. However, few studies in Japan have examined the crossover effect (the effect of the spouse's education on the partner's health behaviors and health status) of education on health.

This study uses a basic model to examine how the education of married men or women and their spouses affects the dependent variables for various health behaviors and health statuses.

2. Data and Analysis Methods

2.1. Data and Analysis Model

Our analysis employs anonymous data from the Comprehensive Survey of Living Conditions. The survey has been conducted every three years since 1986, covering households and household members nationwide, and consists of five questionnaires focusing on household, health, care, income, and savings. Each survey covers households and household members in stratified randomly sampled districts from the census tracts. As of June 2022, data from 1995 to 2016 of this survey are available as anonymous data. In this study, we use the data from the 2010 survey, which include information on the education of married couples, to examine the crossover educational effects on health behavior and health status among married couples. Data from 2010, 2013, and 2016 were pooled.

The estimated models examine the impact of education and age on each married individual's health behavior and health status, and that of a partner's education in addition to the individual's education on health behavior and health status. Thus, the analytical models (Models 1 and 2) are presented as follows:

$$Y_i = \alpha + \sum_{edu} \beta_{edu} Edu_i + \beta_{age} age_i + \varepsilon_i \qquad (1)$$

$$Y_i = \alpha + \sum_{edu} \beta_{edu} Edu_i + \sum_{edu\_p} \beta_{edu\_p} Edu_{pi} + \beta_{age} age_i + \varepsilon_i \qquad (2)$$

The dependent variable Y_i refers to the health behavior or health status of individual i. The explanatory variables Edu_i are education dummies for the individual and Edu_{pi} are education dummies for the spouse (partner), and the individual's age age_i is added. Model 1 uses only the individual's education as an explanatory variable, whereas Model 2 adds the spouse's education; thus, we can expect the effect of the individual's education dummies in Model 1 to be reduced in Model 2, with the couple's education matching absorbing some of that effect. It is possible that the crossover effect of spousal education may be higher than that of the individual's education.

For education, high school, vocational school, junior college/technical college, university, and graduate school dummies are used based on junior high school. For age, as the answers to the questions are given in age group intervals of 5 years, we create a continuous variable that takes the median value of the relevant option (e.g., 42 for the 40–44 age group). Participants were excluded if their or their spouse's age or educational level was unspecified. The sample size for both age and education was 137,832 (with 68,916 couples).

We conduct an empirical analysis using samples between 22 and 62 years of age, whose ages correspond to the working-age population (15–64 years old) and their spouses.

2.2 Variables and Methods of Analysis

The dependent variables, health behavior, and health status utilize 13 items from 1) to 13), as listed thus: first, regarding health behavior, 1) Frequency of drinking is selected from the following options: "daily," "5–6 days a week," "3–4 days a week," "1–2 days a week," "1–3

days a month," "rarely drink," "quit drinking," and "do not drink (cannot drink)." 2) Amount of alcohol consumed (for those who drink alcohol, in terms of daily portions): "900 ml or more," "720 ml or more but less than 900 ml," "540 ml or more but less than 720 ml," "360 ml or more but less than 540 ml," "180 ml or more but less than 360 ml," and "less than 180 ml." 3) Frequency of smoking: "I smoke every day," "I smoke sometimes," "I used to smoke but haven't for over a month," and "I don't smoke." 4) Number of cigarettes: "10 or less," "11–20," "21–30," and "31 or more." 5) The level of rest and satisfaction with sleep is selected from the following options: "I get enough," "Fairly well," "Not very well," and "Not at all well."

Next, with regard to health status, 6) Health awareness is evaluated based on a 5-point scale of "good," "fairly good," "normal," "not so good," and "not so good." As the choices for the abovementioned items are sequential, Ordered Probit analysis is used to analyze the explained variables.

In addition, regarding 7) Mental health, for the following six questions, each answer is given a score of 4 points for a total of 24 points (the higher the score, the worse the state of mind): (1) "Do you feel irritable?" (2) "Do you feel hopeless?" (3) "Do you feel fidgety and restless?" (4) "Do you feel depressed, as if nothing will happen to make you feel better?" (5) "Do you feel like doing anything is exhausting?" and (6) "Do you feel like everything you do is a struggle?" For this question, most respondents who lived a normal life rated each item as 0, and many scored a total of 0. Therefore, the analysis is conducted using the Tobit model, which analyzes the distributions in which the explained variable is truncated at 0.

Item 8) comprises 10 questions: 1) "I eat breakfast, lunch, and dinner regularly;" 2) "I eat a well-balanced diet;" 3) "I eat lightly seasoned foods;" 4) "I try not to overeat;" 5) "I exercise moderately or get physical activity;" 6) "I get enough sleep;" 7) "I don't smoke;" 8) "I try not to drink too much alcohol;" 9) "I try not to stress out;" and 10) "others." For each of these, 1 is selected if the case is being executed; otherwise, 0 is selected. We use Logistic regression analysis for these variables, and the coefficients indicate the odds ratios.

Similarly, Logistic analysis using 1 or 0 as the dependent variable is also used for the following items: 9) Medical checkups and 10) Cancer screenings for the following five items: (1) "Stomach cancer screening," (2) "Lung cancer screening," (3) "Colorectal cancer screening," (4) "Uterine cancer screening," and (5) "Breast cancer screening."

We also use the Logistic regression for 11) Having worry or stress; 12) The prevalence of three major diseases, namely, (1) "Stroke," (2) "Angina pectoris/myocardial infarction," and (3) "Malignant neoplasm;" and 13) Whether the respondent has been hospitalized or not.

In some cases, some of the couples did not respond to the questions regarding health behavior or health status, which was used as the dependent variable. Additionally, participants who have been hospitalized or in residential care are excluded because of missing data. The sample sizes for 1), 2), 5), and 8) are significantly reduced because these questions are not included in the 2010 survey. Notably, 10) "Screening for uterine and breast cancers is applicable only to women and is not responded to by men. Therefore, the sample sizes for each gender-specific estimate differed.

3. Considerations Using Basic Statistics

3.1. Educational Background Matching of Married Men and Women

This section discusses the background of the analysis, using the basic statistics of the variables adopted.

First, there are 44,943 couples in which the man (husband) falls within the working-age range (15–64 years) and 49,777 couples in which the woman (wife) falls within the working-age range. Their educational background combinations are presented in Table 1, which shows that the most common educational background combination for couples where the husband is of working age is a high school graduate and the wife is also a high school graduate (26.18%), followed by 11.11% where both the husband and wife are university students.

		Wives						
		Junior high school	High school	Vocational school	Junior college/technical college	University	Graduate university	Total
H u s b a n d s	Junior high school	2.29	3.29	0.81	0.37	0.14	0	6.90
	High school	1.78	26.18	5.39	5.61	1.82	0.06	40.85
	Vocational school	0.26	3.49	3.00	2.01	0.93	0.04	9.74
	Junior college/technical college	0.05	1.31	0.50	1.04	0.34	0.01	3.26
	University	0.25	8.53	4.38	10.62	11.11	0.36	35.26
	Graduate university	0.01	0.32	0.37	0.87	1.97	0.45	3.99
	Total	4.64	43.14	14.45	20.53	16.32	0.92	100
		Husbands						
		Junior high school	High school	Vocational school	Junior college/technical college	University	Graduate university	Total
W i v e s	Junior high school	3.17	1.96	0.26	0.06	0.26	0.01	5.70
	High school	3.89	27.09	3.29	1.31	8.68	0.31	44.57
	Vocational school	0.85	5.15	2.79	0.48	4.13	0.34	13.74
	Junior college/technical college	0.37	5.38	1.86	1.00	10.3	0.84	19.75
	University	0.13	1.70	0.85	0.31	10.53	1.88	15.39
	Graduate university	0	0.06	0.04	0.01	0.34	0.41	0.85
	Total	8.4	41.33	9.08	3.16	34.23	3.79	100

Table 1: Combination of educational attainment for couples in which either the husband or wife falls into the productive age group

Similarly, the lower side of Table 1 shows that the most common combination of educational backgrounds where the wife is of working age is where the husband and wife are high school graduates (27.09%), followed by college graduates for both the husband and wife (10.53%).

3.2. Health Behaviors and Health Status of Married Men and Women

Tables 2 present the results of using t-tests to confirm the differences in the means of health behaviors and health status between men and women who fall into the working-age group and those who are over the working-age group, respectively. Generally, the differences

between men and women for most variables are significant at the 1% level. For example, for the frequency of alcohol consumption, the difference is 2.030 points for men (5.238) and women (3.208) in the working-age group, but the difference in the frequency of alcohol consumption decreases to 2.494 points for those older than the working--age group. In Tables 2, the numerical values for the frequency of drinking, amount of drinking, smoking status, and number of cigarettes smoked are all higher for men, and the numerical values decrease when they are older than working age. As a higher value indicates worse mental health, it can be confirmed that women have, on average, worse mental health than men.

For the 10 health behaviors (1) to (10), a numerical value close to 1 indicates that the health behavior is being implemented, and the numerical values for the diet-related items (1) to (4) are all higher for women than for men in terms of both working age and older.

In the working-age group, only item (5), related to exercise, is performed better by men; however, other behaviors related to sleep and stress are undertaken better by women.

Item	Husband	Wife	Item	Husband	Wife	Item	Husband	Wife
Drinking status	5.238	3.208	Eat regularly	0.447	0.546	Medical checkup	0.821	0.618
Amount of alcohol consumed	2.425	1.821	Well-balanced diet	0.316	0.412	Cancer screening①	0.437	0.285
Smoking status	2.234	1.351	Lightly seasoned food	0.169	0.293	Cancer screening②	0.430	0.305
Number of cigarettes smoked	2.024	1.679	Not to overeat	0.312	0.409	Cancer screening③	0.379	0.281
Rest satisfaction through sleep	2.842	2.826	Exercise	0.334	0.281	Cancer screening④	—	0.497
Health conscious	3.489	3.418	Enough sleep	0.276	0.295	Cancer screening⑤	—	0.421
Mental health	2.917	3.496	Do not smoke	0.381	0.446	Worries and Stress	0.495	0.581
			Not to drink too much	0.250	0.250	Three major diseases	0.025	0.016
			Not to get stressed	0.235	0.267	Hospitalization	0.008	0.009
			Other	0.017	0.027			

Note: Health behavior (8) "Not to drink too much" in Table 2 is not significant, and hospitalization is significant at the 5% level.

Table 2: Health status of men and women of working age

Although women get enough sleep, their degree of fulfillment is lower than that of men. In addition, once they exceed the working age, men perform better on items (5) to (8). Although men outperform women in terms of cigarette smoking and alcohol consumption, the results suggest that men are more conscious of these health behaviors.

Men perform better in terms of health-screening-related behaviors. This may reflect the availability of medical checkups in the workplace. It can also be confirmed that women are relatively more likely to experience worries and stress, regardless of age. The probability of the two major illnesses and hospitalization tends to be higher for men when they are older (over working age).

4. Empirical Analysis Results

4.1. Health Behaviors and Health Status of Married Men and Women of Working Age

4.1.1. Men's Health and Crossover Effects

Tables 3 and 4 present the results of Models 1 and 2 for men who are of working age, whereas Tables 5 and 6 present the results of the analysis for working-age women.

Variables	Drinking	Alcohol	Smoking	Number of cigarettes	Sleep	Health conscious	Mental health
High school	-0.025	-0.112 ***	-0.264 ***	-0.197 ***	-0.019	0.155 ***	-0.155
Vocational school	-0.117 ***	-0.231 ***	-0.380 ***	-0.327 ***	-0.110 ***	0.154 ***	0.140
Junior college/technical college	-0.011	-0.263 ***	-0.430 ***	-0.189 ***	-0.026	0.229 ***	-0.165
University	-0.084 ***	-0.291 ***	-0.638 ***	-0.402 ***	-0.056 *	0.281 ***	-0.108
Graduate university	-0.174 ***	-0.556 ***	-1.150 ***	-0.678 ***	-0.002	0.352 ***	-0.360 *
age	0.012 ***	-0.011 ***	-0.012 ***	0.013 ***	0.010 ***	-0.015 ***	-0.017 ***
Sample size	28,105	19,127	42,556	16,443	28,038	42,491	42,028

Variables	Eat regularly	Well-balanced diet	Lightly seasoned food	Not to overeat	Exercise	Enough sleep	Do not smoke
High school	1.086	1.309 ***	0.938	1.076	1.359 ***	0.853 ***	1.177 ***
Vocational school	1.154 **	1.609 ***	1.085	1.152 **	1.353 ***	0.822 ***	1.427 ***
Junior college/technical college	1.334 ***	1.640 ***	1.366 ***	1.195 **	1.722 ***	0.920	1.668 ***
University	1.439 ***	2.277 ***	1.299 ***	1.319 ***	1.889 ***	0.935	1.840 ***
Graduate university	2.235 ***	3.376 ***	2.342 ***	1.688 ***	2.336 ***	0.947	2.787 ***
age	1.045 ***	1.027 ***	1.050 ***	1.032 ***	1.014 ***	1.023 ***	1.013 ***
Sample size	28,307	28,307	28,307	28,307	28,307	28,307	28,307

Variables	Not to drink too much	Not to get stressed	Other	Medical checkup	Cancer screening①	Cancer screening②	Cancer screening③
High school	1.145 **	1.096	1.030	1.915 ***	2.350 ***	2.153 ***	2.179 ***
Vocational school	1.325 ***	1.094	1.270	1.744 ***	2.546 ***	2.335 ***	2.454 ***
Junior college/technical college	1.352 ***	1.269 **	1.096	2.762 ***	3.716 ***	3.056 ***	3.305 ***
University	1.587 ***	1.286 ***	0.951	3.527 ***	4.247 ***	3.340 ***	3.620 ***
Graduate university	2.237 ***	1.295 ***	0.781	5.245 ***	4.702 ***	4.141 ***	4.345 ***
age	1.013 ***	1.024 ***	0.998 ***	0.996 ***	1.053 ***	1.042 ***	1.055 ***
Sample size	28,307	28,307	28,307	43,667	43,133	42,989	42,866

Variables	Worries and Stress	Three major diseases	Hospitalization
High school	0.988	0.940	0.621 ***
Vocational school	1.170 ***	0.804	0.820
Junior college/technical college	0.993	0.663 *	0.407 **
University	1.093 **	0.891	0.386 ***
Graduate university	1.102	0.882	0.328 ***
age	0.991 ***	1.127 ***	1.038 ***
Sample size	42817	43687	44391

Note: ***, **, and * indicate significance at the 1, 5, and 10% levels, respectively. All tables in this paper use the same notations.

Table 3: Effects of education on men who fall into the working-age group

The results in Table 3 confirm that most of the estimates are significant. The top row shows the coefficients of the Ordered Probit model analysis based on the frequency of alcohol consumption and mental health. Regarding the two variables of alcohol consumption and smoking, we can confirm that the higher the level of education, the more people tend to abstain. In particular, the differences between not only high school graduates and those with higher levels of education but also college graduates and beyond are clear. Although there is no clear relationship between education and sleep, there is a distinct hierarchy in terms of health consciousness. The results of the analysis in the second column and below are presented as odds ratios, with values above (below) 1 indicating a positive (negative) effect.

The 10 items on health behaviors also generally show disparities among educational backgrounds. The pecking order of educational background is more clearly indicated for health and cancer screening, with significant results at the 1% level for all items. Those with a final postgraduate degree are approximately four to five times more likely to have undergone medical examinations than the base group of junior school graduates. In particular, the probabilities of undergoing regular medical checkups are 3.527 and 5.245 times higher among college graduates and postgraduates, respectively. Worries and stress have little correlation with educational background, and the three major diseases are also not significantly related to educational background. The probability of hospitalization tends to decrease with higher education, with some educational variables being statistically insignificant.

Next, we confirm the results of the analysis of the crossover effects for men in the working-age category in Table 4. The results of this analysis are shown in Model 2, with the wife's education dummy inserted as an explanatory variable for the man's education. The wife's educational level has a significant effect on smoking status, although no correlation with the wife's educational level is confirmed for alcohol consumption. In other words, the higher the wife's education level, the lower the smoking rate, even if the man's education level is the same. The wives' educational levels are also significantly correlated with health consciousness.

A wife's educational background also has a significant positive impact on diet-related health behaviors (1) through (4). A similar trend is observed for item (5), that is, exercise-related health behaviors. The influence of wives' educational background on medical checkups is also significant, especially the difference between high school and vocational school graduates, while that of those with higher educational backgrounds is significantly evident. However, the effect of wives' educational background on worries, stress, three major illnesses, and hospitalization is hardly observed.

Variables	Drinking	Alcohol	Smoking	Number of cigarettes	Sleep	Health conscious	Mental health
High school	0.039	-0.001	-0.088 ***	-0.025	-0.019	0.101 ***	-0.395 **
Vocational school	0.053	-0.007	-0.174 ***	-0.083 *	-0.062	0.110 ***	-0.228
Junior college/technical college	0.035	-0.040	-0.212 ***	-0.095 **	-0.030	0.133 ***	-0.311 *
University	0.037	-0.069	-0.363 ***	-0.273 ***	-0.037	0.147 ***	-0.403 **
Graduate university	0.040	-0.102	-0.459 ***	-0.172	-0.004	0.184 ***	0.205
age	0.012 ***	-0.011 ***	-0.013 ***	0.012 ***	0.010 ***	-0.014 ***	-0.016 ***
Sample size	28,105	19,127	42,556	16,443	28,038	42,491	42,028

Variables	Eat regularly	Well-balanced diet	Lightly seasoned food	Not to overeat	Exercise	Enough sleep	Do not smoke
High school	1.145 **	1.190 **	1.134	1.126	1.355 ***	1.097	1.112
Vocational school	1.173 **	1.394 ***	1.194 *	1.201 **	1.476 ***	1.128	1.203 **
Junior college/technical college	1.261 ***	1.486 ***	1.369 ***	1.261 ***	1.536 ***	1.042	1.307 ***
University	1.288 ***	1.657 ***	1.512 ***	1.304 ***	1.617 ***	1.172 *	1.477 ***
Graduate university	1.289 *	1.845 ***	1.676 ***	1.490 ***	1.875 ***	1.149	1.758 ***
age	1.046 ***	1.029 ***	1.052 ***	1.033 ***	1.016 ***	1.023 ***	1.015 ***
Sample size	28,307	28,307	28,307	28,307	28,307	28,307	28,307

Variables	Not to drink too much	Not to get stressed	Other	Medical checkup	Cancer screening①	Cancer screening②	Cancer screening③
High school	0.880	0.958	1.604	1.312 ***	1.460 ***	1.413 ***	1.491 ***
Vocational school	0.923	0.933	1.957 **	1.329 ***	1.573 ***	1.592 ***	1.664 ***
Junior college/technical college	1.006	1.024	1.725 *	1.557 ***	1.981 ***	1.814 ***	1.963 ***
University	1.094	1.055	1.793 *	1.543 ***	1.869 ***	1.760 ***	1.929 ***
Graduate university	1.397 **	1.101	1.610	1.380 **	1.793 ***	1.911 ***	1.666 ***
age	1.014 ***	1.025 ***	1.000	0.997 **	1.055 ***	1.044 ***	1.057 ***
Sample size	28,307	28,307	28,307	43,667	43,133	42,989	42,866

Note: The bottom row of the explanatory variables represents the spouse's educational level.
　　　The results for worries and stress, three major illnesses, and hospitalization are omitted.

Table 4: Crossover effects on health for men who fall into the working-age grou

4.1.2. Women's Health and Crossover Effects

Table 6 confirms the effect of education when the wife falls into the working-age category. This result also shows that most of the effects are significant. In the top row of the variables, the ordinal order of education is clear for the two variables of alcohol consumption and smoking, as well as for the variable on health consciousness. However, there is no clear correlation between the frequency of alcohol consumption and sleep. This finding is similar to that observed in men. However, the frequency of alcohol consumption is positively significant for women, unlike men. In addition, while almost no significant results are observed for the mental health of men, a significant pecking order is confirmed for women, with the more highly educated group having better mental health. Based on the effects of health behaviors (1) through (4) regarding diets, the differences between educational backgrounds are particularly evident for item (2), "eating a well-balanced diet," with postgraduates being 4.738 times more likely than junior high school graduates. In addition, a correlation with educational background can be generally confirmed for items (5) exercise, (7) behaviors to abstain from smoking, and (8) alcohol consumption. Furthermore, similar to men, the correlation with educational background is strong for medical checkups, all of which, including uterine and breast cancer checkups, are significant at the 1% level. As in the case of men, the disparity between educational backgrounds for the probability of receiving a regular medical checkup is the largest, at 3.245 times for college graduates and 5.245 times for postgraduates.

Variables	Drinking	Alcohol	Smoking	Number of cigarettes	Sleep	Health conscious	Mental health
High school	0.082 **	-0.323 ***	-0.467 ***	-0.212 ***	-0.117 ***	0.142 ***	-0.423 ***
Vocational school	0.153 ***	-0.410 ***	-0.590 ***	-0.371 ***	-0.131 ***	0.203 ***	-0.376 ***
Junior college/technical college	0.108 ***	-0.534 ***	-0.975 ***	-0.464 ***	-0.105 ***	0.245 ***	-0.551 ***
University	0.157 ***	-0.651 ***	-1.153 ***	-0.657 ***	-0.077 **	0.325 ***	-0.711 ***
Graduate university	0.156 **	-1.078 ***	-1.416 ***	-1.336 **	-0.113	0.322 ***	0.109
age	0.002 ***	-0.023 ***	-0.022 ***	0.004 ***	0.003 ***	-0.011 ***	-0.026 ***
Sample size	31,264	10,746	47,300	5,189	31,108	46,987	46,317

Variables	Eat regularly	Well-balanced diet	Lightly seasoned food	Not to overeat	Exercise	Enough sleep	Do not smoke
High school	1.167 ***	1.545 ***	1.121 *	1.024	1.295 ***	0.865 **	1.427 ***
Vocational school	1.285 ***	2.104 ***	1.369 ***	1.159 **	1.445 ***	0.973	1.699 ***
Junior college/technical college	1.730 ***	2.646 ***	1.485 ***	1.166 ***	1.667 ***	1.030	1.905 ***
University	1.920 ***	3.691 ***	1.939 ***	1.270 ***	2.009 ***	1.235 ***	2.303 ***
Graduate university	2.047 ***	4.738 ***	2.473 ***	1.439 ***	1.843 ***	1.165	2.262 ***
age	1.029 ***	1.027 ***	1.046 ***	1.024 ***	1.045 ***	1.002 *	1.005 ***
Sample size	31,432	31,432	31,432	31,432	31,432	31,432	31,432

Variables	Not to drink too much	Not to get stressed	Other	Medical checkup	Cancer screening①	Cancer screening②	Cancer screening③
High school	1.331 ***	1.095	1.104	1.708 ***	1.840 ***	1.810 ***	1.870 ***
Vocational school	1.690 ***	1.242 ***	1.403 *	2.167 ***	2.142 ***	2.477 ***	2.234 ***
Junior college/technical college	1.933 ***	1.219 ***	1.165	2.252 ***	2.709 ***	2.514 ***	2.843 ***
University	2.326 ***	1.329 ***	0.933	2.665 ***	3.199 ***	2.885 ***	3.212 ***
Graduate university	2.720 ***	1.299 *	1.548	4.544 ***	3.874 ***	4.049 ***	3.426 ***
age	1.002 *	1.026 ***	1.011 ***	1.035 ***	1.059 ***	1.055 ***	1.063 ***
Sample size	31,432	31,432	31,432	48,344	47,242	47,211	47,273

Variables	Cancer screening④	Cancer screening⑤	Worries and Stress	Three major diseases	Hospitalization
High school	1.450 ***	1.909 ***	1.042	0.902	0.754
Vocational school	1.738 ***	2.169 ***	1.240 ***	0.901	0.752
Junior college/technical college	2.263 ***	3.051 ***	1.105 **	0.805	0.535 ***
University	2.593 ***	3.449 ***	1.002	0.876	0.577 **
Graduate university	3.003 ***	3.394 ***	1.405 ***	0.911	0.216
age	0.981 ***	1.037 ***	0.986 ***	1.078 ***	1.022 ***
Sample size	48,444	48,457	47,407	48,292	49,174

Note: ***, **, and * indicate significance at the 1, 5, and 10% levels, respectively.

Table 5: Effects of education on women who fall into the working-age group

However, similar to men, no clear correlation with educational background can be confirmed for worries, stress, or the three major illnesses. No clear correlation with educational background is observed for hospitalization as well.

Table 6 confirms the crossover effect of husbands' education on the health of working-age women. Although there is no clear educational effect on the frequency of alcohol consumption, it is positive and significant, indicating that the husband's education somewhat affects the wife's frequency of alcohol consumption. Regarding smoking status, a crossover effect is found among married couples, which is similar to the results presented in Table 4. Unlike the crossover effect for husbands, there is no clear correlation between education and

health consciousness, although it is significant; however, the difference between those with a college degree or higher and those with less than a college degree is clear. In other words, there is a positive effect on subjective health consciousness if the husband has a college degree or higher. Some educational attainment is also significant for mental health, but there is no clear pecking order.

Variables	Drinking		Alcohol		Smoking		Number of cigarettes		Sleep		Health conscious		Mental health	
High school	0.086	***	-0.044		-0.161	***	-0.113	**	0.022		0.091	***	-0.349	***
Vocational school	0.107	***	-0.081		-0.239	***	-0.071		0.013		0.120	***	-0.400	***
Junior college/technical college	0.143	***	-0.085		-0.267	***	-0.226	**	0.081	*	0.087	**	-0.165	
University	0.115	***	-0.134	***	-0.396	***	-0.102	*	0.068	**	0.172	***	-0.398	**
Graduate university	0.060		-0.325	***	-0.677	***	-0.171		0.127	***	0.238	***	-0.456	**
age	0.002	***	-0.023	***	-0.022	***	0.004	***	0.003	***	-0.010	***	-0.027	***
Sample size	31,264		10,746		47,300		5,189		31,108		46,987		46,317	

Variables	Eat regularly		Well-balanced diet		Lightly seasoned food		Not to overeat		Exercise		Enough sleep		Do not smoke	
High school	0.963		1.140	**	1.033		1.014		1.072		0.960		1.119	**
Vocational school	1.020		1.367	***	1.079		1.000		0.990		0.949		1.175	***
Junior college/technical college	1.015		1.249	***	1.173	*	1.083		1.143		0.949		1.223	**
University	1.129	**	1.658	***	1.258	***	1.067		1.343	***	1.060		1.368	***
Graduate university	1.484	***	2.089	***	1.695	***	1.143	*	1.510	***	1.193	**	1.724	***
age	1.029	***	1.028	***	1.046	***	1.024	***	1.045	***	1.002	*	1.005	***
Sample size	31,432		31,432		31,432		31,432		31,432		31,432		31,432	

Variables	Not to drink too much		Not to get stressed		Other		Medical checkup		Cancer screening①		Cancer screening②		Cancer screening③	
High school	1.076		1.003		1.002		1.233	***	1.422	***	1.386	***	1.384	***
Vocational school	1.169	**	1.005		1.159		1.178	***	1.387	***	1.341	***	1.396	***
Junior college/technical college	1.122		1.086		0.669		1.320	***	1.621	***	1.537	***	1.653	***
University	1.331	***	1.084		0.830		1.254	***	1.668	***	1.566	***	1.698	***
Graduate university	1.727	***	1.205	**	1.014		1.265	***	1.667	***	1.455	***	1.779	***
age	1.003	**	1.026	***	1.012	***	1.035	***	1.059	***	1.056	***	1.063	***
Sample size	31,432		31,432		31,432		48,344		47,242		47,211		47,273	

Note: Results for cancer screening items (4) and (5), worries and stress, three major diseases, and hospitalization are omitted.

Table 6: Crossover effects on health for women of working age

For the health behavior items (1) through (4) related to diet, unlike in the case of the husbands in Table 4, it can be confirmed that some crossover effects of the husbands' educational backgrounds are not significant. However, for health behavior item (2), "I eat a balanced diet," the crossover effect of the husband's educational background, as well as the wife's educational background in Table 4, is clearly significant.

For exercise as a health behavior (5), having a husband with a college degree or higher indicates a significantly positive effect. As in the case of men, the crossover effect for couples can be clearly confirmed by refraining from smoking (7) rather than alcohol consumption (8). The effect of husbands' educational backgrounds on health screening is also generally significant. Although the coefficient varies slightly depending on the level of education, we can confirm that husbands with higher educational levels generally have an increased probability of their wives receiving medical checkups.

5. Conclusion

This study empirically analyzes not only the effect of education on the health behaviors and health status of married couples but also the crossover effect of education among them. First, basic statistics show that women perform better in terms of dietary health behaviors, whereas men perform better in terms of exercise and medical checkups. Furthermore, the crossover effect is more pronounced regarding the wife-to-husband scenario than vice versa. Among the various health behaviors, the clearest effect of one's educational background is medical checkups, and the crossover effect is also clearly confirmed for both husbands and wives.

The remaining issues include the possibility of reverse causality and intervention via a covariate factor. The verification of these points will be the subject of future studies.

Acknowledgments

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The Experiences of Secondary Teachers Co-constructing Mental Wellness Knowledge

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Abstract

The Mental Health Commission of Canada (2012) indicated "up to 70 percent of young adults living with mental health problems report that the symptoms started in childhood" (p. 24). In Canada, by the age of twenty-five one in five individuals affected by mental illness (Mental Health Commission of Canada, 2020). Mental Wellness 30 (MW30) is a proactive Canadian curriculum, providing students with a 30-level high school elective credit in mental health and wellness. This qualitative collective case study examined four teachers' experiences as they co-constructed knowledge and developed an understanding of mental wellness with their students by teaching the MW30 curriculum. Vygotsky's (1986) social constructivist theory framed this study, which focused on the interactions between students and their teachers as they co-constructed knowledge. During this two-month-long study, data were collected through detailed field notes and online interviews with the participating teachers. Three common themes emerged in relation to the co-construction of knowledge: 1) Increased Student Engagement: Teachers and Students Co-create Pedagogical Decisions Supporting Positive and Safe Classrooms; 2) Emotional Scaffolding: The Role of Emotions in the MW30 Learning; and 3) Valuable Learning Occurs When Social Interactions are Embedded in Curriculum and Pedagogy. The findings of this study highlight the need for implementing the MW30 curriculum in schools, the benefits of which include fostering greater mental health literacy for students and teachers. The overarching demographics of mental health issues within student populations further highlight the need to attend to students' mental health and provide them with the knowledge, skills, and tools to move forward in life as productive, happy individuals.

Keywords: Mental Health Literacy, Mental Wellness, Secondary Teachers, Student Engagement, Social Constructivism, Self-Awareness, Social and Emotional Learning, Contact-Based Education

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Introduction

According to the Canadian Mental Health Association (2020), "10-20% of Canadian youth are affected by a mental illness or disorder—the single most disabling group of disorders worldwide" (para. 5). Approximately, 75% of these disorders present during adolescence (Iyer, 2015; Malla et al., 2016; WHO, 2020). Despite these alarming numbers, evidence suggests that only one out of five children in Canada receive the mental health support and services they need (Canadian Mental Health Association, 2020; Whitley et al., 2013). This attributes to the staggering statistics that suicide remains "the second leading cause of death worldwide for individuals in the 15–29 age range" (Laverty & Kelly, 2019, p. 107). Unfortunately, the fear of stigma and social discrimination associated with mental illness remains a core barrier for adolescents seeking the services and help they need (Kutcher et al., 2013; McGorry & Mei, 2018; Milin et al., 2016, Roeser et al., 2000; WHO, 2020). Schools have an essential role to play in reducing that stigma. Improving the attitudes associated with mental illness is important so that adolescents are not ashamed of seeking professional mental health support (Barry et al., 2014; Kelly et al., 2007; Kutcher et al., 2013; Rodger et al., 2014). These are factors which contribute to the challenges of adolescents, and they also emphasize the urgent need for proactive programs which promote wellness and assist adolescents in improving their mental health literacy, self-regulation, and necessary resilience (Hawkridge, 2018; Rowley et al., 2005).

Mental Wellness Literacy

The school environment is ideal for promoting and normalizing mental health and wellness education due to the large number of young people present (Barry et al., 2014; Kelly et al., 2007; Kutcher et al., 2013; Milin et al., 2016; Rodger et al., 2014). Mental health and wellness literacy provide individuals with the knowledge to recognize, support, manage, and help prevent mental health issues and illnesses (Chen et al., 2016; Cook et al., 2015; Kutcher et al., 2013). According to recent findings, the lack of mental health literacy, support, and services combined, contribute to cumulative impairments to how individuals' function in their home, school, and community (Bates & Eccles, 2008; Government of Alberta Education, 2008; Iyer et al., 2015; Kutcher et al., 2013). Many researchers have found that adolescents demonstrate low mental health and wellness literacy but have a high desire to deepen their knowledge on the subject (Chen et al., 2016; Jorm, 2012; Rickwood et al., 2019). Ultimately, educational experiences that provide mental health and wellness literacy are essential for engaging adolescents and their learning regarding mental wellness. Through engagement, these adolescents learn to improve their ability in recognizing the first onsets of mental health challenges and gain an awareness of how to access professional support (Barry et al., 2014; Kutcher et al., 2015). Evidence clearly demonstrates teachers will encounter mental health issues among the adolescents in their classroom and acknowledge the critical role they have with their students' mental health and wellness (Carr; 2018; Whitley et al., 2013). Still, many teachers feel inadequately prepared, trained, or educated to deal with these effectively (Goodwin et al., 2016; Graham et al., 2011; Russell-Mayhew et al., 2016; Whitley et al., 2013). The cultural, social, emotional, and economic diversity in the teachers' classrooms, requires them to go beyond traditional teaching methods and implement research-based programs to encourage student success (Graham et al., 2011). Therefore, the challenge faced by the teachers in today's society, is to discover and implement effective pedagogies and methodologies to promote the growth and development of their students' mental health and wellness (Atkins & Rodger, 2016; Goodwin et al., 2016; Russell-Mayhew et al., 2016). For this reason, this study investigated the experiences of four classroom teachers as they taught

the Mental Wellness 30 curriculum together with their students for the first time. Mental Wellness 30 (MW30) is a 30-level elective course on mental wellness, providing both theory and applied learning about mental health issues to support healthy living in students 15 years of age and older. The purpose of MW30 is to develop competent and confident students who appreciate and understand the importance of living a balanced and healthy lifestyle. The MW30 curriculum aims to support students' education by promoting social, mental, physical, spiritual, and emotional balance. The course also helps students to improve their resiliency and expand their awareness of strategies and resources for developing positive mental health, all while reducing the stigma associated with mental illness (Sun West School Division, 2018). The purpose of this study was to examine how four select teachers and their students, engaged with the MW30 curriculum, to co-construct mental health and wellness literacy. The significance of the study lies in how these understandings can inform the theory and practice of teaching and learning within the MW30 curriculum, highlighting the challenges and changes needed for teachers and students to have a better engagement with the material. Teachers' responses to this curriculum are vital to assessing content relevance and student engagement.

Method

This study utilized a qualitative case study approach, to collect data from four different teachers situated in four different schools. Social constructivism framed this research on how contexts, environments, and interactions shaped the participating teachers' understanding of teaching and experiencing a mental wellness course within their high school classrooms. The research aimed to gather, analyze, and understand the teachers' perspectives and experiences. As a result, answers to the research questions provided a deeper understanding of the participants' experiences teaching and the factors that cultivated increased student motivation and engagement in mental health and wellness literacy. Data was collected through four individual interviews and one focus group, and open-ended questions were posed to each of the four participants to understand their socially constructed experiences. Descriptive field notes were taken during and after each interview, which were used to generate future questions for the focus group. Triangulation of field notes, individual interviews, and a focus group were used in the data collection of this study to validate research findings.

Data Analysis

Thematic analysis was the process employed for analyzing this study's data and included identifying, coding, and analysis of patterns found within the data (Braun and Clarke, 2006). The three themes that emerged from the data included: (1) Increased Student Engagement When Teachers and Students Co-Create Pedagogical Decisions Supporting Positive and Safe Classrooms, (2) Emotional Scaffolding: The Role of Emotions in the MW30 Learning Experience, and (3) Valuable Learning Occurs When Social Interactions are Embedded in Curriculum and Pedagogy.

Findings

The purpose of the individual interviews, focus group interviews and extensive field notes was to explore the teachers' experiences in co-constructing mental wellness knowledge with their students. The MW30 learning experience supports Nodding's' (2005) research, which claimed that secondary-level curricula that connect to larger well-being aims and provide content that meets students' expressed needs are seldom offered. Due to the increase in

mental health issues the participants observed amongst their students, the teachers in this study believed that MW30 should be a priority curriculum. The teachers agreed that sharing knowledge in a classroom regarding mental health and wellness was vital to understanding the students' thoughts and behaviors. Parallel to teachers gaining an understanding of the students, the students also developed proactive strategies to enhance their wellness. Overall, the participants expressed that student feedback regarding the course was positive, engaging, and exploratory. One teacher commented that her students were "super pumped," and this enthusiasm transferred back to the teacher, who felt that co-constructing knowledge with her students increased their engagement. Tensions and challenges arose within the course due to the sensitive nature of the content. The potential for hard conversations, the stirring of unpleasant thoughts or memories, and the vulnerability students experienced throughout curricular discussions and activities required careful guidance. Teachers remained cognizant of their students' needs and worked hard to facilitate a climate of engagement, emotional safety, and positive social learning, all of which became evident in the themes emerging from the study.

Theme 1: Increased Student Engagement When Teachers and Students Co-create Pedagogical Decisions Supporting Positive and Safe Classrooms

During the interviews, the teachers shared strategies that supported safe and positive classrooms. All the teachers believed that building trust through caring relationships was essential to getting adolescents to discuss mental health and wellness concepts in a meaningful and collaborative way. Additionally, the teachers felt that sharing their personal experiences with mental health and wellness, stimulated classroom conversation, and made them more relatable to their students. One teacher reported "when teachers share personal stories, then the kids will feel safer to do the same," and she felt that "it was important not to be afraid to be vulnerable because it is important to find strength in our weaknesses." The teachers expressed that creating positive, caring classroom environments is an ongoing process. Building positive classroom spaces where students felt an element of trust, respect, and safety was constructed through daily opportunities to come together as a class and discuss personal and social issues.

Consistent with other research on caring, safe, and positive classrooms (Noddings, 2008; Wang & Eccles, 2013), this study revealed that co-constructing a respectful and welcoming classroom atmosphere could increase students' engagement, motivation to learn, and confidence to discuss abstract and sensitive topics related to mental wellness. Further, indicates that positive teacher-student relationships promote students' motivation to learn, sense of belonging, and connection to course content (Fredricks et al., 2019). One teacher described her students as "intent, focused, and listening," sharing the following about one student in particular:

> One student loved the content of the curriculum and used her enthusiasm to help other kids in the room. During classroom discussions, she would share mental wellness strategies and skills that she learned through experience with mental health challenges and supported her peers with encouragement, reminding her peers that they were not alone.

To build positive and safe classrooms, the participating teachers provided sufficient opportunities for their students to collaborate, develop trust, gain competence, and demonstrate autonomy. It was evident that classroom partnerships between the teachers and

students were created through the opportunity to share, listen, and explore their curiosity together. Another teacher mentioned that she "knew the students were engaged by the questions they would ask. [She found] "when students are actually learning and interested in something, they'll ask questions." These meaningful interactions enhanced the students' abilities to inquire and evaluate new ideas and knowledge within their generation. As a result, students in the MW30 classrooms extended their zone of proximal development, which the participants observed in the form of increased student learning, engagement, and collaboration. Noddings (2005) described teachers as extraordinary people in the lives of students. The teachers in this study saw the MW30 curriculum as an opportunity to participate in caring relationships, which Noddings (2005) affirmed is an essential quality of meaningful and engaging teaching.

Theme 2: Emotional Scaffolding: The Role of Emotions in the MW30 Learning

Park (2016) referred to emotional scaffolding as the actions teachers carry out to encourage student persistence and success. Research suggested adolescents who can emotionally disclose their thoughts and feelings often have fewer psychological and behavioural problems, as well as closer and more satisfying relationships with others (McCarthy et al., 2017; Goleman, 1999). The participants implemented emotional scaffolding to personalize instruction, meet their students' needs, and connect the mental wellness content to their students' interests and strengths. Collectively, the teachers made pedagogical decisions to scaffold affective growth in their students' zone of proximal development by making connections between the students' prior knowledge and the concepts being learned. The teachers offered an interpersonal space during the learning experience, where they provided emotional support and scaffolds to their students while negotiating the gradual transfer of responsibility. This resulted in extending their students' knowledge and increasing respect and empathy. The teachers found that an integral part of helping their students understand how language communicates emotions was assisting them in understanding their own and others' emotions.

The participants expressed challenges while teaching the course. For each of the participants, the first challenge was handling the students' emotions which included sadness, anger, depression, anxiety, or panic. At times, students would express strong emotions without self-regulating or coping with what was going on in their minds and bodies due to the lack of development of these skills. As teachers and students co-constructed ways to deal with stressful moments, students expanded their emotional intelligence by examining their personal lives to make sense of abstract feelings, emotions, and thoughts. The teachers believed that the sooner students could identify and self-disclose personal emotions, the sooner they could heal from whatever challenges they may be internally battling. Speaking to this, one teacher expressed the following:

> It's good that the curriculum touches something in them that needed to be brought up and worked on. The sooner they heal the better, rather than carrying it into adulthood and when they are a parent themselves. It's better to work through those emotions when they are young and can put some coping and support systems into place.

As teachers worked to establish healthy emotional learning through scaffolding the themes of trust and engagement, self-awareness, empathy, and relatedness emerged. The teachers scaffolded trust and engagement through a series of pedagogical strategies, finding it important to honour students' contributions, model enthusiasm, and support students'

persistence in the learning. Developing trust in one another "opened a lot of doors and lots of emotions" claimed one teacher. She found that teaching a mental wellness curriculum was an "emotionally packed" experience, but she was happy to have the opportunity to help her students address different emotions, which "was where the learning happened."

The teachers scaffolded self-awareness through reflection and journaling. Two of the teachers were challenged with large class sizes, resulting in some students feeling intimidated and preferring to discuss and reflect in small groups or through journaling. Journaling provided students with an opportunity to make connections, share their lived experiences, and express their feelings and emotions without fear of being judged. One teacher commented that she "liked student journaling because that was where I saw a lot of their learning." Another teacher shared "sometimes I wouldn't see kids' engagement until I asked them to write down what their thoughts were about the lesson, and then when I would read them, I realized they were listening because they understood the lesson's goal." Goleman (1995) articulated that an essential source of emotional intelligence is self-awareness. During class time, the teachers and students actively engaged in activities that enhanced their self-awareness. The participants co-created stress reduction, communication, responsible decision making, goal setting, and self-regulation skills with the students. By co-creating these skills, the participants were able to foster the students' self-awareness, self-monitoring, resiliency, and emotional engagement.

Teachers scaffolded empathy through contact-based educational opportunities, which incorporated bringing individuals with lived mental illness experiences into the classroom (either in person, virtually, or through recordings) to share their personal recovery stories, conveying a positive message of hope to students (Chen et al., 2016). As the teachers and students watched the testimonials together, they began to imagine themselves in others' experiences, thereby strengthening their empathetic skills. Empathy plays a significant role in positively correlating the fundamental personality factor of resiliency, which is linked to strong feelings of hope and helps prevent adolescent suicide attempts and ideation (Sánchez-Teruel & Robles-Bello, 2014). One teacher commented, "My students were interested in hearing real stories about someone's struggles and how they got through it. They realized others struggle but can deal with it because they had the tools and got the help they needed". Another teacher believed that when her students empathized with the testimonials, it helped them to "normalize" the mental health challenges and struggles that people encounter. The teachers noted that as the students encountered experiences where their empathetic skills were utilized, increased student engagement, self-esteem, and confidence grew. Students also experienced an increased sense of belonging by connecting to the stories they had heard. One teacher shared, "Students realize there is another real person, with a real life, and with real struggles, that they connect with, and they would say, 'I have an uncle like that' or 'my sister has the exact symptoms'." Another teacher agreed, "The stories normalize mental illness because students learn there are other people going through it. Others struggle with it but can deal with it because they have tools now and got the help they needed." This sense of relatedness in the classroom stimulated supportive conversations where teachers and students co-constructed new ways to cope with mental health challenges and persevere through stressful experiences, For one of the teachers, having "personal connections helped her students open up and have supportive classroom conversations." She reported that her students' sense of relatedness played an important role in their motivation, emotional disclosure, and engagement. Another teacher felt that the course promoted the opportunity "to understand ourselves and our differences". By removing negative stigma associated with mental illness from the classroom and adapting the course to suit the emotional needs of the

students, students were able to gain emotional intelligence, integrating intellectual and emotional development alongside one another. As a result of gaining emotional intelligence from hearing real-life stories, students found positive ways to identify and manage their emotions while developing effective communication and empathy towards others.

Theme 3: Valuable Learning Occurs When Social Interactions are Embedded in Curriculum and Pedagogy

Interactive experiences with peers, plays a significant role in cognitive development for adolescents. Vygotsky and Cole (1978) suggested that "learning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with peers" (p. 90). Throughout the study, the teachers observed the intellectual growth that occurred when students interacted with peers. Following the intellectual growth, the participants also recognized the students increasing empathy towards others. Noddings (2008) expressed that "dialogue that involves a mutual quest for understanding is a fundamental component to activating caring relationships" (p. 168). The MW30 curriculum invites students and teachers to construct new knowledge collaboratively while also honouring the knowledge they bring as individuals to the course. Through social interactions, the teachers found that pieces of students' experiences, memories, and feelings began to connect, allowing them to begin making sense of theirs and others' mental health challenges. One teacher noted that her students could "see that other people their age or older got through it, and they are okay. The stories give students hope." She stated, "The course opened up the classroom dialogue." Another teacher saw growth in her students through the opportunities for sharing, which led to increased learning and strategizing for their mental health and wellness. After watching their students co-construct solutions, supports, and self and social awareness, the participants expressed that they believed the education system is moving forward with a more proactive and preventative approach to mental health and wellness. Through class discussions and reflections, one teacher found that her students would share ways they positively coped when aspects of their life became challenging and stressful. She observed them saying things such as, "You know what I do? I go for a drive, or I go get a friend and we go for a walk." Through emotionally rich conversations stimulated in class, she fostered her students' ability to support and trust each other. She learned that peer teachings gave her students new skills and strategies they did not already have, and she believed that interacting with her students strengthened relationships amongst the classroom as a whole.

The participants taught their students to recognize personal and outside supports to foster mental health and wellness, improving and advocating support seeking behaviours. Teachers engaged students in creating a 'personal circle of courage' to assist them in identifying local, provincial, and national supports. The teachers found that this activity instilled a sense of belonging, fostered courage, and engaged students in constructing a support circle to persist and be self-compassionate through difficult times. Awareness, acquired through classroom co-construction of mental health literacy, helped students establish a sense of relatability amongst each other. They developed the ability to identify their mental health challenges and recognize personal strengths while also being reassured that treatment and support are available. During classroom interactions, teachers recognized that through learning about stigma and the negative consequences for people living with mental illness', the students were positively impacted and gained a sense of empowerment. All four teachers agreed that the negative stigma associated with youth disclosing mental illness and seeking support still exists. One teacher saw that "asking for help [was] a massive hurdle for kids getting the help

they need." By educating students on the importance of seeking support and providing them with accessibility to do so, without the worry of receiving judgement, accessing the supports needed becomes much more achievable and convenient. Another teacher pointed out that by discussing different mental health strengths and challenges in a class together, adolescents can learn about the range of mental health experiences, which reduces stigma and improves their help-seeking behaviours (Kutcher, 2009; Kutcher et al., 2015).

According to Vygotsky and Cole (1978), the zone of proximal development (ZPD) is a social space where individuals are challenged enough to remain focused and attentive, which enhances their ability to learn new concepts. As teachers and students interact to create the ZPD, a shared experience occurs. Goldstein (1999) expressed that co-constructing knowledge implies a powerful interpersonal connection between individuals collaboratively engaging in the learning process. The teachers in this study repeatedly acknowledged that the students were interested in the MW30 content. As a result of their students' desire to learn more about mental wellness, the teachers delivered an experience that fostered emotional, cognitive, and behavioural engagement. The teachers' pedagogical strategies were carefully implemented while the students were engaged, by doing so, the students could move through the ZPD and were challenged to grow and extend their learning experience. Emotional scaffolding encouraged students to move beyond their comfort zone to a space where they could explore and develop their unrealized potential and the confidence to engage in collaborative and cooperative learning. Additionally, students learned to control and manage emotions such as anxiety and frustration while learning a new skill and facing a new challenge. As the teachers and students negotiated meaning from what they were learning, they observed a transfer of responsibility: Students began to take control of their learning while the teachers facilitated the experience. This study's results contribute to the broader discussion on how mental health and wellness literacy promotion could improve adolescent well-being. Across the board, research has expressed the urgent need for mental health and wellness initiatives that increase knowledge, reduce stigma, develop self-awareness and self-care, and improve help-seeking behaviours (Bates & Eccles, 2008; Chen et al., 2016; Kutcher et al., 2015; Rickwood et al., 2007; Wei et al., 2015). The MW30 curriculum and teacher resources answer the call for that need, and this study has provided insight into the experiences of teachers and their students who undertook it.

Conclusion

This study expanded on the limited mental health literacy units by providing insight into a comprehensive 30-level credit course that includes all aspects of mental health and wellness. Building on Kutcher et al.'s (2015) definition of mental health literacy, the MW30 curriculum included social and emotional learning, wellness strategies, and contact-based education. Social constructivism framed this research, which demonstrated that positive social interactions facilitated teachers' and students' co-construction of knowledge, leading to increased emotional, cognitive, and behavioural engagement. The teachers felt they had co-constructed a mental toolbox with their students, which they could draw from to enhance resilience, protective factors, and invest in their self-care. Furthermore, the teachers saw an increase in their students' empathy, which instilled a sense of belonging and reduced stigma. As a result of teaching MW30, teachers saw improvements in their students' mental health literacy, social skills, and emotional skills. The participants observed their students processing, internalizing, and applying cognitive and emotional knowledge gained through meaningful and collaborative experiences. Importantly, they expressed enjoying emotionally supporting their students during times of deep engagement by remaining attentive,

supportive, and caring. Positive interactions instilled a higher level of thinking, allowing students to emotionally and cognitively expand their ZPD. Overall, this study found that the MW30 curriculum, and its accompanying resources, helps teachers provide and co-create learning experiences that motivate the students to understand and utilize proactive skills to maintain their mental health and wellness as they enter adulthood. The teachers in this study repeatedly mentioned that they enjoyed teaching MW30, and that their students enjoyed learning it. The importance of making school enjoyable for adolescents must not be underestimated. Many individuals will experience their first encounter with a mental health disorder during adolescence, which is also when they are engaged in secondary education (Woloshyn & Savage, 2018). Classroom engagement protects against high rates of youth drop-out, the rise of adolescent mental health disorders, and increased suicide rates (Fredricks et al., 2019; Malla et al., 2016; Woloshyn & Savage, 2018). This study demonstrated the positive difference that teachers can make in a student's life when provided with accessible resources and opportunities. With those resources and opportunities, teachers can foster motivation and engagement in their students, both of which are vital components of encouraging students to stay in school (Fredicks et al., 2019; Froiland & Worrell, 2016; Wang & Eccles, 2013).

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Assessing Biological Diversity Literacy Levels Among Students and Teachers at Teacher Training Colleges in the Eastern Region of Ghana

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Abstract

The biodiversity conservation concept is essential for literacy levels, as it provides the primary value of ecosystem life support, renewable resources, and ecological services. This research assesses the biological diversity literacy levels among students and teachers in the Eastern Region of Ghana. The research used the purposive sampling technique to select 515 students and 45 teachers from six (6) of the 46 public Colleges of Education in the Eastern Region of Ghana. Results showed that both students and tutors lacked adequate environmental awareness. Teacher trainees are expected to have adequate knowledge of responsible environmental behavior to influence their future students, as the training of teachers plays an important role in imparting the theme of Education for Sustainable Development. Results from the linear probability model indicate that being a female increases the probability of having perceived environmental knowledge by 10 percentage points, controlling other demographic characteristics. Also, being educated increases the probability of having perceived environmental knowledge by 5 percentage points, controlling other factors. Age was found to be significant at a 1% significant level. This research suggests policy recommendations for Ghana's Colleges of Education to develop and manage limited natural resources to promote environmental sensitivity, produce an in-depth knowledge of issues, teach students how to analyze and investigate issues, use citizenship to solve problems, and raise students' expectations of rewards for acting responsibly.

Keywords: Biological Biodiversity, Biodiversity Conservation, Environmental Education, Teacher Education, Environmental Abuse, Sustainable Development, Ghana

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1. Introduction

This paper explores the role of biological diversity literacy in Ghana's Teacher Training Institutions and its potential to contribute to sustainable development. It examines the relationship between instructors' and students' knowledge of biological diversity and their capacity to encourage sustainable behavior. The paper also explores the connection between Ghana's rich natural diversity and its cultural heritage, aiming to identify knowledge gaps and synergistic learning experiences. By examining the current state of biological diversity literacy within the framework of teacher training or education, we want to both uncover knowledge gaps and the potential for synergistic learning experiences. This is because, the Teacher Training Institutions serve as a thriving environment for the growth and training of prospective educators who are crucial agents to producing people who are environmentally conscious for a sustainable future (Adu et al., 2021; Adu et al., 2022; Yli-Panula et al., 2023). The purpose of the article is to clarify the connections that may be made between classroom instruction and sustainable development principles by utilizing biological diversity literacy. As we sort through the complexities of ecological education, we could get a deeper understanding of the subtleties of information transfer. Additionally, we may clear the way for a more tranquil coexistence of Ghana's natural ecosystems and its future stewards.

Human activity is mostly to be blamed for the about 1.0°C rise in global temperature above pre-industrial levels, with a likely range of 0.8°C to 1.2°C. If global warming continues at its current rate, research predicts that it will hit 1.5°C between 2030 and 2052. The rate of rise during the pre-industrial period was claimed to be rising more slowly when compared to the trend for the decade 2006-2015, which was 0.87°C (possibly between 0.75°C and 0.99°C) greater than the average for the decade 1850-1900 (Adopted, 2014; Masson-Delmotte et al., 2021; Steiner & Engdaw, 2022). This circumstance is scary and troubling. All of these will have a disproportionately negative impact on the local populations that depend on agriculture or other agricultural activities for the provision of their basic needs.

2. Literature Review

2.1 Teacher Trainee as an Agent of Biodiversity Conservation

The field of education, particularly at the Teacher Training Institutions, has a complex task in the context of Ghana's efforts to achieve sustainable development and the entire world. There is a substantial knowledge gap regarding the level of instructors' and students' biological diversity literacy, despite the nation's rich ecological diversity and the urgent need for educated environmental stewardship. This information gap weakens the ability to develop environmentally conscious citizens and the incorporation of sustainable practices into educational settings (Adu et al., 2021).

The problem at hand is the incomplete integration of substantial biological diversity literacy in the curricula of teacher training institutes. This flaw prevents educators from properly educating succeeding generations about ecological awareness and responsibility, perpetuating the cycle of subpar environmental education. Furthermore, a poor understanding of biological diversity makes it difficult to combine educational programs with the need to save Ghana's natural resources and cultural heritage, which interferes with the more general goals of sustainable development.

2.2 Biodiversity Conservation and Teacher Education

The successful implementation of innovations like environmental education, particularly biodiversity education, depends largely on pre-service teacher preparation. Recent international research shows that these teacher training programs place an extremely low priority on environmental and biodiversity teaching. The importance of this issue is underscored by the fact that each teacher educator has a significant impact on a sizable number of pupils, who in turn have a significant impact on the larger educational community and the educational experiences of countless children (Brandt et al., 2021; Robles-Moral et al., 2023).

The effectiveness of biodiversity education in education depends on policy, curriculum, staff qualifications, parental involvement, and school climate. Recent research has shown limited understanding of biodiversity among pre-service teachers, particularly at the organism level, and its relation to environmental sustainability. As indicated in research conducted in Poland and Turkey. Another research in Turkey looked at pre-service science teachers' perceptions on biodiversity and how it relates to environmental sustainability. Taking these studies as a whole, it is clear that pre-service teacher education programs must be improved in order to prepare future teachers to address biodiversity concerns in educational contexts (Id Babou et al., 2023). Essentially, pre-service teacher preparation plays a crucial part in preparing future teachers to act as change agents in society, advancing sustainability and biodiversity preservation. To provide future teachers with the required knowledge and abilities to handle biodiversity in the classroom, it is crucial that pre-service teacher education programs give priority to environmental education, particularly biodiversity education (Davis et al., 2010; Lim et al., 2009).

2.3 Educational and Development Theories

2.3.1 Macro Theory of Learning/Education

Education plays a significate role in the development process as shown by the macro theory of leaning by Blossfeld. The theory contend that education betters the fortunes of an individual and the community, and the country in general. Therefore, education could be said to be the main milestone that could provide the necessary ingredient for better development of society and hence, the protection of biodiversity. With the quality education received, the protection of biodiversity is assured.

The macro education theory aims at fulfilling the needs of everyone; the theory provides a depth education where everyone is expected to be included for the benefit of all (Blossfeld, 2023). The term "Macro" signifies the larger proportion of a socioeconomic system where education aims at making a positive change to the larger systems of communities (Blossfeld, 2023; Paldam, 2023). There are two theories under the macro education theory: functionalism and conflict theories.

2.3.2 Functionalism Education Theory

Functionalism education theory shows how education received can provide individuals with the capacity to contribute to better the community. The emphasizes the creation of individuals' ability to improve the fortunes of society, in other words, an individual is empowered not only for his advancement but that of the larger community. This kind of

education aims at changing the status of society by giving back to the same what an individual got through education (Nargiza et al., 2023; Paldam, 2023).

Furthermore, the functionalism education theory aims at producing protective individuals who could have at heart the development concerns of the community (Nargiza et al., 2023; Patoulioti & Nilholm, 2023) Therefore, an education system with a sense of biodiversity protection could achieve and promote biodiversity protection towards sustainable development. This type of holistic education cannot be complete without an emphasis on environmental education, especially biodiversity education.

2.3.3 Conflict Education Theory

The conflict theory sees education as one that brings conflicts to society. The changing nature of education brings about structural changes in society which invokes a rise in injustice and inequality, which could breed violence among individuals in society. Educated individuals are likely to take advantage of the system and gain better socio-economic status, which causes the uneducated to be pushed away (Ferrare & Phillippo, 2023). The conflict theory looks at the other side of education that sees education as the cause of structural change in society due to the distinction between the educated and the uneducated (Ferrare & Phillippo, 2023; Isopahkala-Bouret et al., 2023).

3. Methodology

The students and tutors in this study serve as the main analytical subgroups for the data gathering. A purposive non-probability sampling technique was used to choose a total of 515 students and 46 tutors from the six institutions of education in the eastern region of Ghana with a total population(enrolment) of 10,588 students and 308 Tutors respectively. A same questionnaire survey consisting of both open ended and close ended were given to the sampled population to provide data for analysis for the survey. It was noted that among the 515 students, they were all studying different academic specialties that Ghana Tertiary Education Council (GTEC) had approved in the individual colleges or institutions. The 46 instructors were discovered to be teaching one or two of these approved subjects or courses concurrently at the various institutions. Excel, SPSS, and STATA statistical techniques were used to analyze the data collected. The study was conducted in the eastern region of Ghana. The locations of the study area is as shown below(figure 1). Participants in the survey were asked to rate their overall degree of knowledge on biodiversity genetic, biodiversity species, and ecosystem diversity using a Likert scale. The subsequent data analysis was performed using Microsoft Excel, SPSS, and STATA.

Figure 1: **COUNTRY AND AREA OF RESEARCH: GHANA – EASTERN REGION**
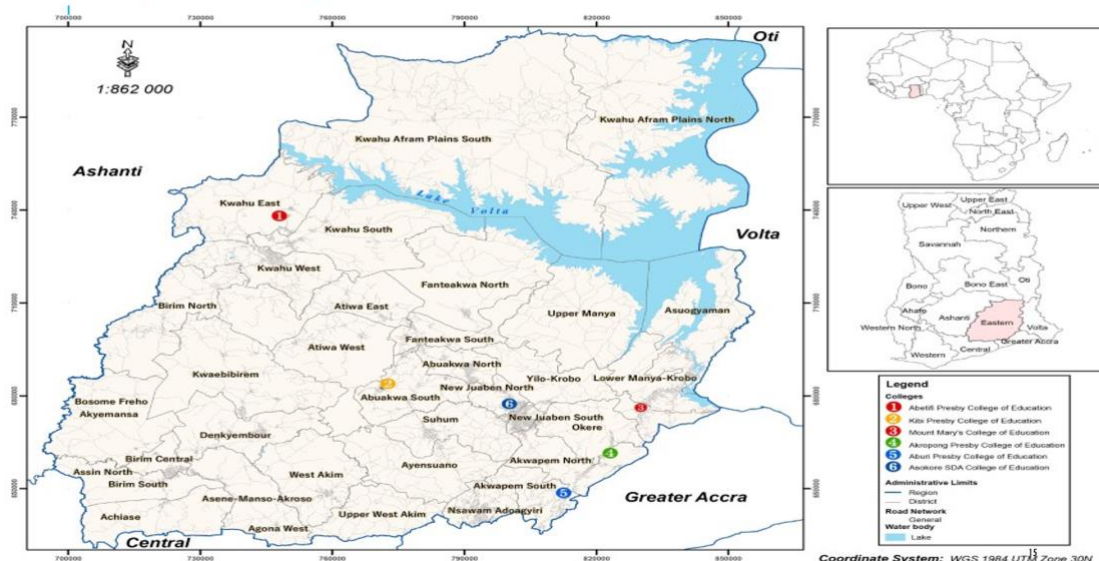
Author's own construct – 2023

3.1 Linear Probability Model: Equation and Definition of Variables

To ascertain the elements that shape the level of perceived biological diversity knowledge within the selected cluster, we employed the Linear Probability Model (LPM). The variables used in the Ordinary Least Square or the Linear Probability Model specification are perceived Biodiversity knowledge as the dependent variable and status, age, gender, level of formal education, marital status, mother tongue, Ghanaian language studied, religious denomination, ethnicity, and income as covariates as shown in Table 1. The dependent variables take the value of 1 if the pre-service teachers and teacher trainee tutors meet the acceptable score of perceived biodiversity knowledge and 0 otherwise. The OLS in the LMP equation used is as follows:

$$y_i = \beta_0 + \beta_1 x_i + \cdots + \beta_k X_i + u_i \qquad (1)$$

where y_i is a dummy variable equal to 1 if pre-service teachers and teacher trainee tutors i meet the acceptable score of perceived biodiversity knowledge and 0 otherwise, while u_i is the error term.

3.2 The Cumulative Percentage of the Perceived Level of Biological Diversity Knowledge Performance

According to Al Rubaish (2010), when conducting assessment studies and experience surveys, the most suitable and practical method for handling ordinal scale data is the cumulative percentage (Al Rubaish et al., 2011). also advocated for the use of the cumulative percentage based on their deductions from assessment studies aimed at advancing academic programs. They drew inspiration from the practices of the National Commission for Assessment and Academic Accreditation (NCAAA) and well-regarded institutions worldwide. The cumulative percentage is a straightforward and easily comprehensible measure, making it particularly accessible to non-statisticians. It serves to quantify changes in performance over time and helps pinpoint areas where improvement is required (Al-Rubaish et al., 2011; Al Rubaish et al., 2011). In summary, the endorsement of the cumulative percentage as a tool for handling ordinal scale data is supported by Al Rubaish and his

collaborators, and it has been embraced in various assessment studies and experience surveys in the domains of education and environmental awareness (Al Rubaish et al., 2011; Campbell, 2021).

A variety of parametric and non-parametric metrics, such as the arithmetic mean, median, first quartile, and cumulative percentage, have been used as analytical tools in the evaluation in order to create a credible scoring system. But when the linear probability model was used for analysis, the "good" and "excellent" scores were combined and given the designation "acceptable score."

4. Results

4.1 Demographic Characteristics

The respondence completed a total of 560 survey questionnaires, 515 were from the students while 45 were completed by the tutors. Out of this total number, 63% (354) were females whiles 37.2% (206), were males. In all, 92.00% (517) were below age 30, 3.4% (19) were between the ages of 31 to 40, whiles 3.0% were also between the ages of 41 and 50, and the rest 1.6% (9) were above age 50. This suggests that most of the respondents are students, the actual target for the study. Since they are likely to work or impact knowledge to future generations for a long time, it is reasonable to assume that they are aware of how their labor affects the environment and biodiversity sustainability for sustainable development and vice versa. 531 representing 94.8% had SSCE/WASSCE certificates, 28 representing 5.0% had a master's degree, and 1 representing 0.2% had attained Ph.D. It is anticipated that respondents' perceived awareness of environmental concerns would be significantly influenced by their educational background. Most respondents (82.3%) are not married, with 84 (15.0%) being married. Akan, the mother tongue, is claimed by 72.14% of respondents. Ewe speakers make up 9.8% of the population, while Ga-Dangme speakers are present in 7.9%. Dagbani, Gonja, Wali/Dagaare, and Kasem have lower percentages, indicating lesser prevalence. 3.39% of respondents are classified as "Others," suggesting the presence of many minority languages. Most respondents are not married.

The study reveals that Akuapem Twi is the most frequently learned Ghanaian language among respondents, with 50.18% having studied it. Asante Twi is the second most learned language, followed by English at 30.54%. Ewe is the third most frequently learned language, with 6.96% of respondents studying it. Less frequently taught languages include Fanti, Ga, Dangme, Kasem, Nzema, and Dagbani. The data suggests that people from diverse linguistic backgrounds may desire to learn multiple Ghanaian languages for various reasons, including academic needs or personal curiosity. This information can help in educational planning and language preservation activities.

Table 1: General Environmental Knowledge of Teacher Trainees/Tutors Stratified by Demographic Characteristics

Parameter	Frequency	Percentage
Total respondent	**560**	**100**
Status: Pre-service teachers	515	91.96
Teacher trainee tutors	45	8.04
Age: Below 30	517	92.00
31-40	19	3.4
41-50	17	3.0
Above 50	9	1.6
Gender: Male	206	37.2
Female	354	63.2
Level of education: SSCE/WASSCE	531	94,8
Masters	28	5.0
Ph.D.	1	0.2
Marital Status: Single	461	82.3
Married	84	15.0
Divorced	11	2.0
Widow/Widower	4	0.7
Mother tongue: Akan (Akuapem, Asante, Fanti, Nzema)	404	72.14
Ewe	55	9.8
Ga-Dangme (Ga, Krobo)	44	7.9
Dagbani	4	0.71
Gonja	6	1.07
Wali/Dagaare	8	1.43
Kasem	14	2.5
Others	19	3.39
Ghanaian language studied at school:		
Akuapem Twi	281	50.18
Asante Twi	171	30.54
Fanti	27	4.825
Nzema	4	0.71
Ewe	39	6.96
Ga	11	1.96
Dangme	21	3.75
Dagbani	3	0.54
Kasem	3	0.54

Source: Authors' own construct (2023)

4.2 Independence Sampled T-test of Teacher Trainees and Tutors

An independent samples t-test was carried out as part of the statistical analysis to compare the means of two (2) distinct groups, namely male and female on ten environmental dimensions on which three were on biodiversity issues (Biodiversity species, biodiversity genetics and biodiversity ecosystems) to determine whether there is statistical evidence that the associated population means are significantly different. If the result of the observed t-test is greater than the critical values, the null hypothesis (H_0), which states that there is no significant difference between males and females, will be rejected. The outcomes of the independent T-tests for the two groups are shown in Table 2.

A. On biodiversity genetics, 354 female pre-service teachers and tutors, with an average score of 2.87 (with a standard deviation of 1.260). The 206 male participants, on the other hand, had a higher average score of 2.24 (with a standard deviation of 1.007). The findings revealed a statistically significant difference in perceptions across genders ($F_{(560)} = 16.368$, $p = 0.000$), with Levene's test indicating equal variances. The independent samples t-test revealed that men had a statistically higher comprehension of biodiversity genetics than women ($t_{(560)} = 6.103$, $p = 0.000$). Furthermore, Levene's test for variance equality ($F_{(560)} = 16.368$, $p = 0.000$) indicated that the assumption was correct. The same interpretation was given to the others.

B. The study found a significant difference in awareness of biodiversity species between males and females, with males scoring higher on average (M=2.08). The t-test showed a t-value of 4.489 and a Cohen's D effect size of 0.41, indicating that males have a better understanding of this topic compared to females. However, the practical significance of this difference may be limited due to the relatively small effect size (Cohen's D = 0.41). Levene's test for equality of variances also showed a significant difference in awareness between the two groups, violating the assumption of equal variances. The study concludes that while the statistically significant difference is statistically significant, the practical significance of this difference is relatively modest.

C. The study found no significant difference in knowledge of ecosystem diversity between male and female groups, with an average score of 1.92. The Levene's Test and T-test for independent samples also showed no significant difference, indicating no practical significance. Cohen's D = 0.32 effect size suggests that there is limited practical significance associated with this difference. A similar interpretation is given to all the other dimensions.

Table 2: Independent Sample T-test of Teacher Trainees and Tutors

Dimension	Levene's Test F	Sig.	Gender	Mean	Standard Deviation	P-value	T	Cohen D
Biodiversity Genetics	16.368	0.000	Female	2.87	1.260	.000	6.103	0.35
			Male	2.24	1.007		6.469	
Biodiversity Species	48.209	0.000	Female	2.63	1.506	.000	4.489	0.41
			Male	2.08	1.231		4.732	
Ecosystem Diversity	70.980	0.000	Female	2.55	1.579	.000	4.938	0.32
			Male	1.92	1.183		5.320	
Water Pollution	0.079	0.779	Female	3.17	1.285	.0568	0.572	0.52
			Male	3.10	1.301		0.570	
Air Pollution	73.667	0.000	Female	2.64	1.580	.000	5.406	0.37
			Male	1.95	1.192		5.814	
Biodiversity	0.245	0.621	Female	3.06	1.259	.001	3.378	0.61
			Male	2.69	1.234		3.396	
Sustainability	0.912	0.340	Female	2.92	1.300	.001	3.158	0.38
			Male	2.57	1.211		3.218	
Watershed management	0.276	0.599	Female	3.01	1.099	.265	1.095	0.61
			Male	2.90	1.022		1.116	
Conservation Of natural resources	2.603	0.107	Female	2.84	1.351	.000	5.163	0.42
			Male	2.24	1.271		5.247	
Wetland	0.235	0.628	Female	3.21	1.379	.704	0.380	0.31
			Male	3.17	1.449		0.375	

Source: Author's own from fieldwork (2023)
Level of significance p<0.05

4.3 Perceived Biodiversity Knowledge Performance as a Cumulative Percentage

Using a five-point Likert scale with 1= strongly agree, 2= agree, 3= neutral, 4= disagree, and 5= strongly disagree, the 515 teacher trainees and the 45 teacher trainee tutors were asked to assess their own level of familiarity or knowledge on the issue of biodiversity. The survey reviewed that Pre-service teacher, comprising 66.99% of the population, are classified as "Improvement Required (Poor)," while 19.81% are "Acceptable (Good)," and 13.20% are "High Quality (Excellent). Teacher trainee tutors, on the other hand, are classified as 26.67% - Improvement Required (Poor), 51.11% - Acceptable (Good), and 22.22% - High Quality (Excellent) category respectively (See Table 3). This is a bad recipe for the achievement of the SDG 14 and 15 and its subsequent effects on sustainability development of Ghana. This is because, for the ecological and sustainable utilization of biodiversity, education has a crucial role to play in ensuring the protection and sustainable utilization of biodiversity. The knowledge and deeds of present and future generations will determine the fate of biodiversity in the event of sustainable development. In addition to this, a survey by (Solveig Marie, 2023), reviewed that acquiring knowledge in educational program by students in Ngorongoro district, Tanzania on Biodiversity and ecosystem systems changed student's perceptions on biodiversity conservation and ecosystem services as indicated by the pre-test and the post-test results findings reported by the researchers. Therefore, this study also supports the positive effect of biodiversity knowledge for biodiversity sustainability for sustainable development through education.

Table 3: Assessment of the Level of Biological Diversity Literacy, Interest, and Skills of Teachers Trainees/Tutors Stratified by Four (4) Demographic Characteristics

Parameter	Improvement Required (Poor)	Acceptable (Good)	High Quality (Excellent)
Status: Pre-service teachers	345(66.99)	102(19.81)	68(13.20)
Teacher trainee tutors	12(26.67)	23(51.11)	10(22.22)
Age: Below 30	303(63.79)	114(24.00)	58(12.21)
31-40	11(57.89)	3(15.79)	5(26.32)
41-50	7(43.75)	1(6.25)	8(50.00)
Above 50	4(57.14)	11(4.29)	22(8.57)
Gender: Male	100(48.54)	53(25.73)	53(25.73)
Female	225(63.56)	66(18.64)	63(17.80)
Level of education: SSCE/WASSCE	303(57.06)	116(21.85)	112(21.09)
Masters	22(41.51)	28(52.83)	3(5.66)
Ph.D.	0(0)	0(0)	1(100)

Source: Author's own from fieldwork (2023)

4.4 Linear Probability Model (LPM)

Table 4 shows the results from the Ordinary Least Square (OLS) in the Linear Probability Model (LPM) estimates of perceived environmental knowledge of pre-service teachers and teacher trainee tutor. Among the pre-service teachers and teacher trainee tutor, mother tongue, marital status, religious denomination and income are unrelated to their perceived environmental knowledge score. This means that mother tongue, marital status, religious denomination, and income are not important factors in predicting the household head's perceived environmental knowledge score. The results indicate that being a female increases the probability of having perceived environmental knowledge by 10 percentage points,

controlling other demographic characteristics. Also, being educated increases the probability of having perceived environmental knowledge by 5% points, controlling other factors. Age was found to be significant at a 1% significant level. The coefficient of the Ghanaian language studied at school was found to be significant at 10% significant level.

Table 4: Linear Probability Model (LPM) Estimates of Perceived Environmental Knowledge Pre-service Teachers and Teacher Trainee Tutor

Variables	Perceived Environmental Knowledge Score
Age	**0.201***
	(0.154)
Female	**0.1003****
	(0.138)
Education	**0.0555***
	(0.115)
Mother tongue	0.000850
	(0.00720)
Marital Status	0.108
	(0.101)
Religious Denomination	0.0221
	(0.00245)
Ghanaian language studied at school	**0.0201***
	(0.0288)
Income	-0.0001
	(0.00137)
Constant	0.7118**
	(0.2001)
Observations	560
R-squared	0.4032

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: Created by the Author from fieldwork, 2023

5. Discussion

The study reveals that demographic variables such as mother tongue, marital status, religious denomination, and income do not significantly influence the perceived environmental knowledge of pre-service teachers and teacher trainee tutors. However, gender and education play more significant roles in shaping environmental knowledge, with females showing a 10 percentage point increase in perceived environmental knowledge. This suggests that gender-specific patterns in environmental awareness may be present, and targeted approaches to environmental education could benefit both male and female individuals.

The positive correlation between education and perceived environmental knowledge emphasizes the importance of formal education in shaping individuals' awareness and understanding of environmental issues. Age also plays a significant role in predicting

perceived environmental knowledge, suggesting generational differences in environmental awareness. The Ghanaian language studied at school has a modest impact on perceived environmental knowledge, prompting further exploration into the role of language in environmental education.

The study also highlights the need for tailored educational strategies to enhance environmental awareness among diverse populations. However, the current situation in education, particularly for pre-service teachers, raises questions about the effectiveness of the current system in fostering knowledge and abilities needed to conserve biodiversity. Most pre-service teachers' assessments of their performance are classified as "Improvement Required (Poor)," raising concerns about the sustainability of terrestrial and marine ecosystems.

The study concludes that education is essential to the ecological and sustainable use of biodiversity, and immediate action is needed to improve the educational quality of this group. Cooperation between legislators, educational institutions, and the community is crucial to change Ghana's educational system and prepare the country for a more sustainable and ecologically aware future. The findings underscore the interconnectedness of education, biodiversity awareness, and sustainable development, emphasizing the need for immediate action to enhance the effectiveness of the educational system in fostering responsible biodiversity management and environmental consciousness.

6. Conclusion

This study emphasizes the importance of education in increasing biodiversity awareness and supporting its sustainable management. To secure a better future for Ghana's biodiversity, several actions can be implemented, including enhancing the curriculum, providing teacher training, promoting public awareness, and integrating biology, ecology, environmental science, and social sciences into biodiversity education.

Investing in teacher education, curriculum reform, and public awareness initiatives is crucial for Ghana to secure its ecological heritage, which is essential for sustainable development and achieving SDGs 14 and 15. Teacher trainees, when motivated, can enhance their knowledge on biodiversity issues, serving as a foundational understanding of the environment and its natural interactions. This indirectly makes them willing to learn more to become an environmentally conscious generation.

The study also advocates for differentiation in environmental education at every educational level to achieve specific goals at every educational level. By focusing on biodiversity education and awareness, the study contributes to the body of previous knowledge by highlighting the potential benefits of decreasing human-related activities that endanger genetic and species functioning and sustainability. This could improve ecosystem services and well-being, increase the chances of a sustainable future for future generations, and impact future clients, such as students.

In conclusion, investing in teacher education, curriculum reform, and public awareness initiatives is essential for Ghana's sustainable future. By addressing biodiversity issues and raising environmentally conscious generations, Ghana can work towards achieving its Sustainable Development Goals (SDGs 14 and 15).

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Employee Well-Being in Higher Education – 'GNH of Business' in Hungarian

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Abstract

The quantification of organisational happiness and wellbeing is a major challenge, not only in for-profit organisations, but also in educational institutions. A happy teacher is more motivated and committed to his/her teaching and learning activities. In the literature, research findings are mainly concerned with the wellbeing of students and learners, while the study of teachers remains in the background. The aim of the present research is to use a less known and less applied measurement method to identify the most important characteristics that most influence teachers' and professors' feelings of wellbeing. The study was carried out among institutions of economic higher education in a small country in Central and Eastern Europe. We sought a solution that could provide a holistic picture of the satisfaction and sense of wellbeing of teachers and professors working in the institution. The quantitative study involved 239 faculty members and 14 managers who completed questionnaires according to the 'GNH of Business' methodology developed in Bhutan. Following the logic of the method, 29 indicators were used to rate wellbeing based on individual satisfaction in 5 domains, followed by an organisational happiness index. The results show that organizational happiness is most influenced by non-monetary benefits in the area of quality of life, and trust is the most influencing factor within the psychological wellbeing indicator. On the side of organizational conditions, it is mainly managerial thinking and decision making that can raise the value of the organizational happiness index through the indicators of cultural and ecological diversity.

Keywords: Higher Education, Well-Being, GNH of Business, Trust

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Introduction

In recent decades, GDP has come under increasing criticism as a measure of the living standards of a country's population. Most of these criticisms have pointed out that many of the factors that characterise human well-being cannot be described by GDP indicators. This fact has prompted a reflection that focuses on how to better capture the so-called soft elements in addition to quantifiable factors. The result of this research is a set of indicators that more or less regularly measure the happiness and satisfaction of people and societies in different parts of the world. All of these indicators have also come in for a lot of criticism. These problems have led to the need to identify parameters that holistically express the quality of human well-being.

In addition to the research and recommendations of the past decades, there is a measurement system based on the Buddhist religion in Asian countries, known as GNH (Gross National Happiness). The GNH takes a holistic approach to measuring people's happiness and well-being. In our research, we aimed to find out whether the GNH logic can be applied in domestic contexts and what its version developed for organisational/business contexts shows. In a first phase, we tested the GNH in higher education in economics, targeting employees and managers of all higher education institutions involved in business education. The research used questionnaires developed by Bhutanese translated into English. Our research questions were:

> Q1: Is the original method developed for measuring GNH adaptable to domestic conditions without changes?
> Q2: What conclusion can be drawn from the results of the areas covered with regard to the strengths and weaknesses of higher education in business?

Theoretical Background

In order to move from GDP to the applicability of the GNH logic, it is necessary to go back to basics, by which I mean a brief overview of the shortcomings of GDP, followed by an outline of the basic idea of Buddhist economics as a prerequisite for the design of a system for measuring happiness. Since our study was conducted in the context of domestic higher education, we will give a brief overview of the current situation.

Gaps in GDP

GDP as a measure of the quality of social life has come under increasing criticism since the 1950s. The arguments put forward are summarised below (van den Bergh & Antal, 2014):

- GDP is not a measure of the benefits of market-related economic activities, but merely an estimate of costs.
- The positive correlation between GDP growth and perceived progress does not imply that GDP is an ideal measure of social welfare.
- The increase in GDP per capita and the associated increase in material consumption cannot compensate for the lack of basic needs.
- Between 1950 and 1970, GDP grew steadily in most Western countries, but social welfare stagnated and sometimes even turned negative.
- A clear shortcoming of GDP is that it does not capture the distribution of income, but only average income.
- GDP does not cover informal economic activities such as voluntary work, childcare or growing crops for own use.

- It is considered a serious shortcoming that the damage caused by pollution is not covered by GDP (van den Bergh & Antal, 2014).

In order to overcome the problems mentioned above, the development of the indicators already mentioned in the introduction has been prioritised.

Buddhist Economics

In his book "The Small is Beautiful" (2014), Schumacher contrasts his view of the work of modern and Buddhist economics.

According to the logic of modern economics, success is nothing more than the accumulation of wealth. The Buddhist view is the exact opposite, as it puts the human being first. Payutto (1994), in the work of a Buddhist monk, demonstrated the importance of the principles of moderation, contentment and non-dissipation, which are closely linked to economics and are really far removed from the modern consumption-oriented economy. Daniels (2007) emphasises sustainability, which is in line with the teachings of Buddhism, as moderation is considered important. According to Zsolnai (2011), the strategy of the Buddhist economy is built around the following 5 main components: minimizing suffering, simplifying desires, practicing non-discipline, sincere care and generosity.

GNH's calculation method allows for the assessment of both objective and subjective parameters, and its thinking is based on happiness as the result of the sum of measurable elements.

The Happiness

Aristotle used the term "eudaimonia", which is often mistranslated as happiness. In contrast to happiness, eudaimonia did not mean a variable state, but 'happiness' for the whole of life, the successful conduct of life, the good life (Warburton, 2005).

The three related concepts used in the study are satisfaction, happiness and well-being. All three concepts are difficult to define and there is no agreed definition for any of them, most of them being defined in terms of each other. Based on the literature approaches reviewed, their meanings are used in our study as follows.

Three levels of happiness can be identified. The first is pleasure, "hedonistic happiness", the level of *satisfaction. The* second is *well-being*, which refers to engagement and the release of feelings while completing a task or goal. This high level of experience is referred to as "flow" (Csikszentmihalyi, 2000). The third level corresponds to Aristotle's "eudemonia" (Irwin, 2019). This level of *happiness* is characterised by inner harmony, purpose in life, personal growth, constructive relationships, autonomy, and a general sense of psychological, physical and natural balance (Kopp & Pikó, 2006).

A GNH

The GNH indicator developed and used in the Kingdom of Bhutan is a good response to the criticisms of the soft indicators and a way to overcome their shortcomings. The indicator was first mentioned in the 1970s by the fourth King of Bhutan, Jigme Singye Wangchuck. According to him, the aim of a government should not be to increase the value of GDP, but

rather to increase the happiness of the country. The GNH takes a holistic approach to measuring people's happiness and well-being. It is composed of four pillars (Good Governance, Strengthening and Promoting Culture, Environment, Sustainable and Equitable Social and Economic Development), which can be further broken down into 9 areas. These are:

- Psychological well-being
- Health
- Time use
- Education
- Cultural diversity and resilience
- Community vitality
- Good governance
- Ecological diversity and resilience
- Quality of life

The 9 domains of the GNH are further divided into 33 measurable parameters, which are rated through standard questionnaire questions. Using this method, the contribution to overall national happiness can be identified at 3 levels:

- political/governmental, municipal,
- business and
- at individual level.

The original logic was developed at the societal level, but in recent years a way of calculating this at the organisational/business level has been developed and is what we have aimed to do in our research (Zangmo, et al, 2017). In both cases, we arrive at the calculation of the happiness index through the measurement of individual human happiness.

The GNH of Business (GNH of Business)

The business application was developed based on the 9 domains of the GNH, which were divided into 2 groups according to the assessment domains (see Figure 1): employee happiness and organizational conditions of happiness (Zangmo, et al, 2017).
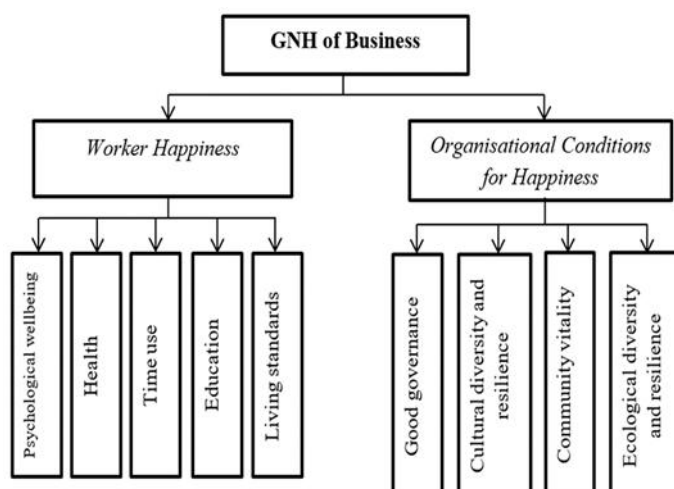
Source: Zangmo, et al., 2017

Figure 1. GNH's business framework

Employee happiness represents employee satisfaction and happiness in each area of GNH. Through the organisational conditions of happiness, we obtain information about organisational behaviour and how this contributes to employee well-being and happiness (Zangmo, et al, 2017). All the areas presented here can be further broken down into indicators, which will be measured through questionnaire research.

No research has been found on the application of GNH to business (given its novelty and experimental methodology). Thus, the research we conducted can be considered as a pilot study.

Briefly About Higher Education in Hungary

Over the past 10 years, the situation in higher education has changed radically. The priorities of tasks, the means made available (funding), the legal conditions, the way in which the maintenance authorities manage and the instruments they use have all changed. The specialised structure has changed and all the institutions have become universities.

The changing expectations of teachers, the changing quality of the student population, and the struggle for talent are new challenges that are not attractive to young graduate students. Low salaries, lack of appreciation, increasing workloads, restrictions on research freedom and the exodus of young people are causing serious difficulties for university leaders. Happiness research on higher education is rare, and satisfaction surveys focus mainly on students. International studies have also mostly investigated student satisfaction. In many respects, the results of research on teacher satisfaction raise similar issues to those of the national studies.

In our view, the development of an appropriate measurement logic can provide a broader framework for the value transfer role of higher education. This framework is the measurement of organisational happiness, for the quantification of which we use the GNH philosophy presented above.

Material and Method

The research used the Hungarian version of the original questionnaires developed in Bhutan (GNH of Business), retaining all domains, indicators and questions for professional fidelity. In a few cases, corrections were necessary due to Western terminology, clarity or professional considerations (working hours [40 hours in our case instead of the original 48], wages [expressed in HUF instead of Bhutanese currency], spirituality [meditation instead of contemplation], scholarships [to raise opportunities in the home country]). Overall, the results of the questionnaire survey were calculated at the organisational level and can be interpreted as an indicator of organisational happiness. As individuals were surveyed, the calculations are first valid for individuals (employee happiness index) and then, based on the calculation method, the results can be interpreted at organisational level using the data from the questionnaires (rating the provision of organisational conditions) completed by managers.

Calculation of GNH at Business Level

The overall analysis methodology consists of three steps:

1. Defining and applying a compliance threshold (Employee happiness was assessed using 29 indicators, measuring 114 variables across five areas of the GNH.) Similarly, 20 indicators of organisational conditions with 102 variable measures were rated in 4 GNH domains. This step provides an opportunity to separate disadvantaged (unhappy) and non-disadvantaged (happy) workers based on the compliance threshold. Similarly, the adequacy threshold values in the areas of organisational conditions were examined for all 20 indicators. The summary of indicators and the application of adequacy thresholds are also used to assess organisational conditions and employee happiness.

2. Application of weights. (Workers scored on the basis of the compliance threshold - 0 and 1 values - are multiplied by the weights.) Two weights were used, the area weight and the indicator weight. The area weight was derived by dividing the total possible score (100) by employee happiness and organizational conditions. Thus, the weight for each of the areas used to assess employees is 20 (100/5), where 5 is the number of areas involved. In the assessment of organisational happiness, each of the four categories used to assess organisational conditions was given a weight of 25 (100/4), where 4 is the number of domains involved.

3. Summation and scoring (The value of the two previously calculated components was calculated by simple summation.) The value of the organisational happiness index is the weighted sum of the two components with equal proportions.

The aim of ensuring employee happiness is to achieve and maintain employee well-being. Employee happiness is also associated with improved productivity and investors nowadays see well-being and happiness as leading performance indicators.

For employee happiness, each employee's score on indicator i can be calculated using formula (1) below.

To calculate the business value, the employee happiness score is obtained by summing the weighted indicator scores for all employees and dividing by the number of all employees in the study (n).

A similar method is used to calculate organisational conditions (2), except that the calculation of average scores is not required, as indicators can usually be rated by a manager.

$$Whap = \sum_{i=1}^{n} wi\ xi \tag{1}$$
$$O =\ _{hap} \sum_{i=1}^{n} wi\ xi \tag{2}$$

where,
Ohap - the organisational happiness score
Whap - employee happiness score
n - number of indicators
i - the i-th indicator
wi - *weight* of the i-th indicator
xi - value of the i-th indicator

The business happiness index is calculated as a weighted sum of employee happiness and organisational conditions. A 50:50% ratio is calculated for both components. The correlation used to calculate the business value:

$$H = 0.5 \times W_{hap} + (0.5 \times O\ )_{hap} \tag{3}$$

Authentication/Certification

Based on the calculated values, the business is classified as shown in Table 1.

Table 1. Categories and indicators of organisational happiness

Score	Certification	Comment
≤ 40%	below average	requires immediate intervention
40-59.9%	average	intervention is needed in certain areas
60-79,9%	good	improving performance in certain border areas
Above 80%	very good	GNH certificate, both values must reach 60%

Source: Zangmo, Wangdi, & Phuntsho (2018) *GNH Certification,* Centre for Bhutan Studies & GNH

An overview of each area and an understanding of their impact on business operations will help you to formulate a development strategy, assess risk and plan for opportunities.

Conduct Research

The Sample

The survey was carried out in 2021-22 in the faculties of economics and in institutions of higher education in Hungary (61 faculties/institutes). The questionnaires were sent to the deans of the educational institutions online, with the request to forward them to the employees and to be filled in by them. The response rate was very low and 239 employee questionnaires (around 7%) and 14 manager questionnaires (around 23%) were collected.

Employee Happiness Survey

The calculation followed the same logic as the 3 steps described above. Then, the percentage of the compliance thresholds in each area was determined, i.e. the extent to which the employees in the study met the predefined compliance threshold. The weighted values for each area can be calculated separately and summed to give the employee happiness score in %. The 29 indicators of the questionnaire questions, the weights and the calculated values are shown in Table 2 (n=239).

Table 2. GNH areas, indicators and their weights with calculated values

Weight of area		Weighted value
Psychological well-being	20%	*7.88*
Health	20%	*7.12*
Time use	20%	*9.17*
Education	20%	*6.95*
Quality of life	20%	*1.56*
Employee happiness ∑		*32.68*

Source: own editing

The results of the table show relatively low but balanced scores in each area, with the exception of the area of living standards, where the rating is significantly lower than in the other areas.

Measuring Organisational Conditions

The picture of organisational happiness conditions reflects business behaviour and phenomena related to the social well-being of employees. The compliance thresholds are based on standards previously developed in Bhutan (Ura et al., 2015).

The areas and indicators of organisational conditions, their weights and the results of the survey are summarised in Table 3 (n=14).

Table 3. Weighted values of organisational conditions

Category	Category weight	Weighted value
Good governance	25%	*21.72*
Cultural diversity	25%	*11.89*
Community vitality	25%	*16.93*
Ecological diversity	25%	*7.83*
Organisational conditions for happiness $\sum$		*58.37*

Source: own editing

The rating for organisational conditions is significantly higher, almost double (58.37%) the score for employee happiness.

Based on the aggregated results, the happiness index is representative of the economic education in higher education in Hungary, with a weighting of 50-50%:

$$\textbf{H = 0.5 x 32.68 + 0.5 x 58.37 = 16.34 + 29.19 = 45.53\%} \quad \textbf{(4)}$$

The score obtained is close to the lower end of the average category, as shown in the evaluation Table 4, which means that intervention is needed in some areas. The critical areas can be seen from the aggregate area scores, but a deeper analysis of the differences within areas reveals further gaps.

Table 4. Result value category

Score	Certification	Comment
$\leq$ 40%	below average	requires immediate intervention
40-59.9%	average	intervention is needed in certain areas
60-79,9%	good	improving performance in certain border areas
Above 80%	very good	GNH certificate, both values must reach 60%

Source: own editing

Discussion

Using the Bhutanese measurement system, it was possible to quantify the value of the happiness index in 9 domains. The results of the research provide a starting point for assessing how colleagues in Hungarian higher education in economics feel, how satisfied and happy they are at work, while working, and to what extent the conditions provided by the workplace, management decisions and measures contribute to this.

Q1:
With the exception of some minimal wording (for reasons of clarity or technical considerations) or corrections to the measurement level, the indicators used in the questionnaires are suitable for measurement and rating under domestic conditions. *We consider this to be the most important result of the research, which confirms that the original objective has been met.*

Q2:
The analysis suggests that each of the employment areas needs more thought and attention, as they account for approximately one third of the 20% weights. There are small variations, but almost equal proportions of deficiencies, with the exception of one area, which is rated *'Quality of Life'*. Here they scored very low, which has long been a neuralgic point in higher education.

Indicators that show problems that can be linked to pay, other benefits, recognition. The shortcomings in the area of *'Psychological well-being'* also point to internationally confirmed problems. Overall job satisfaction shows mixed results worldwide, but employees reported higher levels of satisfaction with working conditions and facilities in the domestic context. Problems related to negative/positive emotions at work (anger, sadness, frustration, disappointment, frustration/forgiveness, pride, joy) are difficult to compare with previous research, as little information on this was found in the literature on higher education. One indicator of positive emotions was examined in an international comparative study of happiness in three countries, the results of which show that there is a downward trend in positive emotions due to increasing stress loads (Mark & Smith, 2012). The results of the present study show the existence of trust as a positive. Positive perceptions of organisational trust enhance employee performance, cooperation and the successful functioning of the organisation as a whole, indicating the presence of an ethical environment and employee engagement. As mentioned in the theoretical chapter, these soft factors are of particular importance in determining the final outcome. This is confirmed by another international study which found that organisational commitment and increased productivity are related to happiness (Dehaghi, 2012). In the area of *'Health,'* stress is the main cause of unhappiness - which is related to the negative emotions reported in the previous area. In the area of *'Time use',* unhappiness is felt in the case of work schedules (often due to unpredictable and unusual tasks to be performed at unusual times). Flexible working hours is rated positively in the teaching circle, but the ratings of the non-teaching circle do not indicate clear satisfaction. In the area of *'Training,'* the opportunities for development and training were rated very low, which in the light of the emphasis on staff's need to learn is a positive factor, but the lack of opportunities and funding for them is detrimental to the feeling of happiness. At the same time, scholarship opportunities were rated extremely highly.

In terms of organisational conditions, it is even more difficult to make comparisons with previous research because of the lack of studies. In our own research, the fact that the highest

scores were given in the area of "Good Governance" should be seen as a very positive fact. This is basically the result of the alignment of employment, workplace policies and regulations, turnover and income levels. The results of our research show that women and the younger generation are more dissatisfied, have less attention, fewer opportunities for advancement and leadership, and feel underpaid, which can be a major contributor to quitting.

The "Community Vitality" area also scored quite high, with community giving rated as the weakest indicator. Employees rarely volunteer, with the exception of activities related to promoting education. The two areas significantly under-scored are "Cultural diversity" and "Ecological diversity." The gaps in both areas are related to indicators on donations, promotion of national and cultural values and volunteering. In addition, there are serious problems in the area of the environment, insufficient attention to the release of harmful substances and their management, and shortcomings in donations/support in this area are also highlighted.

Conclusions

The research objective has been achieved, proving that the Bhutanese logic, the calculation method based on the developed value measurement questionnaire, can be well adapted to the domestic conditions and provides informative results that can be immediately used in everyday decisions for all interested parties, both professional and non-professional. In the research, we surveyed employees working in the economics faculties of Hungarian higher education institutions, aiming to identify the strengths and weaknesses of this segment of higher education, which can be used to improve employee happiness and its organisational conditions, and as a result to raise the quality of education and student satisfaction. In addition to the overall picture, it is also possible to compare individual institutions, if required, and by comparing the overall picture, managers of individual institutions can obtain immediately useful information. This will allow the development strategy to be formulated, risks to be assessed and measures to take advantage of opportunities to be planned more accurately.

The results confirmed a long-standing finding that there are serious gaps in higher education in terms of salaries, benefits and other recognition, and that there are serious gaps in the attention paid to voluntary activity outside education and to environmental protection. In Hungarian higher education institutions, insufficient attention is paid to issues such as stress and skills development. The results show that managers fail to recognise problems such as the pay gap between senior lecturers and newcomers, the gender pay and recognition gap, the chances of getting into management positions, and the need to empower young people to reduce the risk of losing academic talent. There is evidence of a significant relationship between organisational commitment and happiness, especially between happiness, effectiveness and organisational commitment (Dehaghi, 2012).

A limitation of the research is that, while all institutions in the field of economics launch questionnaire surveys, increasingly relying on the responses and supportive behaviour of staff from peer institutions, the helpfulness of managers (in forwarding questionnaires and motivating staff) varied widely, but in many cases could not be explicitly assessed as supportive. Thus, the responses are not representative, but the results obtained give a realistic picture of the institutions surveyed. This is confirmed by the almost identical ratings given by respondents from each institution in the areas covered.

Our future research will aim to apply the method to the business sector, which will allow us to determine the level of happiness of domestic businesses, thus allowing for comparisons between the organisations studied.

Acknowledgements

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Mind the Gap: Enhancing AI and STEM Accessibility in Rural Pennsylvania

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Abstract

As AI-powered tools like ChatGPT become more prevalent in various industries, it is important to develop a deeper understanding of how they work and their potential impact. There are many misconceptions about AI--often shaped by news and media, both positive and negative, which can lead to overreliance or mistrust. It is important to approach AI tools critically and understand their limitations and potential biases. As we prepare students for a future where AI plays a crucial role, it is vital for educators and policymakers to have a deep understanding of the implications and structures driving this technology. Additionally, academic understanding of computer science and AI is not always accessible to everyone, particularly those in rural areas. Research shows that rural students continue to be disproportionately underrepresented in STEM (Harris & Hodges, 2018). Persistent barriers to participation in STEM (i.e., access to resources, funding teachers, local implications & relevancy, outreach disparities) must be addressed to ensure equitable access to growing and in-demand jobs (Yettick et. al., 2014). Additional research is needed to understand how to address the interwoven and unique challenges that rural communities face. To ensure that we are preparing our future generations for success, we must work to increase accessibility and understanding of AI across all communities. This presentation discusses the outcomes of our community ChatGPT and AI workshop, teacher-centered AI educational materials, and student-facing classroom materials.

Keywords: Rural STEM, Rural Development, Collective Impact, Community Engagement, ChatGPT, Inclusive STEM Education, Social Constructionist, Barriers to STEM Participation, Appalachia, Natural Language Processing

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Introduction

Research shows that rural students are significantly underrepresented in Science, Technology, Engineering & Mathematics (STEM) (Harris and Hogan, 2019; Saw and Agger 2021; and Postsecondary National Policy Institute, 2023). Yet, rural students account for approximately 30% of the public elementary and secondary education student population in the United States (National Center for Education Statistics [NCES], 2017). Students from rural areas face structural opportunities and barriers that shape their educational and occupational pathways, often tied to their geographic location (Agger et al., 2018; Hillman & Boland, 2019; Wells et al., 2019). Persistent barriers to participation in STEM for rural communities include limited access to resources, lower funding for teachers, perceived disconnection from local priorities, and outreach disparities. This must be addressed to ensure equitable access to growing and in-demand jobs for all geographic areas under-represented in STEM (Yettick et al., 2014).

Partnership Development Background & Approach: In 2019, Rachel Burcin began to build a series of partnerships in rural Pennsylvania with educators and leaders from communities underserved and underrepresented in STEM. The work led to the co-development of educator workshops, visits, and student experiences and culminated in shaping and launching the first rural STEM summit for Venango County, which Rachel co-chaired. Adjacent to the STEM summit was an opportunity to deepen and expand connections across the Carnegie Mellon University (CMU) community and collectively design and develop a rural educator workshop. Ultimately, the workshop team grew to include a wide range of expertise, backgrounds, and roles (e.g., from robotics & AI to English, social sciences, and psychology). The team came together to better understand our assets and demystify stereotypes about our respective communities. Because of a foundation of trust and engagement that Rachel and community members had built over the past 4 years and the high regard that both communities held each other, we were able to easily pivot the workshop themes to give center stage to topics, such as ChatGPT, that had burst onto the scene and were dominating US and global media headlines.

Figure 1: Adapted from Collective Impact Forum - Collective Impact

Collective Impact Principles of Practice: Putting Collective Impact into Action

1. Design and implement the initiative prioritizing equity, cultivating peer relationships, and understanding power dynamics.
2. Continually work towards a more equal structure.
3. Recruit and co-create with cross-sector partners.
4. Use data to continuously learn, adapt, and improve.
5. Identify leaders with unique place-based leadership and system leadership skills.
6. Focus on program and system strategies (but balance with addressing urgent concerns or fires).
7. Build a culture that fosters relationships, trust, and respect across participants.
8. Customize for local context.

Source: Kania & Kramer, 2011

Perhaps most importantly, we came together using a human-centered, asset-based approach drawn from social innovation and change theories (Kania & Kramer, 2011; Cooperrider & Whitney, 1999; Hammond, 2013; Neff, 2011). Appreciative inquiry is a philosophy and change process anchored by an asset-based approach (as opposed to traditional problem-solving and deficit approaches that label communities or individuals as broken, incomplete, or inadequate). The appreciative inquiry approach and growth mindset, coupled with motivation and methods, collectively create limitless possibilities (Kwik, 2023; Cooperrider, 1999). Here, we discussed teacher-centered AI educational materials, learned more about the challenges at the forefront of rural educators's minds, and began building out age-appropriate student-facing classroom materials.

Figure 2: Appreciative Inquiry change process adapted from Hammond, 2013 and Cooperrider & Whitney, 1999.

The Appreciative Inquiry Approach

- In every place (whether it be a school, organization, or community), something works.
- What we focus on is internalized and becomes our reality.
- The act of inquiry influences a community in some way (we are not neutral observers).
- Change is difficult, when the best parts of our traditions and history are acknowledged and carried forth in some manner, we become less fearful.
- It is important to value differences.
- Our language must be collective and intentional, as it shapes our future.

The following paper pairs rural educational data with an overview of the workshop's execution in Franklin, PA. Below, we offer a comparative analysis of Venango County and Pittsburgh (Allegheny County) data to introduce the specific conditions surrounding our rural collaboration, shed light on the barriers discussed in the referenced papers, and provide empirical confirmation through tangible quantitative insights.

Background and Motivation

The majority of innovative educational intervention research focuses mainly on urban barriers to higher education and may therefore exclude rural communities and engagement. (Fulkerson & Thomas 2016). For decades, rural has been defined by what it is not (urban) and from its distance to urban centers. This disregards the unique assets, contributions, and opportunities that rural communities hold. For example, the Census Bureau defines rural as any population, housing, or territory NOT in an urban area (Census). Rural spaces remain understudied and underserved and are at high risk for further exclusion from participating in the innovation economy and imagining and creating their own pathways. However, STEM education in rural areas is garnering increased attention due to significant disparities identified in the enrollment and preparation of students for postsecondary STEM degree programs. Several studies, including Saw and Anger's exploration (2021), have underscored the pronounced challenges rural and small-town students face. Notably, these students are considerably less likely to enroll in postsecondary STEM programs than their suburban counterparts. The limited access to advanced coursework, extracurricular STEM programs,

and lower STEM teaching capacity in schools attended by rural students contribute to this gap.

Recognizing the importance of STEM education in producing a scientifically literate citizenry and addressing workforce demands, a focus on rural areas is vital. The introduction of programs like Project Engage (Rogers & Sun, 2019) signifies a proactive approach to overcoming the challenges faced by STEM education in rural areas. A shift in focus to acknowledge and engage rural students' potential enhances STEM opportunities and helps meet workforce needs.

The exploration of rural schools as nurturing grounds for academic talents, especially in STEM, is addressed in studies such as (Lakin, 2021). While rural schools offer substantial opportunities for cultivating academic talents, students with STEM potential face specific obstacles. The STEM Excellence and Leadership project aims to equip rural teachers with the necessary skills to recognize and foster STEM talent, acknowledging the unique challenges faced in rural educational settings.

Furthermore, the severe gap in access to STEM educational benefits for students in rural areas is a central theme in Rachel S. Harris and Charles B. Hodges' study (Harris & Hodges, 2018). The implications of funding disparities, lack of financial support affecting access to well-qualified teachers, and the need for education to apply to local conditions are crucial aspects highlighted. Importantly, the call for more research specifically addressing rural STEM education is echoed, emphasizing the necessity for comprehensive understanding and targeted solutions to bridge the existing gaps.

Without proper resources, access, and guidance, rural students will continue to be barred from contributing to STEM fields--workforce and education. This has profound significance for an already fractured society. Consider this:
- The technology sector is the largest and most valuable industry in the world, a position it has held for at least half a decade (Silicon Republic, 2016).
- The technology sector boasts high job growth. The US Bureau of Labor Statistics (BLS) reports that employment growth in computer and information technology occupations will outpace all other career categories in the next decade (U.S. Bureau of Labor Statistics, 2019).
- Technology sector salaries are among the highest. According to the BLS, the median annual wage for computing and tech is twice that of any other career category. BLS reported that in the computer and information technology occupations, the "median wage was $88,240 in May 2019" (U.S. Bureau of Labor Statistics, 2019; Burcin, 2023).

There is already a disparity between the STEM workforce and the larger workforce. Disparity continues to grow, at an accelerated rate, between the rural workforce and STEM workforce in general. In examining the population changes over the past two decades, Allegheny County, categorized as an urban area, and Venango County, identified as rural, present distinct trends that contribute to a nuanced understanding of the challenges discussed in earlier studies.

From Figures 3 and 4, Allegheny County experienced a notable population decline of -4.55% from 2000 to 2010, followed by a recovery with a positive growth of +2.23% from 2010 to

2020. This pattern suggests a level of urban resilience as the county rebounded from an initial decline, showcasing the dynamic nature of urban populations.

Conversely, Venango County, classified as rural, faced a continuous population decrease over the same periods. The decline was -4.46% from 2000 to 2010, intensifying to -8.25% from 2010 to 2020. This sustained negative growth highlights the challenges confronted by rural areas, potentially influenced by limited economic opportunities and educational resources.

Comparing the urban Allegheny with the rural Venango yields further insights. While Allegheny County, despite an initial decline, managed to recover, rural Venango exhibited a persistent negative trend. This dichotomy underscores the resilience of urban areas in attracting diverse populations and economic activities, contrasting with the challenges faced by rural communities.

Relating these population trends to the claims made in earlier studies reveals correlations. The declining population in rural Venango suggests challenges in providing advanced STEM coursework, aligning with the notion of limited access to educational resources in rural areas. Similarly, the negative population growth may indicate limitations in offering extracurricular STEM programs and lower availability of qualified STEM teachers, supporting prior research findings (figure 6).

Furthermore, these demographic changes in Venango County may contribute to the challenges in postsecondary STEM enrollment (figure 5), reflecting the need for targeted interventions in rural areas. As urban areas like Allegheny showcase more resilience in population dynamics, policy efforts should consider tailored strategies for addressing STEM education disparities in declining rural populations.

Figure 3: Percentage Population Change Comparison
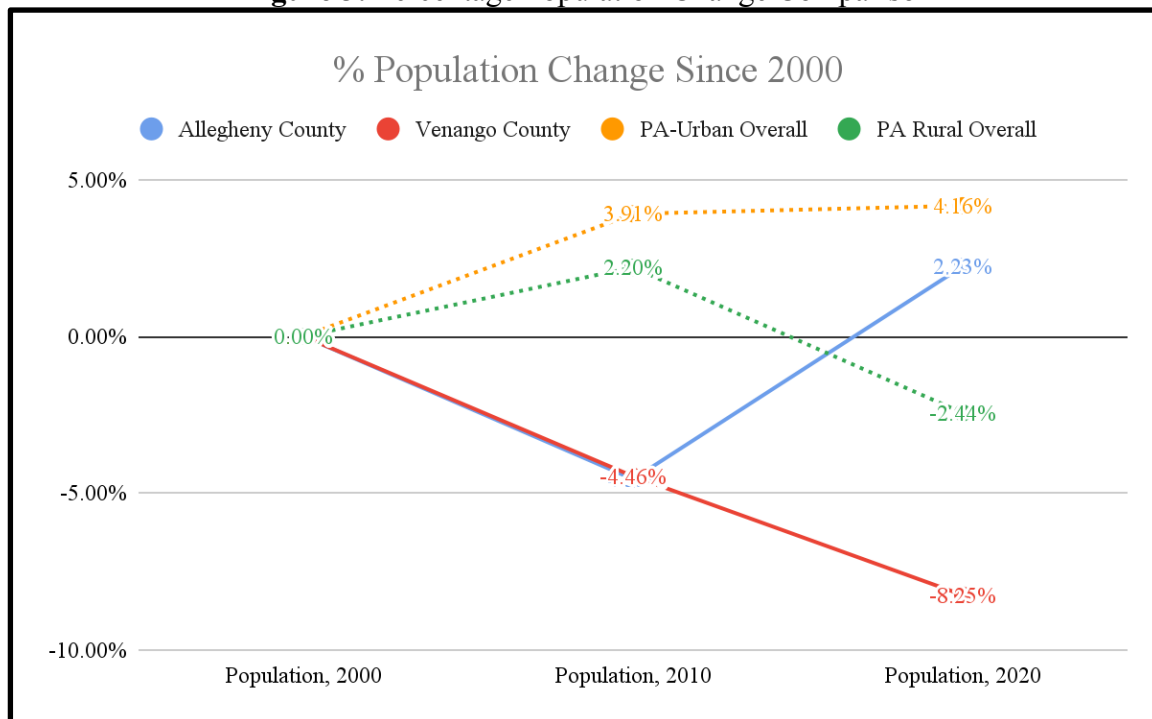
Note: Figure 3 is a comparative analysis of population changes in Allegheny County, Venango County, and overall urban and rural populations in Pennsylvania over three census periods (2000, 2010, and 2020). (US Census Bureau, 2023 and Center for Rural Pennsylvania, 2024)

Figure 4: Growing Median Age Comparison
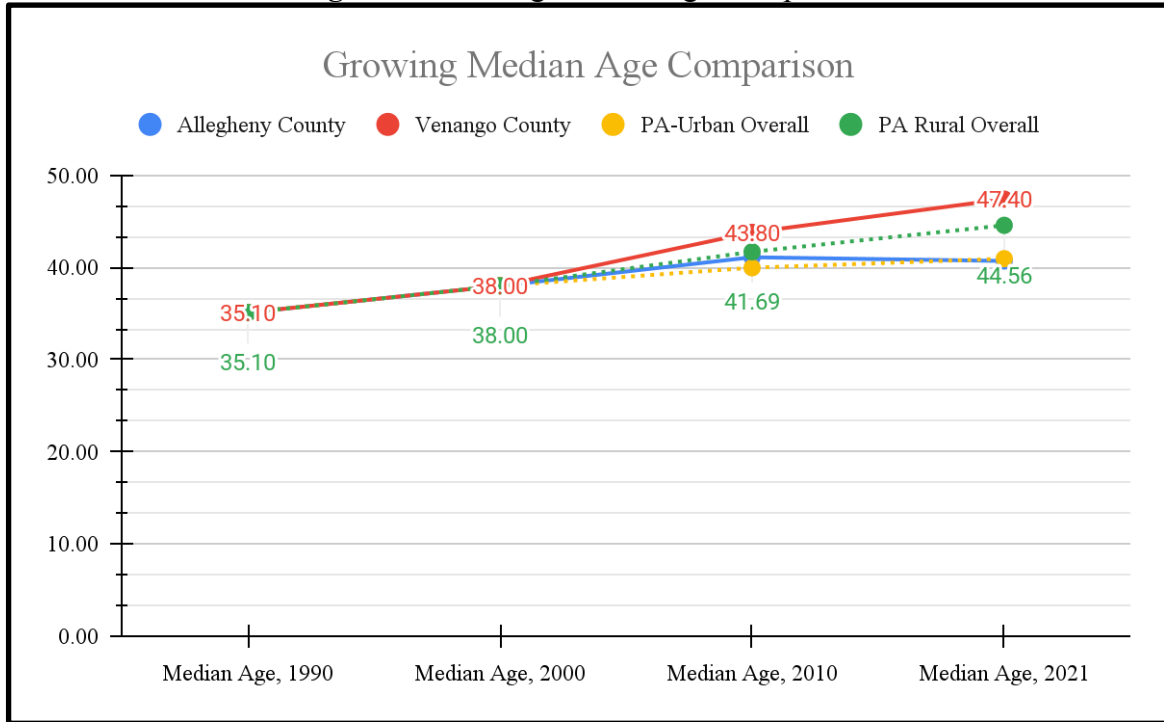
Note: Comparative analysis of median age changes in Allegheny County, Venango County, and overall urban and rural populations in Pennsylvania over four census periods (1990, 2000, 2010, and 2021). (US Census Bureau, 2023 and Center for Rural Pennsylvania, 2024)

Figure 5: Percentage School Enrollment Change Since 2012-2013

Note: Comparative analysis of school district enrollment changes in Allegheny County, Venango County, and overall urban and rural populations in Pennsylvania over several academic years (2017-2018, 2021-2022) and projected enrollments for future years (2026-2027, 2031-2032). (US Census Bureau, 2021a and Center for Rural PA, 2024)
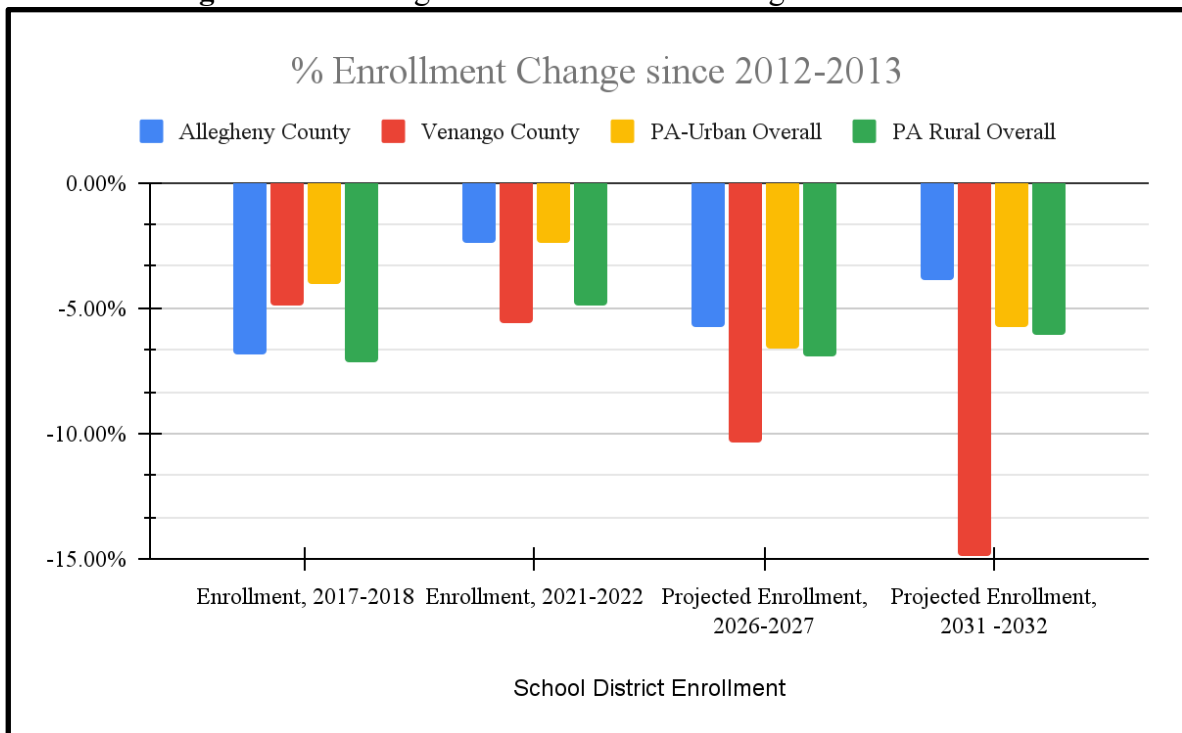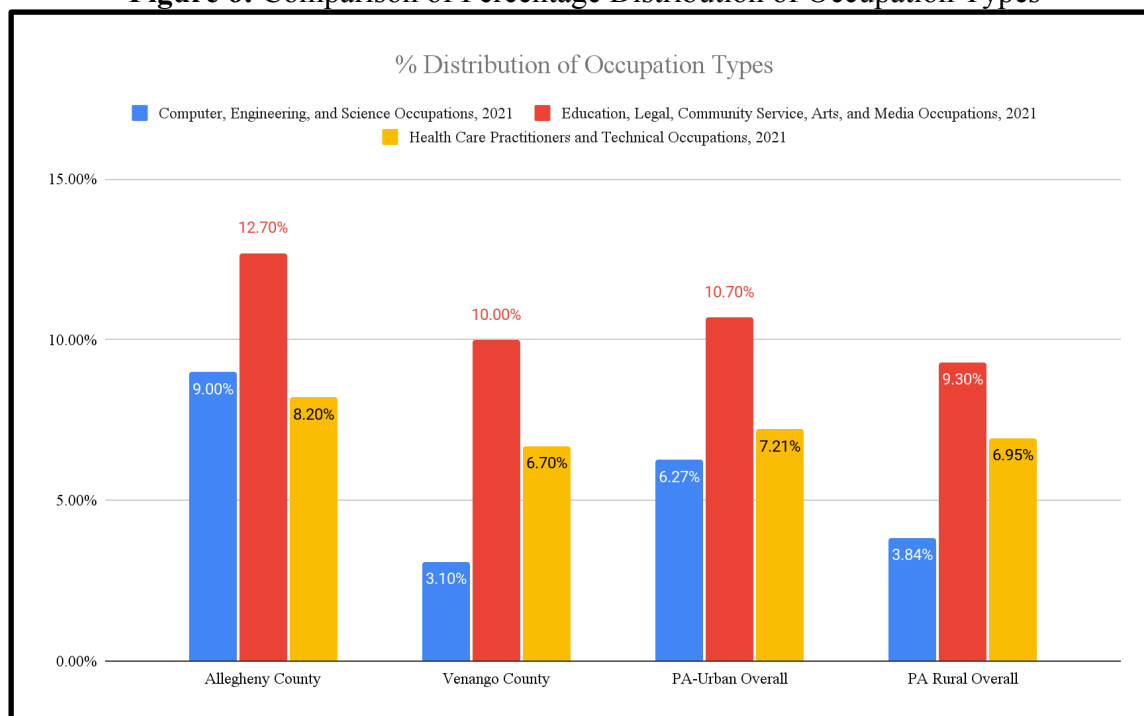
Figure 6: Comparison of Percentage Distribution of Occupation Types

Note: Comparative analysis of occupational distribution in specific sectors within Allegheny County, Venango County, and overall urban and rural populations in Pennsylvania in the year 2021. (US Census Bureau, 2021b and Center for Rural Pennsylvania, 2024)

In summary, these data show the urgency of addressing the challenges faced by rural STEM education. Despite being so physically close, the rural community perception of Carnegie Mellon as "not for rural students" continues as R1, very high research activity designated universities according to the Carnegie Classification system, spaces overlook the rural communities in equity and justice initiatives. The limitations, disparities, and untapped potential in rural areas underscore the need for concerted efforts to make STEM education accessible, relevant, and equitable for all students, regardless of geographic location. This background is the foundation for our work and research, which focuses on enhancing AI and STEM accessibility in rural Pennsylvania, aiming to contribute to the broader discourse on inclusive STEM education. Rural access and inclusion are urgent to reverse widening gaps—rural matters.

Workshop Design, Onsite Curation, and Implementation

The workshop was held on June 12, 2023, in Franklin, PA, in collaboration with a local not-for-profit organization, the Innovation Institute for Tomorrow. Titled "PA Rural Educator Technology Workshops: Let's Explore Robotics & AI," the event brought together rural educators, administrators, and community leaders from across the region with Carnegie Mellon scholars and field experts. "Leveraging AI Tools for Learning: ChatGPT in the K-12 Classroom" was one of two delivered workshops, and specifically aimed to "equip K-12 educators from across fields with background information and vocabulary to enter into conversations on artificial intelligence (AI) and begin to effectively explore and incorporate AI tools, such as ChatGPT, into their own classrooms" ("PA Rural Educator Technology Workshops Program," 2023). This language was used in the marketing, program, and workshop itself. Our approach in piloting the workshop is built on research that shows through conducting a pilot study researchers will be "better informed and prepared to face the

challenges that are likely to arise in the substantive study and more confident in the instruments to be used for data collection" (Malmqvist et al, 2019). The following provides an overview of the "Leveraging AI Tools for Learning" workshop in terms of development, content, and provided resources.

The "Leveraging AI Tools for Learning" workshop consisted of two main components: 1. Social and Cultural Integration with Technical Education: An Introduction to NLP/ChatGPT and 2. Shifting Technical Jargon into Transferable, Culturally Informed Vocabulary. Below, we elaborate on the key points of these two sections as implemented in Venango.

A) Social & Cultural Integration With Technical Education: Introduction to NLP/ChatGPT

The materials aimed at integrating social and cultural contexts with technical education, particularly focusing on rural Pennsylvania participants, to make AI education relatable. Emphasizing the societal relevance of AI, relevant examples were integrated to showcase its applications within familiar community contexts. The introduction commenced with a comprehensive overview of Natural Language Processing (NLP) and ChatGPT, aimed at demystifying core AI concepts. By simplifying complex technical details, this module provided a digestible understanding of NLP principles and the role of ChatGPT in language generation. Figures 7 and 8 were utilized to visually aid this introduction, with Figure 5 depicting the NLP application architecture and Figure 6 providing a breakdown of the NLP process from text to tokens.

Figure 7: Example of NLP Application Architecture
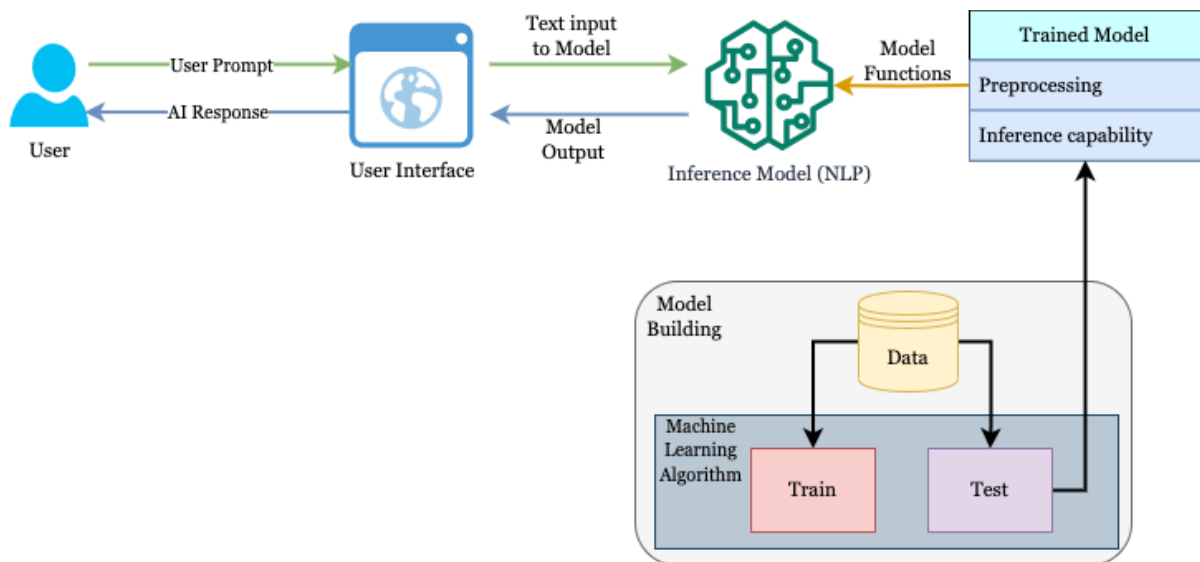
Figure 8: Example of Text to Tokens to Numerical Representation in NLP Models
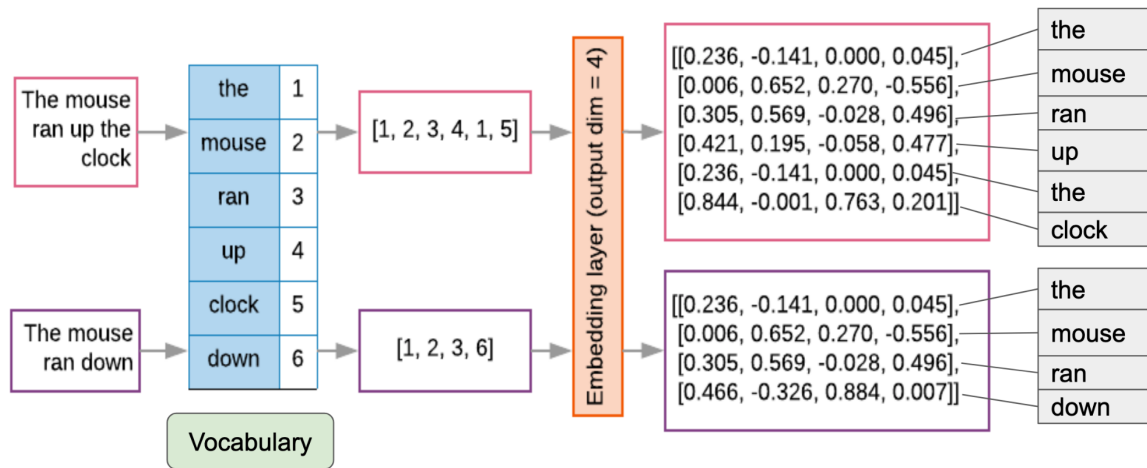
Computers do math--not language

B) Shifting Technical Jargon Into Transferable, Culturally Informed Vocabulary

A key aspect of the methodology involved reframing intricate technical jargon into transferable, culturally informed vocabulary (Scott, Nagy, and Flinspach, 2008). This process required a careful selection of words and terms that resonated with a diverse rural audience, including those without a technical background and those educators working across the K-12 space. Analogies, real-world examples, and relatable metaphors were incorporated to convey complex concepts in a manner that was easily comprehensible. For example, when discussing the types of texts ChatGPT is trained on, we distilled field research, such as "Language Models are Unsupervised Multitask Learners," (Radford et al., 2019) through digestible examples. This included a discussion of why ChatGPT is more knowledgeable about topics such as Miley Cyrus and *Lord of the Rings* than more obscure texts not accounted for in the learning set.

Table 1: Basic Definitions

Term	Definition
AI (Artificial Intelligence)	Decision-making capabilities in machines that traditionally required human intelligence.
NLP (Natural Language Processing)	Short for Natural Language Processing. It is a branch of AI centered around enabling machines/computers to understand text and spoken language.
Machine Learning (ML)	A branch of AI where algorithms work on identifying patterns in data by simulating human learning approaches.
Language Models	A type of statistical/ML model that possesses probability distribution over a sequence of words.
Conversation AI	Branch of AI and NLP that simulates human-human conversation between humans and machines.
GPT	Short for Generative Pre-trained Transformers. A type of language model.
Prompt	A command or an action sentence used to communicate with ChatGPT and other AI.
End-user	Humans interacting with the AI tool.

Note: Table 1 presents fundamental terms and their corresponding definitions in the field of artificial intelligence (AI) and natural language processing (NLP). These definitions serve as foundational knowledge for understanding key concepts related to machine intelligence and language understanding.

Table 2: Applications Definitions

Term	Definition
Text classification	A machine learning technique that categorizes a given text into a predefined class.
Sentiment analysis	NLP technique to identify the human emotion from a given text.
Translation	NLP technique to automatically translate a text from one language to another.
Question answering	Uses NLP techniques and information retrieval approaches to answer natural language questions by human users.

Note: Table 2 delineates essential terms and their respective definitions pertaining to applications of artificial intelligence (AI) and natural language processing (NLP). These definitions elucidate the practical implementations and functionalities of AI and NLP technologies in various domains.

Table 3: Terms in Natural Language Processing (NLP) Building Process

Term	Definition
Corpus	A collection of text, which can include various sources such as movie reviews, internet comments, or conversations between individuals.
Vocabulary	The entire set of terms used in a body of text.
Documents	Refers to a body of text, with examples including movie reviews or emails. A collection of documents make up a corpus.
Preprocessing	The initial step in any NLP task, aiming to clean the text by removing noise. Preprocessing techniques include handling noise, parts-of-speech tagging, normalization, etc.
Noise	Irrelevant or unnecessary information in the text that should be removed during preprocessing.
Parts-of-speech tagging	Identifying the syntactic function of a word within a sentence.
Normalization	The process of reducing similar tokens to a canonical form to simplify analysis.
Stop-words	Commonly used words that are ignored during preprocessing or modeling tasks.
Lemmatization/Stemming	Techniques to reduce inflected terms to their base forms to improve analysis.
Tokenization	Breaking a large chunk of text into smaller pieces (tokens) to map each piece to a meaningful unit of information.
Word embeddings (vectors)	Representing each token as a vector before passing it to a machine learning model for analysis.

Note: Table 3 presents key terms related to Natural Language Processing (NLP) processing techniques and their corresponding definitions. These terms encapsulate various stages and methods involved in processing and analyzing natural language data.

By further integrating relevant examples and case studies additional efforts will be made to expand classroom-ready materials to cater to diverse learners across K-12 levels, offering adaptable learning experiences. Moreover, incorporating discussions on the social implications of AI into classroom settings through news links and visually engaging presentations will be emphasized to underscore the practical applications and societal impact of AI.

Conclusion

While much of our team's workshop in Venango was focused on communicating technical terms in accessible language and constructing classroom materials, the engagement also shifted narratives, challenged stereotypes (both those held by workshop presenters and members of the local community), and minded the supposed gaps that keep R1 institutions out of reach for rural communities despite their geographic proximity. At the end of the workshop, Venango participants noted their excitement of engaging with the AI tools and vocabulary in their classrooms and expressed a shifted understanding of who Carnegie Mellon was for. Those from Carnegie Mellon also spent portions of the visit engaged in local

culture in addition to their presentations, and their understandings of rural spaces, outside of their statistical representations, deepened.

The ultimate takeaway from our ongoing collaborative work is that rural students, educators, and communities *must* be a focus of STEM accessibility work. From our combined experiences of over 30 years at R1 institutions, we know that R1 institutions and elite STEM education institutions continue to overlook and invisibilize rural spaces, and our set of research presented here is only the start. If STEM education and accessibility initiatives continue to overlook rural students, the impact will be devastating on local, regional, national, and global scales. We know that identified patterns of decreasing population in these regions are coinciding with a rise in the median age, resulting in a dwindling pool of young learners. The work in co-creating pathways into STEM is never done, and we call for further research that centers rural communities. At the same time, challenges remain to be addressed, including preserving trust, time, money, and alignment of interests, and we recognize that all rural communities, although facing similar barriers, bring unique assets and perspectives into the conversation. Moving forward, it's imperative to delineate concrete correlations among the multifaceted barriers hindering STEM education in rural areas. By delineating these correlations and implementing targeted interventions, like our workshop, we can effectively begin to mitigate barriers and cultivate a conducive environment for fostering STEM education in rural communities. Together, rural communities and R1 institutions can empower the next generation of rural students to thrive in the increasingly technology-driven world. In short, rural matters.

Acknowledgments

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How Clinical Interviews Are Conducted: A Cross-Linguistic Study of Japanese Nurse Practitioners and American Student Doctors

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Abstract

In medical/healthcare universities, students develop communication skills by participating in simulated patient (SP)-based practicums involving recurrent clinical interviews. The aim of this study was to elucidate the linguistic features related to participants' social relations and roles during clinical interviews conducted in Japanese and American English by comparing the interviews of 18 Japanese advanced nurse practitioners and 18 American student doctors with native-speaker SPs. A comparative analysis of their conversational data yielded results on the following aspects: how the two groups opened their clinical interviews, who started the conversations, the kinds of utterances made, and how the two groups tried to maintain good relationships with the SPs. When opening the interviews, the Japanese advanced nurse practitioners reconfirmed the patients' identification for safety of care, whereas the American student doctors used the patients' first names to build rapport. Another difference between the two groups was that the Japanese advanced nurse practitioners prefaced the interviews with apologies for making the SPs wait, whereas the American student doctors made sympathetic comments related to the SPs' physical conditions. When conducting the interviews, the Japanese advanced nurse practitioners used the SPs' medical data provided in the referral letters and patient charts. In contrast, the American student doctors allowed the SPs to explain their health conditions in their own words. Overall, although the two groups had mutual goals in determining the best approaches for patient care, the clinical interviews were carried out differently in the two languages.

Keywords: Clinical Interviews, Medical Simulation, Advanced Nurse Practitioners, Student Doctors, Opening, Rapport

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Introduction

Educational simulation in healthcare learning allows students to put their classroom knowledge into practice. Learning how to conduct a clinical interview is the very first training step in developing the ability of students and trainees to communicate with simulated patients (SPs)[1]. Irrespective of whether the setting is a simulation class or a real patient interview, conducting a clinical interview involves getting to know the patients. Students and trainees can know and understand patients by being aware of their illnesses and/or showing empathetic reactions. The process of conducting a clinical interview may seem universal. However, different language societies, cultures, and institutions may communicate and interact differently. When analyzing different languages and the different social relations or roles involved in medical interactions at medical training institutions, the language behaviors of medical trainees, specifically advanced nurse practitioners[2] and student doctors, cannot be ignored. In this study, we used clinical interview corpus data in two languages—Japanese and American English—that focused on advanced nurse practitioners (ANPs) and student doctors (SDs) who met simulated native-speaker patients for the first time. The aim of this study was to describe the linguistic features these ANPs and SDs exhibited in clinical interviews with SPs.

For this study, we adapted Gumperz's (1982) interactional sociolinguistics approach, which examines how speakers provide signals to listeners, what speakers intend with their communications, and how speakers make inferences about communicative intent. Gumperz suggested that interactional participants use communicative strategies that align with the social and cultural contexts within a particular social context and institution, such as the teacher–student relationship in a classroom or the physician–patient dynamic in a hospital.

Study Objectives

The aim of this study was to elucidate how participants' social relations, roles, and rules affect their language usage in clinical interviews by comparing Japanese ANP–SP and American SD–SP interactions. We explored the linguistic features that the ANPs and SDs displayed in opening their clinical interviews, building relationships with SPs, and obtaining relevant patient information.

Previous Studies

Clinical interviews require medical providers to use robust communicative techniques: they must inquire about the reasons for a patient's visit, obtain the patient's information, provide medical knowledge, and/or perform physical checkups. In Lipkin's foreword in Cohen-Cole's (1991) book, he noted that clinical interviews place high importance on disease etiology, the diagnostic process, and the patient's therapy. During clinical interviews, medical providers carefully deliver questions that can help them obtain the necessary information from patients, trying to formulate a diagnosis while doing their best to build rapport. Establishing rapport with patients is another important aspect for medical providers when conducting clinical interviews. Respecting the patients, acknowledging them, and

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[1] SP stands for standardized patient(s) in American medical schools.
[2] An advanced nurse practitioner is defined by the International Council of Nurses (ICN) as "registered nurse who has acquired the expert knowledge base, complex decision-making skills and clinical competencies for expanded practice, the characteristics of which are shaped by the context and/or country in which s/he is credentialed to practice. A Masters degree is recommended for entry level (ICN 2002)."

demonstrating warmth toward them are factors that partially build rapport (Riley 2019). At the same time, medical providers need to be assuring, emotionally available, and supportive of patients' needs (Cohen-Cole 1991; Platt and Keller 1994; Pudlinski 2005). Thus, without patients' trust, medical providers cannot perform the required medical interventions (Cohen-Cole 1991). For both ANPs and SDs, relationships with patients are all that matter in clinical practice. Needless to say, medical providers must be knowledgeable and technically skilled.

There is a major difference between how the two groups—Japanese ANPs and American SDs—are taught and trained in their respective schools. The clinical interview practicums at medical schools for SDs focus on how to listen to patients actively and respond to their emotions (Cohen-Cole 1991; Lipkin 1996; Saito 2000). However, Ofri (2017) criticized medical schools, stating that SDs are taught only to take a patient's medical history and not to respond to the patient's emotions. Unlike SDs, ANPs learn how to understand and communicate with patients while in nursing school. Thus, practicums for ANPs concentrates on how to diagnose patients the way physicians do. For nurses, learning how to listen to patients and respond to their emotions are partial requirements (Riley 2019). While there may be differences in how Japanese ANPs and American SDs handle clinical interviews, owing to the nature of their roles or social relations as nurses and doctors, respectively, they share a common understanding that empathy toward patients and an awareness of the presenting illnesses can lead to strong relationships with patients (Riley 2019; Platt and Keller 1994; Pudlinski 2005).

Methods

Sociolinguistics and a discourse analytic approach were adopted in this study to address how Japanese ANPs and American SDs engage with SPs in clinical interviews for the first time. The data for this study were collected from two simulated medical practicums—one from an ANP graduate school in Japan and one from a medical school in America. The participants included 18 ANPs from the Japanese graduate school and 18 SDs from the American medical school, each of whom met with simulated native-speaker patients and were first-year trainees and students, respectively.

Two differences were found in the data due to the practicums being from different countries, specifically with regard to the interaction duration and SPs' symptoms. The interaction duration was 10 minutes for the ANPs and 20 minutes for the SDs. As for the symptoms, the Japanese SPs played the role of diabetic patients, whereas the American SPs complained of fatigue. Neither the ANPs nor the SDs knew about the roles the SPs played or the symptoms the SPs had. During the practicums, the ANPs and SDs were asked to participate in clinical interviews with the SPs and to determine the possible problems affecting the SPs, but they were not required to diagnose the symptoms.

The data were audio- and video-recorded for the Japanese ANPs and audio-recorded for the American SDs and subsequently transcribed in Japanese and English, respectively. We analyzed the data by organizing the structure of the clinical interviews in accordance with Heath's (1993) delivery of diagnosis in general practice consultations and Cohen-Cole's (1991) clinical interview approach. We then compared each phase of the clinical interviews and determined how each group opened the interviews, what kinds of language exchanges were made, and how they elucidated the reasons for the patients' visitation.

Results

Before starting the SP interviews, Japanese ANPs and American SDs learned about the structure of clinical interviews (Cohen-Cole 1991; Saito 2000). An interview can be divided simply into three phases—beginning, middle, and end—or complexly into up to six phases (Heath 1993) as follows:

1. Opening the clinical interview
2. Elucidating the reasons for the patient's visit
3. Performing a verbal and/or physical examination
4. Considering the patient's problem
5. Planning the treatment or further investigation
6. Ending the clinical interview

Based on this structure of clinical interviews, we now present the results of the comparative analysis of the conversational data to address the following three aspects: how both Japanese ANP–SP and American SD–SP pairs opened the clinical interviews (phase 1), what kind of remarks they made in their preliminary talks (phases 1–2), and how they tried to elucidate the reasons for SPs' visitation (phase 2).

Clinical Interviews, Medical Simulation, Advanced Nurse Practitioners, Student Doctors, Opening, Rapport

The verbal greeting of "*Konnichiwa*" ("Hello") in Japanese, along with the nonverbal greeting of bowing in line with the Japanese culture, and the greeting of "Hello" or "Hi" in English for Americans were essential prior to commencing the clinical interviews. Following their own introductions, the ANPs and SDs identified the patients. Introducing oneself and calling the patients by name were important for the ANPs and SDs to show care and considerations toward the SPs (Cohen-Cole 1991; Riley 2019; Saito 2000) and for the SPs to gain a sense of security and trust in Japanese ANPs and American SDs (Riley 2019).

Our data showed significant differences between the two groups in terms of who arrived at the consultation office first and who waited for whom. The Japanese data showed that the ANPs waited in their consultation rooms for the SPs to arrive, whereas the American data showed that the SPs were already in the consultation rooms when the SDs arrived.

To open the interviews, both the Japanese ANPs and American SDs exchanged greetings, introduced themselves to the SPs, and confirmed the SPs' names. The Japanese data indicated that upon entering the consultation rooms, 6 of the 18 SPs (33.3%) initiated conversation by saying, "*Konnichiwa*" ("Hello"), "*Onegai shi-masu*" ("Please"),[3] or "*Osewa ni nari-masu*" ("Thank you for your support [in advance]"). When the Japanese ANPs (12/18 ANP; 66.7%) initiated conversation, eight ANPs greeted[4] the SPs with "*Konnichiwa*" ("Hello"), two ANPs introduced themselves by saying "*Kenshui no XXX desu*" ("I'm a resident, and my name is

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[3] "*Onegai shi-masu*" ("Please") is used in various situations and interactions for requesting something that one cannot fulfill themselves, such as when asking someone to check an assignment/work, when prefacing an interview, when telling a taxi driver where one is going, or so on.
[4] In Ueda's (2007) research, some Japanese doctors started diagnosing their patients without greeting them first. However, this was not seen in our data.

XXX")[5], and one ANP apologetically started with "*Sumimasen*" ("Sorry"). The American data showed that the SPs waited for the physicians to arrive at the consultation offices and initiated conversation by saying, "Come in" (8/18 SPs; 44.4%). The SDs greeted the SPs by saying, "Hi," "How are you doing," "Nice to meet you," or a combination of two or more of these lines in a friendly manner as they entered (10/18 SDs; 55.6%).

We found differences between the Japanese ANPs and American SDs in how they confirmed the SPs' identities. All ANPs asked the SPs to say their own names, assuring them of the safety of patient care (100%). In contrast, ten American SDs (55.6%) identified the SP, stating their full names. One student mentioned his SP's name as follows: "And this is Debbie Armstrong (pseudonym)?" Nine SDs left it to the patients to decide whether they wanted to be called by their first or family name: "Do you want to be called Ms. Armstrong or Debbie?" Calling the SPs by their first name allowed the SDs to build rapport with them (Cohen-Cole 1991; Riley 2019; Saito 2000). The remaining eight SDs (44.4%) did not confirm their SPs' names.

According to Kido (1993), greeting someone in a medical situation for the first time is very sensitive; it not only indicates who helps whom but also how the health provider accepts the patient and vice versa. By greeting their patients and introducing themselves, medical providers can assure the patients of being cared for and worthwhile (Riley 201; Sully and Dallas 2010). This is a crucial moment for medical providers, as it determines whether their patients wish to continue the doctor/nurse–patient relationship or are reluctant. It is also important for health providers to ensure that their communication styles accommodate their patients, especially when the patients are in a glum mood. In the next section, we discuss how the ANPs and SDs accommodated the SPs in their talks.

Preface of the Interview

The people with whom health providers come into contact may be anxious, sad, or even angry because of their illness. Excerpt 1 below shows that an SP was fidgety and irritated when entering the consultation room and complained about the long wait to see the ANP. Upon hearing the SP's complaint, the Japanese ANP replied, "*Sumimasen*" ("[I'm] sorry"), which is underlined in both lines 2 and 12.

Excerpt 1
1 SP: *Yatto yonde itadake-ta.*
         "Finally, my name was called."
2 ANP: *Suimasen. Omatase shite suimasen deshi-ta. Etto, mazu, o-namae wo ukaga-tte. Furu neimu de oshie-te kudasai.*
         "[I'm] sorry. [I'm] sorry for keeping you waiting. Well, first [of all] could I have your name. Could you tell me your full name."
(8 lines are omitted)
11 SP: *Konna ni matsu to omowa-naka-tta.*
         "[I] did not expect to have to wait this long."
12 ANP: *Suimasen.*
         "[I'm] sorry."

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[5] It is important, particularly in practicum situations such as in this study, that trainees inform patients carefully and beforehand that they are trainees who are still learning how to interview patients (Cohen-Cole 1991; Saito 2000).

As the SP entered the room, she started complaining, saying "*Yatto yonde itadake-ta*" (Finally, my name was called). Upon hearing the SP's complaint, the ANP humbly apologized twice: "*Suimasen. Omatase shite suimasn deshi-ta* ("[I'm] sorry. [I'm] sorry for keeping you waiting")." Apparently, the ANP's apology did not work for the SP because the SP continued to complain on her 11th line: "*Konna ni matsu to omowa-naka-tta*" ([I] did not expect to have to wait this long). The ANP emphatically replied, "*Suimasen* ("[I'm] sorry")."

According to Lee (2006), someone who makes a direct complaint expects to hear the other person's apology. People complain because they want others to understand the difficult situation they are in (Kamata 2017). Although the ANPs uttered "*Suimasen*", they were not apologizing for something they did wrong. In Japan, it is a social rule that people use this apologetic word as part of formulaic speech, starting a conversation while showing their sincere, humble attitude toward the other person involved. Miyake (2011) stated that, in the Japanese sociolinguistic context, people utter "*Suimasen*" in gratitude and as an apology interchangeably. In such social contexts, this utterance is preferred as an apology when the social relations between the participants are distant and asymmetrical (Miyake 2011). The apology of "*Suimasen*" is activated at an unconscious level when the speaker regards the situation or circumstances as imposing unnecessary burdens on the other person involved (Miyake 2011).

In this situation, the SP had to come all the way to the hospital and wait a long time to see the ANP, so the SP wanted the ANP to understand the SP's situation. In addition, the ANP knew that the angry exchanges that would result from arguing against the SP's complaints would not resolve the SP's health problems or frustration. Therefore, the ANP humbly accepted the SP's complaint and apologized. The data indicated that the ANP's language behavior (i.e., the humble apology) eased the unwanted distress that accompanied the SP's illness. Thus, health providers need to make adjustments to their communication styles depending on the patient; this will enable them to facilitate clinical interviews effectively and to build the doctor/nurse–patient relationship (Sully and Dallas 2010).

In contrast, the American SDs began their clinical interviews by greeting the SPs with a friendly "Hi," "How are you doing," "Nice to meet you," or a combination of two or more of these, trying to build rapport. Another way of maintaining the relationship with an SP involved making sympathetic comments regarding the SP's physical condition, as demonstrated in Excerpt 2:

Excerpt 2
1 SD: So, how are you feeling today?
2 SP: I'm tired. Sorry, I'm just tired.
3 SD: Oh, I'm just so sorry to hear that. Um, how long have you been tired for? When did it
      start?

In this excerpt, the SD may not have expected to receive such a response from the SP (i.e., "I'm tired") in the first place. The SD may have expected to receive a platitude in reply, such as "Fine," "Good," "Okay," or "I'm okay." However, as shown in the above excerpt, the SP not only responded with the negative expression of "I'm tired" but also emphasized her tiredness by repeatedly saying, "Sorry, I'm just tired." Upon hearing the SP's negative expression (line 2), the SD replied with a stretched-out, sympathetic "Oh." SD may have even uttered this in surprise because she expected to hear a plain response such as "good" or "okay." Heritage (1998) argued that an utterance prefaced by *oh* works as a token that shows

that the speaker who is seeking information has been satisfied within the sequence of questions and answers. Therefore, in the above excerpt, the use of "Oh" projects the SD's acceptance of the SP's health problems.

SD not only accepted the SP's feelings but also made a sympathetic comment. Riley (2019) talked about the importance of empathy and the use of clinical empathy in clinical situations. The author argued that clinical empathy, in a doctor/nurse–patient relationship, is "a tool or skill that is consciously and deliberately used to achieve a therapeutic intervention" (94), and "the goal of empathy is to aid in the establishment of a helping relationship" (94). Furthermore, Riley (2019) stressed that health providers' words must accurately reflect what their patients are experiencing. This is because patients come to clinics/hospitals seeking medical help, and as professionals, health providers welcome all patients (Kido 1993). This SD responded to the patient's emotions with "I'm just so sorry to hear that" and continued trying to gather the patient's data by asking, "How long have you been tired for? When did it start?" Medical providers' responses to patients' emotions will enable them to establish good relationships with the patients (Riley 2019; Platt and Keller 1994; Pudlinski 2005). The data showed that the SPs were informed of being under the SDs' care, which meant that their issues would be addressed.

Elucidating the Reasons for SPs' Visitation

The two groups differed in terms of how they conducted their clinical interviews. In the Japanese data, the patients' information was included in the referral letter and/or provided in the charts used to collect information on the patients' current symptoms and medical histories. The Japanese ANPs conducted their clinical interviews based on either the medical charts or referral letters, or both the charts and referral letters. The following excerpt, Excerpt 3, shows how an ANP referred to a referral letter:

Excerpt 3
ANP: *Kyou wa Uemura-iin no Uemura-sensei no hou-kara, eeto, shoukaijo wo itada-i-te jusinn wo sareta to iu koto desu kedo mo, Uemura-sensei no hou-kara ha nani ka, dono youna o-hanashi wo sare te ima-suka?*
"You brought Dr. Uemura's (pseudonym) reference letter from the Uemura Clinic, and you came to this hospital. What did Dr. Uemura talk about?"
SP: *Kettouchi ga takai kara, sugu ni isha ni shoukaijou wo motte ikinasai tte iwarete, kimashita.*
"(Dr. Uemura says your) blood glucose level is high. You have to bring this referral letter to see a doctor immediately."

Excerpt 4 shows that the ANP confirms both the patient's paperwork and the referral letter.

Excerpt 4
1 ANP: *Kochira-no-monshin-no-hou to shoukaijou-no-hou kakunin sase-te itadaki mashi-ta. Konkai ha, shoukai-jou mora-tta kara kita-tte koto nan-desu-kedo, sono shoukai-jo mora-tta-saki kara nani-ka kou iwa-re-ta koto toka ari-masu-ka?*
"(I have) checked the chart and the reference letter. Today, you have come (to this hospital) because (your family doctor) gave you this reference letter. What did he tell you about?"
2 SP: *Nani-ka saiketsu shite moraeta mitai-de. Kono-toki ni chotto shinpai dakara ookii tokoro de mite morae-tte iwareta-n-de. Maa taishita-koto-nai to omou-n-desu-kedo.*

> "(I) had a blood test. And (there are) something concerns about. So (my family doctor) told me to check at (this) big hospital for further investigation. I think there is nothing to worry about."

3 ANP: *Wakari mashita. Kyou, chotto, o-isogi da-tte-iu-koto na-n-desu-ga.*

> "(I) understand. Today, (you mentioned in the chart that) somehow, (you) are busy."

4 SP: *Sou-nan-desu-yo. Shigoto-tochu de kicha-tta-no-de.*

> "(Yes,) indeed. (I) came to (here) in the middle of the work."

In this interview, the ANP mentioned "*monshin-no-hou to shoukaijo-no-hou*" ("the chart and the reference letter"), as given in the first line of the above excerpt. He then clarified whether the SP understood the details of the reference letter. Upon hearing the reason for the SP's visit to the hospital, the ANP asked the SP to clarify the message she wrote on the chart, as given in line 3: "*Chotto, o-isogi da-tte-iu-koto na-n-desu-ga*" ("You mentioned in the chart that somehow, [you] are busy").

In contrast, the American SDs did not consider the patient information provided, as evident in Excerpt 5:

Excerpt 5

1 SD: So, what are you feeling today?

2 PS: Um, I've just very, very like tired. Yeah.

3 SD: Okay. Tell me a little bit more about that.

4 SP: Um, uh, I've just been feeling like I have no energy.

Similar to the ANPs who conducted their clinical interviews based on the referral letters, two SDs also mentioned the medical charts (11.1%). However, 16 SDs (88.9%) started to consolidate the patients' symptoms from scratch and tried to appropriately diagnose their SPs through interrogative questions.

Discussion

In this study, we examined the comparative language behaviors of ANP–SP and SD–SP interactions in two clinical training institutions—one in Japan and one in the United States. Previous studies involving both ANPs and SDs have shown that medical providers follow a structure for clinical interviews: they open the clinical interview, elucidate the reasons for the patient's visit, perform a verbal and/or physical examination, consider the patient's problem, plan treatment or further investigation, and exit the clinical interview (Heath 1993). Cohen-Cole (1991) and other researchers have insisted that it is important for medical providers to establish rapports with their patients during clinical interviews, following which they can easily pursue medical care based on mutual trust.

Based on the findings of this study, two categories are discussed in this section: how the ANPs and SDs tried to maintain their relationships with the SPs and how they implemented the clinical interviews.

Maintaining Relationships With SPs: Being Humble or Establishing Rapport

The Japanese ANPs and American SDs differed in their manner of maintaining relationships with native-speaking SPs. The Japanese ANPs opened their clinical interviews apologetically. Even though the ANPs said "*Suimasen*" ("[I'm] sorry"), they were not apologizing for any

wrongdoing; in ordinary Japanese conversations, people tend to start their conversations with "*Suimasen*" to show their humble attitudes, especially when the two parties do not know each other well (Miyake 2011).

An ANP's humble attitude toward their SP was demonstrated when the SP made direct complaints about the long wait to see the ANP. The ANP apologized without making any comments against the SP. The ANP understood that the SP had an illness and was worried about his/her health. The ANP knew that arguing against the SP's complaints would result in an angry exchange of words, which would not resolve any of the SP's health problems (Kamata 2017; Lee 2006). Therefore, the ANP's language behavior indicated acceptance of the SP's pain and suffering and eased the SP's distress or unwanted frustration.

An American SD conveyed their sympathy toward their SP's physical problems by saying, "Oh, I'm just so sorry to hear that," upon hearing the SP say, "I'm just tired." Noticing and responding to an SP's emotions leads to a good doctor/nurse–patient relationship (Cohen-Cole 1991; Riley 2019; Platt and Keller 1994; Pudlinski 2005). In doing so, SDs not only speak out about how SPs feel about their illnesses but also convey the message, "You are now under our care, so you don't need to worry about." This unspoken message enforces the SPs' trust in their SDs.

Implementing the Clinical Interviews: Assurance or Consolidation

As they had limited patient information, both the Japanese ANPs and American SDs tried to obtain the reasons for the SPs' visits by identifying the chief complaints and diagnosing the illnesses or causes of the problems. The data revealed that the two groups differed in how they conducted the clinical interviews. A Japanese ANP mentioned the reference letter in Excerpt 3 and both the reference letter and the chart in Excerpt 4.

In contrast, most of the American SDs tried to consolidate their patients' information and symptoms from scratch by using the questions, "So what brings you in today?" and/or "Can you tell me a bit more about that?" Even though the SDs had the chance to read the medical charts beforehand, they interrogated the SPs to gather information about the SPs' symptoms themselves.

Conclusion

This paper is a preliminary study to explores distinctive features of Japanese ANPs and American SDs when they conduct their clinical interviews with native-speaker SPs. The Japanese ANPs and American SDs shared mutual goals: to determine the best approach for patient care and to establish trust and maintain good relationships with the SPs. However, the two groups in this study conducted their interviews differently. On the one hand, the Japanese ANPs tried to maintain a humble attitude when the SPs complained about the long waits. The ANPs knew that even if they argued against the SPs' complaints, the resulting angry exchanges would not resolve the SPs' health problems. The Japanese ANPs tried to sustain their humble attitude to ease the SPs' unwanted distress or frustration while regaining the patients' trust in the first place. On the other hand, the American SDs' sympathetic comments assured the SPs that they were cared for, leading to a sense of trust in the SDs and good doctor–patient relationships. Their relationships succeeded when the SDs noticed the SPs' illnesses and responded to their emotions.

Clinical interviews do not merely involve diagnosing illnesses or talking about subsequent treatment steps. Rather, clinical interviews also involve teaching and educating patients by providing them with medical information (Cohen-Cole 1991). As Cohen-Cole (1991) and Saito (2000) suggested, doctors, including ANPs, have different goals depending on their clinical practices. This study was conducted to determine the differences between the two language groups of health providers when they met their SPs. Future investigations should elucidate the considerable differences that remain between Japanese ANPs and American SDs in their conduct of clinical interviews.

Acknowledgments

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Japanese STEM Students in English Conference Presentations: A Collaborative Approach

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Abstract

This study reports on the development of support programs for STEM university students presenting research in English at international conferences. According to an in-depth needs assessment involving stakeholders in the field of STEM in Japan, it was found that undergraduate students had opportunities to present their research in English (Kawano & Fukuchi, 2022). It is crucial to navigate students, who are novice, nonnative English-speaking scholars, in following certain protocols within their genres during preparations (Noguchi, Terui, & Fujita, 2014). The authors, who include both discipline and English faculty members, collaborated to develop and implement workshops for Japanese undergraduate and graduate students in the fields of STEM in 2022-2023. Eight participants in total prepared slides and scripts, practiced their presentations, and received feedback on vocabulary, expressions, and delivery. Simulations of interactions with session chairs and questioners were also conducted. Post-presentation interviews were recorded and analyzed via text-mining and open-coding, which revealed that the workshops were effective in improving word usage, slide clarity, and delivery skills. However, the participants recalled that they faced challenges during Q and A sessions and were affected by technical difficulties caused by the online conference system. The collaboration of discipline and English faculty proved effective in supporting students' international conference presentations. It will be necessary to focus more on simulating conference communication and on spontaneous responses in Q and A sessions. From this study, the audience will understand the design, implementation, and evaluation of collaborative workshops in the context of an ESP setting in Japan.

Keywords: STEM, Presentation Skills, Mixed Method Approach

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Introduction

The authors aim to develop ESP (English for Specific Purposes) education tailored to the needs of students in the STEM (Science, Technology, Engineering, and Mathematics) department at a private university in Tokyo. The whole project has three phases, the phase 1 as needs assessment in the use of English in STEM, the phase 2 as needs analysis in international conferences, and the phase 3 as development of preparation workshops to present a paper abroad. Between the academic years 2020 and 2021, as the initial phase of investigation, we conducted needs assessment on the use of English with students and discipline faculty in the STEM fields. The study revealed that some undergraduate students have opportunities to present their research in English at international conferences, and there is a demand for cultivating the ability to communicate research results in English in such occasions (Kawano & Fukuchi, 2022). Also, it turned out that students usually write a paper in Japanese, translate it into English, have it edited by a proofreader, and submit it to a conference. Once the paper is accepted, they work on PPT slides, write scripts, and practice reading them repeatedly. The participants of the study expressed that they managed to present their papers, though they had difficulties in dealing with Q and A sessions and small talks during breaks and social events.

In Japan, not all university science majors feel comfortable communicating about their studies in English; in fact, presenting in the first language is a challenging task especially for novice scholars; speaking about their specialized areas in the second language poses further challenges to them. Terui et al. (2016) found that a certain percentage of science and engineering university students lack confidence in English skills and therefore wish to improve them. The research entailed a case study involving a single graduate student who composed a paper in English and subsequently presented it at an international conference. The study was conducted as a one-on-one tutoring session, indicating that there is a need of systematic programs or prototypes designed to assist Japanese science majors in learning academic discourses in English in their disciplines.

In response to these needs, the authors developed workshops to help students prepare to present their papers in English at international conferences. English language faculty and discipline faculty members collaborated to design, pilot, and verify the effectiveness of workshops aimed at supporting undergraduate and graduate students who had been accepted to present at international conferences in science. In this paper, we will report on the two types of workshops, one for the oral presentations in computer science and the other for poster sessions in biophysics, and further attempts to propose prototype of essential components of such support programs.

Prior to designing workshops, we investigated literature focusing on existing materials to improve English skills required to participate in academic conferences. In the context of Japanese universities, there have been two main types of commercial books published that are relevant to our study. The first type includes books written by experts in English education, such as those by Langham (2013) and Noguchi, Terui, & Fujita (2014). These works primarily focus on providing strategies for engaging in academic communications at international conferences. The second type comprises books that offer practical hints and advice from scientists, drawing on their experiences in their respective fields, as seen in works by Hirooka (2011) and Morimura (2014). We have consulted these materials while brainstorming to create tailor-made materials for our study.

Studies measuring the effectiveness of educational practices and interventions of presentation skills are limited. Omotedani and Sannomiya (2023) investigated the effectiveness of a presentation course from a metacognitive perspective. They suggest that explicitly teaching oral presentation skills using PowerPoint, and focusing on delivering presentations based on keywords rather than simply memorizing scripts, while considering discourse markers, was effectively learned. Additionally, as a method of presentation instruction for science students, Fujii (2019) discussed the effectiveness of teaching presentations at his school curriculum. As for teaching poster session skills, Rowe (2017) published a comprehensive report on practices in the medical and pharmaceutical fields, and Elwood and Kawano (2018, 2022) conducted a serious of action research conducted with students majoring in mathematical sciences over several years. Their descriptive statistical analysis reported effectiveness of instructions in the praxis.

When we looked into studies concerning strategies of Q and A sessions, Xu (2022) discussed skills to ask questions at a conference in computer science. This study shows typical questions-answers dataset which would help us understand patterns of academic communications in its particular genre.

Regarding the instruction of small talk at international academic conferences, there appears to be a lack of research on its significance during these events or on methods for teaching scientists to participate in small talk. While studies have examined small talk in business communications and within companies through the lens of English as a Lingua Franca (Pullin, 2010), the exploration of small talk within scientific communities remains unexplored.

Methods

As noted, the primary means of providing support was through two types of workshops tailored to the particular needs of the student presenters. The workshops comprised three facets: a demonstration presentation by each student, advice from the English professors and the content faculty professor about various aspects of the presentation, and finally a Q&A simulation. The workshops lasted 2-3 hours depending on the students' availability. All the students were at the CEFR A2-B1 level.

The first workshop addressed oral presentations. The six participants in this workshop were preparing for an international conference on human computer interaction, which is an important area in the faculty to which these students belong. The second workshop dealt with poster presentations, which in this faculty and its associated fields at least as important as the oral presentations. Two graduate students participated in this workshop; both were preparing for an international conference on biophysics.

Objectives

The workshops were an intermediate step in the sequence of activities addressed in this study. The objectives included four distinct steps, the **first of which** was to make the presentation materials as effective as possible. In the PowerPoint presentations, this meant carefully adjudicating the slides and providing feedback, while in the poster presentations the poster was examined and feedback offered. In both scenarios the feedback was based on our experience teaching consecutive undergraduate courses on oral presentations and poster presentations as well as our linguistic proficiency. The discipline professor provided

feedback based on his knowledge of the subject matter and—again based on his experience—effective ways to explain.

An additional focus in increasing the effectiveness of slides and posters was to explicitly address the visual aspects of the respective media. Our students often have little understanding of the effect of different font styles and the need for care in selecting font size (in my own classes, I simply note that many senior faculty members are older and thus less able to read small font!). Tables and figures are also evaluated, and many of our students benefit from advice to remove clutter (such as unnecessary lines). Finally, there is a propensity to include more open ('white') space on English media than Japanese, so students are advised to consider more austere use of space.

The **second step** was to assess the student's spoken delivery to allow them to present with confidence. As one might imagine, this can be facilitated with practice and more practice coupled with feedback on pronunciation, intonation, and lexical usage. This is also challenging for the students, most of whom have excellent knowledge of their subject material in Japanese but had considerably less facility in presenting that knowledge in English. This is compounded by the fact that they were for the two language professors, whose respective specialties in linguistics were far removed from the technical areas (human-computer interface and biophysics); in general, the students were used to presenting in seminars for their peers and discipline professors, who were certainly proficient in those two areas than their English professors. Presenting to novices requires a deft touch to explain discipline-specific information, and doing so in a foreign language exacerbates the level of difficulty; both aspects guidance and practice to instill confidence, our second objective.

We note in passing here that the translation of technical language has become much easier with the rapidly expanding use of artificial intelligence (AI) software such as ChatGPT, but the students' work still requires a human touch.

While the first two steps constitute common steps in advising on students' work, the **third step** was identified as a pressing area in our needs analysis. 'Surviving' the question-and-answer session has long proven to be an anxiety-inducing segment of student presentation in lieu of its mostly unscripted and quite impromptu nature—the verb 'survive' is exact. To survive and hopefully thrive, the students were coached to anticipate possible questions and lines of questioning. As shown in Figure 1, possible threads included the various sections of the presentation (e.g., Methods and Results) as well as future plans for research or their career.
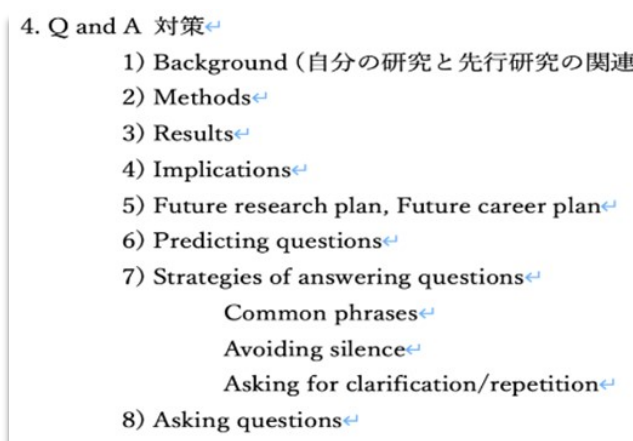

Figure 1. Segment of Possible Questions Worksheet for Workshop Participants

In addition, students were coached on the use of coping strategies such as common ways to ask for clarification or repetition and the necessity of avoiding silence as much as possible. This is a common and quite vexing problem inasmuch as students must first understand the question and then formulate an appropriate answer, and our students tend to take uncomfortably long times to do so.

The **fourth and final area** is the various post-presentation opportunities for small talk. This is a seldom-mentioned and little-researched area, but such opportunities inject the possibility of, for example, receiving additional feedback, deepening discussions that are difficult to pursue in the limited time available after presentation, or simply networking. As was suggested in the Q&A section, students were advised to consider possible topics, both academic and more mundane (e.g., a personal introduction or some details about their university). Moreover, students were coached to actively participate in small talk, asking questions and making comments in what is often a casual venue.

Research Design and Data

The data for this project arose from the configuration of the third phase of this research project. The first two phases focused on needs assessment by the three stakeholders (the students, the discipline professor, and the two English professors), while the third phase then included the workshops, decamping to present at an international conference, and finally a semi-structured interview. Data were culled from the workshop in the forms of observations, comments, and the materials; thereafter the interviews about the students' experience and reflections from the respective conferences also comprised a source of data.

The data were then analyzed with a mixed-methods approach. Text mining using KH Coder 3 (Higuchi, 2017) yielded insight on word frequencies and co-occurrence of lexemes in networks, while the interviews were first transcribed and then analyzed qualitatively with NVivo (Jackson & Bazeley, 2019). The data were first coded inductively, after which the software extracted patterns of usage.

Results

1. Quantitative Analysis

KH Coder 3, a text-mining tool was used to analyse the transcripts of interviews. For Workshop I, as is shown in Table 1, *sahen meishi* or suru-nouns most frequently used were *presentation, question, slide, research,* and *inquiry* in the order of occurrence; *keiyo doshi*, or adjectives such as *all right, anxious, difficult, safe,* and *compact* were commonly used in the interviews. The verbs such as *understand, say, watch, hear,* and *listen* were also used.

	Noun (suru)	Count	Adjective	Count	Verb	Count
1	presentation	190	all right	21	understand	127
2	question	100	anxious	10	say	68
3	slide	68	difficult	7	watch	49
4	research	54	safe	7	hear	45
5	inquiry	37	compact	6	listen	29
6	participation	32	usual	6	go	27
7	preparation	30	easy	5	write	26
8	story	24	important	5	do	23
9	sharing	20	essential	5	make	22
10	explanation	20	vague	4	come	22
11	practice	19	various	4	speak	21
12	response	18	regretful	4	use	20
13	expectation	18	simple	4	think	18
14	worry	15	necessary	4	finish	18
15	comment	13	perfect	3	memorize	17

Table 1: Words in order of frequency in Workshop I

In the interview data of Workshop II, frequently used nouns are *question*, *presentation*, *explanation*, *story*, and *participation*. As adjectives, *simple*, *common*, *clean*, *certain*, and *decisive* were used. Verbs such as *think*, *watch*, *understand*, and *hear* were most frequently used (Table 2). In comparison to Workshop I, vocabulary related to the nature of poster sessions such as *design* and *speak to* were ranked high in the table.

	Noun (suru)	Count	Adjective	Count	Verb	Count
1	question	43	simple	12	think	55
2	presentation	31	common	11	watch	36
3	explanation	15	clean	8	understand	36
4	story	13	certain	5	say	26
5	participation	12	decisive	4	hear	25
6	design	6	regretful	4	speak to	21
7	conversation	6	free	3	go	11
8	research	6	all right	3	use	11
9	sightseeing	5	difficult	3	do	9
10	preparation	4	possible	2	come	9
11	comprehension	4	strange	2	post	7
12	approach	3	various	1	answer	7
13	layout	3	same	1	notice	6
14	accompany	3	close to the limit	1	teach	6
15	printing	3	easy	1	take	6

Table 2: Words in order of frequency in Workshop II

When these frequently used words were crosschecked in the concordance, it was found that the participants were concerned whether their presentations were understood and whether they were able to communicate with the chairperson and with the audience. In addition, co-occurrence network analysis revealed major clusters of related terms: '*workshop slide – presentation - poster*', '*question - Q&A - response*', '*convention site, trouble, Zoom*' - and '*understanding of content - speaking - listening - thinking*'.

2. Qualitative Analysis

Research has elucidated a four-step analytical approach wherein codes, or themes, are inductively derived using an open coding technique. This method is characterized by the identification of patterns within the data emerging from the codes. Furthermore, part of the analytical process involves a thorough examination of the interconnections between these codes. After the initial coding phase, the analyses with NVivo are enhanced by consulting the outcomes from KH Coder, which aids in the reflective process.

Codes in two levels	Number of files	Number of references
Conference	8	23
Schedule	2	3
Poster session site	2	18
Online conference	7	35
Social activities	7	11
Future goal of English study	1	1
Past experiences of poster in L1	3	5
English to Japanese	3	5
Poise and confidence	2	2
Preparation	8	18
Poster/slide design and layout	3	6
Printing of poster	1	1
Q and A	8	35
Unsuccessful talk	1	3
Sightseeing and Travel	2	6
Troubles	5	5
Workshop evaluation	8	26
Workshop helpful points	11	24
Workshop suggestions	11	21

Table 3: Initial codes generated by open coding via NVivo

From open coding of all the utterances in the interviews, codes shown in Table 3 were extracted and further grouped into four topics which will be elaborated in this paper; 1) hybrid conference style, 2) preparation, 3) Q and A, and 4) workshop evaluation. The summary of each topic is explained below.

Hybrid Conference Style

The participants described the profile of conferences in detail. In Workshop I, they expressed advantages and challenges derived from the hybrid nature of conferences that took place after the pandemic surge in 2022. Another participant mentioned, "It was possible to deliver the online presentation without feeling nervous, and I could refer to my notes during the

presentation." Another student said, "I was able to present even in the case of a COVID-19 infection or with a positive PCR test result."

On the contrary, a couple of students "faced challenges in interacting with the session chair and other participants, when both online and in-person attendees were involved in their presentations." There were issues due to technical disruptions online, requiring students to solve them in English spontaneously. As another disadvantage of such hybrid conferences, participants were required to submit pre-recorded presentations well in advance, which placed additional burdens on them. They were unfamiliar with procedures and common phrases in recorded presentations, and therefore struggled to create on an effective video on a trial and error basis.

Preparation

In preparing their presentation, one student told that he dedicated significant time to the creation of slides, ensuring they were engaging by incorporating videos and data, and conducted comprehensive checks to guarantee a smooth run during the event. Another faced challenge translating Japanese slides into English, wondering how to effectively condense the text. Most students began scriptwriting process with writing a scenario in Japanese; then they translated it into English, which was then refined using an AI program such as DeepL; the accuracy of the translation was confirmed by cross-referencing multiple machine translation tools. To improve pronunciation and intonation, a couple of students sought help from colleagues, particularly those who are overseas returnees. Lastly, they would practice reading the scripts to the level of memorization.

Q and A

All the students expressed the difficulty of answering questions asked of at Q and A sessions. Some managed to respond to the questions that were predicted in preparations; however, a student recalled, "I couldn't answer the question on the spot, but later I came up with what I should have said." Another student shared that when she couldn't immediately answer a question about her poster, the audience walked away from her poster without waiting for a response. Naturally, frustrated by this experience, she became determined to study English, motivated to communicate her ideas more effectively and prevent similar situations in the future.

Workshop Evaluation

In general, the workshop was well received by the participants; three of them expressed that the advice on presentation slides in terms of font size, content, and scripts was helpful. Comments on English expressions and usage also contributed to successful presentations. A student pointed out that the workshop gave him an opportunity to situate his study in a wider perspective; "I have been doing this research for a long time and know a lot about it, so I learned what people outside my field thought of my research."

On the other hand, there was room for improvement; the workshop seems to be too short, being conducted as a crash course right before the departure. Due to the limited time, the overall flow of the presentation was not examined. In addition, more Q and A practices including role plays and simulations should have been incorporated. As a poster session

preparation, the workshop should have included phrases and strategies to speak to an audience in front of the poster.

Conclusions

This study has discussed the practice of designing, piloting, and evaluating last-minute preparation workshops for a science international conference presentation. The findings from the preceding section indicate that while the workshops were successful in boosting presenters' confidence, there is a notable need for improvement in flexible communication skills. It was observed that program should place more focus on the area of Q&A skills and the development of strategies for impromptu communication within academic contexts.

Based upon the data and the insights gained from two workshops, we would like to propose a pilot prototype for a last-minute preparation workshop, comprised of six steps:

Step 1: needs assessment of students and discipline faculty
Step 2: outlining objectives, schedule, and materials of the workshop
Step 3: examining draft slides
Step 4: helping practice presentation
Step 5: Q and A simulations and practices
Step 6: small talks and tips for international conferences

As limitations of the study, we had the limited number of the participants. Also, since this is our first project, implementing the workshops demanded significant individual attention and time from both language and discipline faculty members. Looking forward, we aim to apply this model to a larger participant base and create a sustainable framework for science students. For instance, we could include peer review activities and develop checklists to aid students in their presentation preparations. It is hoped that through future research, this prototype will be further polished and widely applied, enabling young scientists to confidently present in English on the international stage.

Acknowledgements

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Reconnecting With New Zealand: There, Online, and Back Again for English for Specific Purposes Students With a Culture Focus, 2019–2024

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Abstract

Many programmes taught under emergency then planned online conditions from 2020-2022 are returning to face-to-face or blended teaching modes. This article relates and reflects on student experiences before, during, and after the pandemic, in original face-to-face, emergency-online, planned online, and blended modes, on an English for Specific Purposes (ESP) programme with a special focus on developing cultural knowledge and local people-to-people connections. It uses student voice from semi-structured interviews and surveys, and teacher experiences, and compares our experiences with international ones. It describes students' feelings that language and cultural learning aims were achieved by the online cohorts, but that the quality and amount of this were impacted negatively by the online mode, varied digital literacy, and varied accessibility & reliability of equipment & connectivity. The article concludes with reflections after the 2023-2024 face-to-face (mildly blended) programme in its new form and gives suggestions about materials and training for staff and students when preparing courses in future whether online, face-to-face, or blended. Suggestions, most of which apply to education in general, relate to training, skills, resourcing, flexibility, and linking language to culture.

Keywords: Student Experience, Online, COVID-19, Culture

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Introduction

Education in its various forms, and many other aspects of life, is emerging from the online life associated with the Covid-19 pandemic and lockdowns. This article aims to narrate the experiences of staff and students on one English for Specific Purposes (ESP, a sub-category of English as a Second Language teaching), programme at a university in New Zealand and reflect upon those experiences, using student feedback. The programme has specific goals of students experiencing and learning about the culture of New Zealand and interacting with its people, as well as the more usual ESL and ESP goals of developing students' language and professional skills. Online, especially under notice Emergency Remote Teaching (ERT, see Moore et al., 2021) conditions with little notice, the culture-related goals were achieved with difficulties. This article narrates the experiences, learning, and innovations of the staff and students on this programme, relates them to wider research in ESOL and education fields, and suggests key learning points for the future.

This articles begins with looking at language and culture, and at the online education situation pre-Covid-19, then the ERT situation during 2020, and how online teaching changed with experiences as *planned* online or hybrid courses continued in 2021 and beyond. The article describes our programme and the innovations made for different iterations through 2020 to 2023, and corresponding student feedback. After a hiatus, the programme was taught online in 2022 with a small follow-up face-to-face component in 2023, and a new face-to-face iteration began in 2023 with small blended and follow-up elements.

The topic of teaching and learning through Covid-19 and other disruptive events has been covered by many articles and several books, some in subject areas and some covering education more broadly. Some are cited in this article. A review of all would be a book itself.

This article uses a combination of autoethnographic evidence and experience, student feedback/voice from surveys and semi-structured interviews, and narrative style. It comments on effects of innovations and changes to each iteration of our programme as teaching mode fluctuated from 2020 to 2024. It relates innovations to wider research, and concludes with overall findings and suggestions. For practitioners, it aims to offer ideas which they may be able to integrate into their own programmes, and factors to consider when planning programmes which may need to be of flexible delivery mode.

Context

Language and Culture

Studying a language in a community that speaks it provides opportunities for engagement in associated society and culture(s), with Newton (2009) calling language and associated culture "intertwined and inseparable" (p.2). However, only a few language learning articles focus on learning about and experiencing associated culture and interacting with local people as a specific goal of a programme. Notably, using the local community and environment as resources for learning has been covered by Shannon & Galle (2017), at IICE-Hawaii by Doi (2024), and others discussing Place-Based Learning. Cai (2024) described activities such as bilingual guided meditation to deepen learning and cross-cultural awareness.

Online Education

Distance, open, or correspondence learning has existed for centuries, helped by developments such as the printing press, postal services, telecommunications, and the internet (Li, 2018). Online education has been available since the late 20th Century, and despite some mixed reviews it has been generally recognised to be of good quality and reliable since early this century (Dhawan, 2020; EA, 2022; Li, 2018). Generally, pre-2020, students knowingly enrolled in such education, it was well planned, and taught by choice.

Before 2020, advice and research findings regarding online teaching and learning had several overarching concerns. These especially applied to language education, and included students needing explicit activities and advice to engage with their peers and feel part of a group or community. Other considerations included that not every student has skills using or reliable access to digital devices (including in 'developed' countries), that there is a limit to the number of new platforms and programmes which can be learned at once, and that face-to-face activities cannot be simply used online with no alterations (Edwards, 2022; Kiddle et al., 2020; Lodge et al., 2022; Marshall, 2018).

Effects of Covid-19

In early 2020, with the need worldwide to teach online under *un*planned emergency conditions, things changed. ERT had taken place before (Dhawan, 2020; Dohaney, 2020; Moore et al., 2021), but it had not previously been on a worldwide scale (Pusey & Nanni, 2021). Academic and blog articles, online workshops, and quick reaction research aiming to report experiences and suggest how to cope with the situation emotionally or professionally appeared almost by the day during 2020. Many activities, platforms, methods, and philosophies for teaching under ERT conditions were outlined, and a running theme was that the same teaching quality level as in 2019 was not expected. From 2021 onwards, common findings and suggestions from different contexts were brought together in books and articles. Space precludes listing all such publications and blogs here, but for a few examples see Chan et al. (2021), EA (2022), Edwards (2020, 2022), Hertz (2022), Kiddle et al. (2020), Lobos et al., (2022), and Ruegg (2023).

The Programme This Article Focuses On

The programme in focus here aims to develop professional language skills and knowledge of mid-ranking civil servants aged 25-45 from low and middle-income countries in Southeast Asia and Mongolia, and concurrently to develop connections with and knowledge of New Zealand's people and its culture. Pre-2020, this latter outcome was achieved in various ways, including a period in homestay families, being on a New Zealand university campus, social interactions with volunteer local conversation partners, and workplace visits. Participants also share flats with classmates of a different nationality.

Feedback about the cultural knowledge and connections aspect from 2019's cohort, the last pre-Covid example for comparison, included repeated frequent effusive praise over conversation partners and homestays, with comments[1] such as, "we have a long conversation about many thing, about the life, and about the plan in the future, about the culture in New

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[1] Note: Student comments here are reproduced with their original language errors, with the aim of maintaining genuine participant voice.

Zealand, about the coffee shop…", and comments on exploring the country, attending cultural performances, and new breakfast discoveries. Further example quotes from participants relating to this goal included:

> "the life, the custom and the culture in New Zealand, is very like a mysterique for me before…But after this time I know much about that."
> "My roommate is from Laos…we share cooking styles."
> "in my country…no one is like, hey, you must use your helmet…"
> "during my weekend I alway went out…and see how New Zealand and Nelson people are and people communicate."
> "When I just back from New Zealand I shocked, because traffic jam every morning."
> "Apart from English I actually learned a lot…such as custom of New Zealanders…how they cook, food, and also we learn about daily life in New Zealand. Very big difference between our custom and New Zealand custom."
> "In Indonesia we hardly have a chance to do walking in the city or in the bush like tramping."
> "Homestay, they talking about daily life, daily activity"
> *(NB: permission for this data collection and use was gained from the university human ethics committee and given by the students in consent forms)*

2019 and 2020's cohorts had 59 and 63 participants respectively, with slightly under a quarter of each cohort coming each from Cambodia and Laos, one or fewer participant from Mongolia, and otherwise fairly evenly split between Vietnam, Timor-Leste, Indonesia, and Myanmar. Post-hiatus programmes from 2022 onwards were halved in size (until later in 2024), and Myanmar was no longer in the programme. Otherwise, participant nationality ratios remained similar. There was a roughly even gender split among programme participants.

The 2020 Experience

In March of 2020 New Zealand went into national lockdown, with borders closed and instructions to stay at home. This had been predicted, and both staff and students had received a small amount of training in using Zoom, while several emails with ideas for teaching and learning online had been sent to staff. Some staff and students had taken part in online learning in the past, planned and by choice. From a programme perspective, the lockdown was announced two weeks after our students had moved to Wellington following two months homestays and attending language schools in regional New Zealand.

Our programme received permission from the university to keep going online rather than take a break, as staff and classmates were the only support network our students had in the country. We preferred not to leave them essentially abandoned. Flatmate arrangements were reorganised so students were living with people who spoke the same first language. Following what advice we could find (e.g., Gómez-Rey et al., 2018; Hodges et al., 2020; Mahul-Mellier, 2020; Marshall, 2018), we tweaked a lot of materials and activities to suit Zoom and computer screens, taught in shorter bursts, and set off-screen activities that were synchronous and nonsynchronous for students to do with flatmates. Attempts to simply present classroom-based lessons on Zoom did not work well regarding engagement, connectivity, interaction styles, material format, and timings. In general, three-hour classes became 3–4 hour learning sessions with a mix of online and offline activities of 30–60 minutes each.

Slightly under half of the conversation partners (but with varying levels of interaction), and workplace visit hosts, and 7/10 guest speakers, volunteered to continue in their programme roles using Zoom or similar. Much like the students and staff, these members of the team were also developing their own abilities in online interactions under home and home-'office' conditions that had great variation regarding distractions, lighting, connectivity, etc. In addition to online interaction attempts listed above, several small-group online conversation sessions were organised, led by volunteer lecturers, scientists, ministry staff, etc. known to programme staff. Multi-country song-and-dance and cooking demonstrations through Zoom were also run. Examples of the student experience are visible at:
https://www.youtube.com/watch?v=FGUrQVTiC9s

We wished to know whether the ERT version of the programme had been effective in building students' knowledge of and connections with local people and culture. To investigate this, the author collected student feedback at or shortly after the end of the course, collected by anonymous survey of all students and through semi-structured interviews with eight students from the 2020 programme and nine students from the 2019 cohort who responded to an email asking for volunteers to interview online. See Edwards (2020) for greater methodological detail. This initial piece of research became an ongoing tracking of and reflecting on student experiences under different conditions and programme iterations, and comparison of those findings with international ones, likely concluding with a presentation at the CLESOL conference in Wellington, New Zealand, in April 2024.

2020 Findings

The 2020 students did appear overall to feel that they had learned about New Zealand culture and society and had built personal and professional connections, with comments including, "No matter what position no matter what job other people do, I just feel that they are treated equally…because they all human like us not because of other aspects of their lives. But in Asia we still consider others by their age, their ranking..." They also indicated that studying online had negatively impacted the experience, but with some new skills developed. For example, one student said and several students said similar to, "I think face-to-face is better of course…learning online by Zoom…is a new method…I can learn some…new techniques". Feedback included many mentions of homestay families and conversation partners, and additional quotes such as:

> "Even though we could not experience in workplace visits we had a lot of coceptual knowledge through outside lectures/ conversation groups /documents supported by tutor /exploration with [conversation partner]."
> "If there was no covid-19 we had a chance to visit these places…virtual workplace visit also happened, but I think it's much better if we have the opportunity to get real experiences."
> "When we lived in a homestay we learnt a lot about the daily life of New Zealanders…my host took us to participate in their parties."
> "I think New Zealander is in the leading way is in promoting the wellbeing of the workers."
> "If we talked about the interesting things, we just forget about we interact by Zoom because we enjoy the conversation. But for the learning, the Zoom is quite not good but is really better than nothing."
> "Isolation of Covid-19 was challenges and make us have to be more innovative."

> "In the beginning, I afraided that I cannot improve my studying but after all I also can see my ability change compare with my first time that I arrived."

Our experiences and those of our students' corresponded with a lot of international findings: that social connectivity or community, support networks, and feelings of belonging are important to student success and motivation (Douglass, 2020; Hubertz & Janowsky, 2024; Lobos et al., 2022); that connecting with locals and learning about local culture can be done online but may be less effective and needs to be done differently (Kauppi, 2020); that most students appreciated some form of programme being available (Chan et al., 2021; Douglass, 2020); and that the equipment and connectivity available to students and staff, and their reliability, and everyone's digital literacy had noticeable effects on the experiences (Bryson, 2021; Li & Roihan, 2024; Octava, 2021; Peridore & Mcvoy, 2024; Ruegg, 2023).

The Hiatus Experiences

The main programme this article is based on was on a two-year hiatus from mid-2020. The staff, however, taught on several online and hybrid programmes focusing on English for Governance and English for Academic Purposes, and alumni reconnection micro-programmes. Feedback and experience gained on those programmes, and contemporary research in the field worldwide, informed the development of a new model for our main programme when it returned via online mode mid-2022.

We included various innovations in these courses. These included using digitally-skilled students and staff to train and mentor students in online learning skills during their enrolment or orientation periods (Moore et al., 2021; Peridore & Mcvoy, 2024; Pusey & Nanni, 2021), and time zone-based study groups. Some study groups included mentors who were graduates of the courses. We reorganised courses into shorter blocks with gaps of several weeks between them, created resources that are accessible and more able to be reused in different modes and programmes (Kiddle et al., 2020), and we used shared collaborative documents. We also encouraged socialising among online students, including sometimes with friends they had met in New Zealand previously. Sometimes students led and organised socialising and sometimes we set it up. Gathertown online socialising spaces and Padlet noticeboards for introducing selves were used by us in 2021–2022, but around the world many platforms were used.

From these experiences, we noted that students and staff learned new digital skills and hybrid classroom management skills, (EA, 2022; Hockly, 2020; Steven, 2022), and it became clear that potential offshore students needed clear information about teaching mode and styles, and about workload and technology/connectivity *requirements* (not recommendations), to be able to participate. Students expressed appreciation for courses being available, and that they felt learning outcomes were achieved, but they also expressed a preference to have had the courses face-to-face. Alumni reengagement micro-courses, had positive feedback related both to new content learning and interacting with a wider group of people than locally, being able to, "reconnect with New Zealander, [peers] in different intakes and building more knowledge…By attending this programme I can see how much I have improved include personal capacity and knowledge."

Alongside the positive feedback above, difficulties continued to be encountered. These included physical aspects such as eye strain related to long hours at a desk, looking at a computer, or simple online learning fatigue, and sometimes trying to do too many things at

once (Kiddle et al., 2020; Marshall, 2018). Lack of human interaction was also a difficulty (including, "sometimes we can't see each other during class" or similar comments from students). As time passed and students were allowed to physically travel to other countries from mid-2021, we lost some to institutes there. There were also continual difficulties with reliability of equipment and internet connections, and access to them, with family responsibilities, and with workload demands from managers for students on part-time programme – especially if they were using the office computer, or were sent into the field with no connectivity. These were despite students' best intentions.

As time passed we moved from ERT to *planned* online or hybrid teaching. It had become clear that providing effective language education, connection-building, and cultural exposure online was possible under both ERT and planned conditions, but much more effectively when planned and knowingly enrolled in. It also seemed that, in general, students and teachers preferred face-to-face classroom connections and environment. Inequities in connectivity, equipment, and digital skills existed despite students knowing well in advance that they would study online, sometimes related to local infrastructure conditions. Our main programme returned online in 2022, with a face-to-face component planned for 2023 when we then hoped that international borders would be open.

The experiences in the rest of the world appeared to be similar to ours. Presentations and publications included discussions of trying to do too much, frequent needs for breaks, inequities in access to and skills using digital equipment and connectivity, inappropriate workspaces, and problems with lack of interpersonal interaction (e.g., Bryson, 2021; Chan et al., 2021; Hertz, 2022; Li & Roihan, 2024; Lobos et al., 2022; Moore et al., 2021; Peridore & Mcvoy, 2024; Pusey & Nanni, 2021).

Planned Online, Then Blended (2022–2023)

The full programme returned *online* for three months beginning July 2022, with a small follow-up workplace-based project, and with a planned further symposium in New Zealand in early 2023 (which might have instead taken place in Southeast Asia). The symposium did take place in New Zealand for three weeks in February 2023, and the students were able to make face-to-face connections with local people and each other, present their workplace projects, and visit professional and touristic sites. A visualisation of the three versions of the programme is in Figure 1, below.

This online (then blended) programme used most of the innovations listed above, especially including flexibility of attendance hours, and activities to build digital skills and social connections (EA, 2022; Lobos et al., 2022; Peridore & Mcvoy, 2024). With warning, many conversation partners, guest speakers, and workplace hosts were willing to engage students online. This was an improvement on 2020 ERT, but not at pre-Covid engagement levels. Student feedback following the main online programme, such as, "we not only learn language but we have created the network and learning culture among…participants and New Zealand's culture", and, "when we have online programme…we are not standing in the same shoes. Like everyone have their different obstacle or their different problems," suggested goals had been accomplished, but accomplished imperfectly.

The symposium in New Zealand seemed to, according to student feedback, greatly enhance students' connections with local people and knowledge of the country. One student reported, "Speaking partner is very good and kind…they help us to travel to visit New Zealand places

on the weekend in New Zealand" and another reported visiting a conversation partner's house and dog. Participants had also found more opportunities to practice using English, related by one student with, "we don't have a good time to practice our English outside our time in Zoom meeting. But when we are three weeks in…New Zealand we must using English in every situation". Community-building was barely needed because students had already got to know each other online. Further feedback suggesting that the connections and culture goals had been achieved more successfully in New Zealand than online included:

> "A lot of classmates comment that what they like most in the field trip they choose the Māori village."
> "Beside of English ability we got some cultural understanding not only for the New Zealander or Kiwis, but we can learn another culture from our fellow southeast Asian peoples."
> "The activity that I learned from a New Zealand culture I learned when I went to visit New Zealand. Online is just read as some article, a text article…"
> "[workplace visit to Wellington airport] I find it fantastic…I learn more from the custom system. I lot of things very interesting…They have two responsibility, on behalf of the immigration department as well, instead of only the Customs in Vietnamese, is very different."
> "…we could not worry about the computer problem, and I think communicate directly, face-to-face, is more better than online course."

That said, there was also some feedback noting lack of homestays and minimal time to meet conversation partners.

Up to 2020	2022-2023 blended	2023+
Seven weeks study and homestay in regional **New Zealand**.		2-3 pre-commencement brief online meetings
Three months in-person study in **Wellington** (including language and professional knowledge classes, workplaces, guest speakers, cultural activities, extracurricular conversation partners, etc). 2020 programme disrupted by nine weeks of **ERT** then socially-distanced classes and few social interactions.	**Three months** study online (including language, culture, and professional knowledge classes, virtual workplace visits and guest speakers, *online* conversation partners and cultural site websites/virtual tours. etc).	**Three months** in-person study in **Wellington** (including language and professional knowledge classes, workplaces, guest speakers, cultural activities, extracurricular conversation partners, etc).
	2-month **part-time project** online based on a home workplace issue.	6-week **part-time project** online based on a home workplace issue.
	Three-week visit to New Zealand. Including **two weeks in Wellington** (present projects, guest speakers, social interaction, workplace visits, met conversation partners face-to-face), and 6-day cultural road trip to Auckland.	Four-day symposium in **Thailand**, presenting projects, guest speakers, and two cohorts meeting.

Figure 1. Comparison of different versions of the programme

The New Model: 2023 Onwards, Face-to-Face+

In March 2023, the programme returned to face-to-face mode full time, in Wellington. Many aspects of the programme are the same as before Covid-19, however the programme no longer has seven weeks of language learning and homestay in regional New Zealand. New aspects of the programme include a workplace-based, part-time, six-week project with online check-ins once students have returned to their countries, and a four-day multi-cohort symposium in Thailand in early 2024 where students present those projects. The course now includes contact between cohorts, blended components, and what the course funders call 'multiple touch points'. One issue with the new model has been logistical problems delaying the start of the conversation partner programme for several weeks for each intake, despite student feedback being clear that this is a key feature in achieving our cultural knowledge and connections goals.

Feedback from students on 2023's two cohorts showed that 100% of participants felt that they had increased their understanding of New Zealand society and culture and felt more connected to New Zealand, and (for 62/63 respondents), to its people. Anonymised interview and free-text survey comments cited conversation partners and fieldtrips multiple times, such as, "for conversation partner, I alway walk or shopping together, and we alway discuss what is Kiwi, New Zealand, what do they like, or what do they alway do when they have a free time". Around half the students seemed to feel that the new form of the programme was too short. One example comment was, "to learn more about New Zealand culture, homestay would be a good idea to learn understand culture,", and another was, "I would love to have more weeks to complete this course because it is too [intensive]". Additional comments from students' interviews and surveys include:

> "The thing that surprised me: In parliament when we visit they have [protesters]. In my country the government won't allow to do that."
> "I'm interested in Māori culture but we don't have much time for exploring Māori culture here."
> "The trip to Rotorua when we can find the brilliant culture of Māori. That New Zealander try to keep it."
> "I learn about New Zealand cultural a lot, especially from my conversation partner. After school time I go around and spot how the people live in New Zealand and the way of life going on.."
> "I also love to visit a farm. To alpaca farm. We find online, they pick us up at Wellington station. That's what I imagine about New Zealand the about the farm when I came here I see I think it's not New Zealand, but then I see that farm and [laughter]."
> "I learned that culture of New Zealand and I really like because they accept you for who they are no matter what you are."
> "The workplace visit should be longer"
> "We shopping together. I visit her house twice. We cooked together...and I also have a chance to meet her family, like her younger daughter and her nephew."
> "When I go outside in my country if I see foreigner, the tourist, sometimes they confused about something so I try to jump in and talk with them.."
> "We love each other as friends, without boundary, without race, without difference, I love us."
> "unfortunately my CP very busy…we only meet two times. But I can tell my friend and I share a conversation partner with [her]"

In early 2024, both of 2023's intakes (minus a few missing for health or further study reasons), met together in Bangkok with some of our programme staff for a four-day symposium. At this they presented their workplace projects, networked, practiced their English in an immersive environment again, and had some guest speakers from programme-related embassies and government departments. Feedback included repeated reference to enjoying reconnecting with classmates and staff and making new connections, learning from and forming personal and professional bonds with each other, and the opportunity to use English continuously for several days. The symposium was rated highly by 96% of the 57 participants, and 98% said that doing the project had increased their confidence in using English and giving presentations. Notably at this stage, there were no comments about the symposium or time in New Zealand being too short. The general impression from staff was that the student participants were perhaps too happy to be in Bangkok, (re-)connecting, and experiencing the symposium to complain about anything.

Overall Reflections and Key Points

We found it was possible to teach an interactive language course effectively during Covid-19, whether teaching face-to-face, online under planned or emergency conditions, blended, or hybrid. We are far from unique, as many of the sources referenced in this article demonstrate (e.g., Pusey & Nanni, 2021). We also found it was possible to develop students' connections with and knowledge and understanding of local people and culture online under both ERT and planned online conditions. However, these aspects can be achieved more effectively online with good planning, proper skills, and dependable infrastructure and equipment. Further, the cultural elements of the programme are *especially* more effectively achievable face-to-face.

Additionally, new skills have been learned by students and teachers worldwide, and the need for upskilling staff and students and for resilience planning has been made clear. It remains to be seen how many institutions remember this against staffing and budget constraints. Institutes and governments who invested in such things prior to 2020 found that to be advantageous (Moore et al., 2021). What the ongoing demand for online and hybrid courses is, and how many institutions continue to offer them, also remains to be seen due to online burnout, not all young people being digital natives (Marshall, 2018), but a youthful demand for online learning seemingly on varied individualised terms (Hubertz & Janowsky, 2024).

Moore et al. (2021) and Thorkelson (2023) suggest that the adoption of new technologies needs to be encouraged by institutions and enabled by their infrastructure, and that those institutions and staff already familiar with teaching online had a less challenging time in 2020. Dohaney et al. (2020) list effects of and barriers to institutions being resilient to educational disruptions, looking at individual to institutional and system levels and the effects of having or not having community, support, leadership, permitted flexibility, digital literacy, and appropriate and reliable digital systems. Thorkelson (2023) also points out that teachers often become the sole staff member interacting with students during online programmes. This means that they may acquire a larger pastoral and community-building role than on face-to-face programmes. Our experiences were that our brief preparation for ERT was incredibly useful, and that online we did have a greater role in building communities with classes than pre-Covid. We are also grateful for the volunteer workplace and conversation partner connections and pastoral team who continued with us through these years.

Key recommendations for front-line teachers from our experiences are:

- Make sure you and your face-to-face students are able to teach and learn online synchronously and asynchronously, and have reliable software and equipment to do so. This might require permission from managers, and will require practice.
- Promote the value of maintaining these skills even when not 'needed'. When they are needed, keep forms of learning on offer through adversity.
- Do not try to do exactly the same activities off and online. Instead, consider how the same goals can be met using different or adapted activities. Simultaneously, consider how staff and materials can be used in adapted ways rather than completely recreating a programme or resources.
- Through adversity, retain enough resources, including staff, so that core components of programmes can still be run.
- For language teachers, embed cultural learning and interactions into your language teaching as much as possible, online or in person. Some institutes have separate staff for this, but learning a culture is not done separately from learning a language.

Conclusion

As many others have found in the last four years, online study works best with proper planning, and with staff and students who are both trained in online teaching and learning and have suitable and reliable equipment (Bryson, 2021; Moore et al., 2021; Octava, 2021; Rasiah et al., 2020; Vičič, 2022). Students expressed positivity regarding developing skills to learn online and it is clear that they can develop language skills and cultural knowledge and connections in that medium, but more effectively if staff and students are expecting to be online. However, such learning is achieved most effectively face-to-face, and many staff and students prefer that medium. The most updated, and likely final, iteration of this research will be discussed at the CLESOL and possibly NZALT/FIPLV conferences in Wellington and Auckland, New Zealand, in April and July 2024.

Online, hybrid, and blended programmes are useful to offer and appealing to some, and it is good to have a diversity of offerings and not keep all eggs in one basket. However, most teachers and students appear to prefer face-to-face programmes where possible (Kiddle et al., 2020; Ruegg, 2023), especially those with interactive, communicative, and cultural experience elements, and even more so if face-to-face is what they thought they were enrolling in. As three students who experienced both modes pointed out, "[in] New Zealand we must using English in every situation", "we could not worry about the computer problem", and "it changed my life…to communicate with you all and also the classmate, directly in the person, not online anymore".

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How Empathic Communication Is Conducted in the First Encounter:
A Cognitive-Pragmatic Analysis of Clinical Interviews by American Medical Students

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Abstract

Medical and healthcare universities often use simulated patients (SPs) in simulation practicums, which provide students with important opportunities to develop their interactional competencies. A total of 30 clinical interviews were extracted from the audio recordings. The interactions between American medical students (MSs) and SPs were examined aiming to clarify the process of building empathic communication from a linguistic point of view, especially from a cognitive-pragmatic perspective. In other words, the focus of the analysis was on the utterances and their interrelationship with the emotional involvement of each participant. Positive emotions associated with laughter, as well as positive evaluative statements, were identified and these formed the cornerstone of the analysis. In some sessions, a question-response interaction involving a basic medical questionnaire may provide a more extended and developed interaction on a specific topic. In such cases, a sense of closeness and intimacy emerges, and that aids in building empathy. A cognitive-pragmatic theoretical framework will also be used to clarify the mechanisms by which verbal exchanges of intimacy and laughter trigger positive emotions, as appropriate.

Keywords: Medical Discourse, Empathic Communication, Contexts of Laughter

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Introduction

Objectives

This study analyzes the discourse of an interview between a medical student (MS) and a simulated patient (SP) in the context of the first meeting, in which empathy building is considered difficult. It would be interesting to observe how conversational participants engaged in self-disclosure. In this study, we report the results of our observation of the process of empathy building between two people, focusing on the exchange of words that evoke intimacy and laughter as positive emotions.

What is Empathic Communication?

According to Riley (2019), it does not judge or evaluate other people's words but just shows that you have understood them. Furthermore, to describe empathic communication, it is necessary to review the definition of empathy, which has been discussed in light of the Roter interaction analysis system (RIAS) (see Roter and Larson 2002). Roter and Larson (2002) stated that "Empathy is operationally defined in the RIAS manual as statements that paraphrase, interpret, recognize or name the other's emotional state."

On the other hand, Sandvik et al. (2002) pointed out other RIAS codes that also reflect emotionally-relevant talk, including such categories as 'legitimize,' 'reassure/shows optimism,' and 'concern.' Roter and Larson replied to Sandvik et al., saying, "what is done with these individual codes is an analytic and interpretational challenge, not a coding issue."

Theoretical Framework

Although RIAS coding is very informative, it is not surprising that controversy arises over the definition of empathy as it pertains to human emotions. This study proposes the use of another interpretive hypothesis, a cognitive-pragmatic theory called Relevance Theory (RT) proposed by Sperber and Wilson (1986/1995), while utilizing RIAS. The superiority of the Relevance Theory lies in the idea of a higher-order schema that embeds propositional content. Higher-order schemas are useful in that they can express, for example, the degree of the confirmatory nature of a confirmatory question or the speaker's intentions and attitudes with a positive or negative orientation. Spoken utterances that do not have a linguistic component, such as 'laughter,' can also be treated as elements that contribute to the restoration of communicative content in the same way as speech.

The hearer or the interpreter of an utterance has a thought of higher-order explicit meaning, and it is dubbed 'higher-level explicature (HLE).' HLE can be part of assumptions of possible interpretations. For example, when medical student produced an utterance like "is there any cause for increased stress," simulated patient, the hearer, may or may not have one of the HLE (1b-i), (1b-ii), or (1b-iii). (see also Goto et al. 2022 for confirmatory statements)

    (1) a. confirmatory statement produced by MS: "Is there any cause for increased stress?"
        b. HLEs:
                i. the speaker is asking the hearer whether P (P = proposition)
                ii. the speaker is confirming whether P.
                iii. the speaker assumes that P (and therefore has a desire to confirm).

Similarly, the speaker's emotions associated with laughter can be recovered as HLE. One possible HLE may be that the speaker has an associative (or positive) feeling towards what is expressed by the linguistic content of the previous MS utterance. Including the interaction in (2), we will see detailed analyses of laughter in the data used in this study.

> (2) MS: Well, I mean, managing a household is a job on its own, right?
>   SP: [laughter]

Data & Method

Data

A total of 30 clinical interviews were conducted between American MSs and SPs in a simulation practicum class (audio recorded and transcribed).
Duration of each session: approximately 20 min.
- Symptoms of SPs: Fatigue
- Diagnosed: No

Method

We extracted the transcribed text utterances accompanied by laughter or laughter itself. We then categorized the laughter in terms of the 'context in which it occurred.' We identified the person who produced laughter and analyzed the effects of laughter, in particular, whether laughter contributed to empathetic communication, and identified the causes of laughter.

Contexts of 'Laughter'

Several parameters have been considered in previous laughter studies. As an instance, external contexts such as 'being tickled,' 'watching humorous videos' or 'hearing jokes' immediately come to mind, as described by Vettin and Todt (2004). Laughter tends to be contagious in everyday conversations and is frequently induced by laughter from others (Provine 1992). In this study, however, only the following two points are taken up as 'contexts of laughter' because this study aims to explore the ways in which laughter contributes to communication in discourse (in this case, interviews).
- an utterance by the previous speaker (including emotional output such as laughter by the previous speaker)
- an utterance by the person who laughs (i.e., laughter immediately after their own utterance)

Among the collected 'laughter,' chains of laughter were observed on several interviews. Many chains of laughter occurred on occasions of extended or developed conversations (i.e., extended from the basic, scheduled interview QA). This sort of 'derailment' or 'going off on a tangent' is another keyword that we would like to focus on in this study.

Typical Flow of Interview

MS first asked about the chief complaint and then conducted a variety of other interviews, including b. through k., as listed below. After the interview, the session ended with a physical examination.

a. chief complaint (→ fatigue)
b. amount of sleep
c. pains of stomach/chest, etc.
d. medications
e. allergies
f. smoking & alcohol
g. medical history
h. medical history of family members (including parents, siblings, children)
i. any changes in appetite, indigestion, urinary, etc.
j. headaches, numbness, etc.
k. any feelings of anxiety, depression, etc.
➡ physical examination

Quantitative Study

Results

TABLE 1. Comparison of 'Laughter Count' between MS and SP

	Number of occurrences of laughter <range>	Median number per interview	Whether or not a chain of laughter <range>	Contexts of laughter a. after own utterance b. after partner's utterance
MS	3 - 42 times	6.0 times	0 – 3 times per interview session (20-min each)	a. 76% b. 24%
SP	0 - 10 times	2.26 times		a. 40% b. 60%

During the 20-minute interview conversation, the number of times each participant laughs ranged from 3 to 42 for the MS and 0 to 10 for the SP, as shown in TABLE 1. The medians were approximately six times for MS and approximately 2.26 times for SP. The number of times a chain of laughter occurred ranged from one to three per interview. The figures show a contrast regarding whether laughter occurred at the time of their own utterance or that of their partner (i.e., the context of laughter): 76% of the laughter produced by the MS occurred immediately after their own utterance, whereas 60% of the laughter produced by the SP occurred immediately after their partner's utterance.

To ascertain the difference in the laughter after their own utterance and after partner's utterance between MS and SP, Man-Whitney U tests were conducted. The statistical analyses revealed that the number of the laughter after their own utterance were significantly higher in the MS group ($Md = 2.0$, $n = 30$) compared to the SP group ($Md = 0.0$, $n = 30$), $U = 241.00$, $z = -3.20$, $p = .001$, with a medium effect size $r = .41$. On the other hand, it was found that there was no statistically significant difference between the MS group ($Md = 0.0$, $n = 30$) and the SP group ($Md = 1.0$, $n = 30$) in terms of the number of the laughter after the partner's utterance were not significantly, $U = 419.00$, $z = -0.49$, $p = .625$, with a small effect size $r = .06$.

Note that because this study did not aim to analyze the perception of laughter itself, the acoustic measurements focused only on the duration of laughter and not on other features,

such as those related to fundamental frequency. Rather, it focuses on the process of understanding empathic utterances and does not consider their frequency or other features.

Discussion

Based on the results of the data analysis, we may state the following.
- MS produced more 'utterances accompanied with laughter' than SP.
- A large percentage of laughter by MS was produced immediately after the MS's own utterance.
- In contrast, a large percentage of laughter by SP was influenced by previous MS utterances or laughter.
- Chains of laughter were observed during some interactions, many of which occurred during extended conversations (for example when MS asked SP about her family members, SP talked about her children's college, and MS shifted the topic to her own college. Laughter occurred during each participant's 'self-disclosure.' This type of topic extension often occurred after almost all scheduled questions and before physical checks).

According to the analysis by Vettin and Todt (2004), who recorded and analyzed conversations in a setting similar to that of daily conversation, the participants often ended their own speech with laughter as well as laughing at the other participant's utterance. This study used data from a simulated conversation, in which MS and SP played the roles of interviewer and interviewee, respectively, in a setting different from that of everyday conversation. However, the results of this study partially resembled the results of the analysis of daily conversation in that MS often laughed immediately after the speaker's own utterance. The number of times that MS showed this "laughter after their own speech" was significantly larger than that of SP.

Qualitative Study

We regard it as highly significant to conduct an integrated quantitative and qualitative analysis. In this section, we will take a closer look at the behavior of the participants in the conversational interactions, selecting some examples from a few interviews in which the effect of laughter is noticeable.

A Chain of Laughter

Excerpt 1 (interview 1)

077 MS: No. And what do you do for work? /[1]
078 SP: Um, actually, I haven't—I'm not working currently.
079 MS: Okay.
080 SP: I was—you know, it's—it's so strange to say it, like, it feels strange to me. I was a stay-at-home mom, but, now, they're, um, in college. So—
081MS: Oh, wow.
082 SP: I'm kind of—yeah. And so-so, no, I used to work, um, before-before they were born. And when my daughter was born, I—I stopped, and I'm just a stay-at-home mom, but, currently, no, I'm not working.

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[1] / rising tone of question
[2] [laughter] explicit/clear laughter

083 MS: Well, I mean, managing a household is a job on its own, right? /
084 SP: **[laughter]**[2]
085 MS: You know what I mean? You know?
086 SP: I know.
087 MS: [unintelligible] started working, you know, they mean, like—
088 SP: **[laughter]**
089 MS: Definitely.
090 SP/MS: **[laughter]**

In this part, SP smoothly answers MS's questions. Here, in response to MS's question "what do you do for work?" ([077]), SP answers "I'm not working currently" ([078]), after which SP talks for a while, and then MS replies saying, "managing a household is a job on its own, right?." ([083]) This elicits laughter from the SP. Shortly thereafter, the SP laughs twice immediately following MS's utterance. In other words, the first MS utterance triggers a chain of humorous laughter.

A tag 'right?' at the end of an utterance [083] has a rising tone; this linguistic element leads them to empathic communication. In other words, this element suggests that the speaker (MS) assumes that the hearer (SP) has also known information expressed by the utterance, and therefore it conveys the speaker intends to lead the hearer to the assumption that speaker wants to confirm that the information is already shared among them. It may then be interpreted that the hearer reads humor with that intention, which leads to laughter. Furthermore, SP's laughter has no linguistic elements. However, it is possible to describe a speaker's thought as follows (via pragmatic inference):

> *The assumption that can be pragmatically recovered:*
> The speaker's laughter shows a speaker's positive emotional attitude toward a thought expressed by the hearer's previous utterance (that managing a household is a job of its own).

An Extended Interaction With Laughter

Excerpt 2 (interview 23)

092 MS: Okay. What--what did-- what were you hospitalized for? /
093 SP: The birth of my-- both my children.
094 MS: Okay. How old are they now?
095 SP: My daughter is 20 and my son is 18.
096 MS: Oh, wow. Okay. So just both in high school, huh? /
097 SP: No, both in college.
098 MS: No? / Oh, both in college. Oh, yeah. I look at my age and it's just like–
            cause we graduated at 17. **[laughter]**
099 SP: **[laughter]**
100 MS: Yeah. Okay-okay. Where are they at for college? /
101 SP: My daughter's away in Southern California-
102 MS: Oh, nice.
103 SP: -private School. And my son is a UH student. He's dorming over there.
104 MS: Awesome. What school in Southern California? /

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[2] [laughter] explicit/clear laughter

105 SP: USC.
106 MS: Oh, okay. I went to UCLA, so- **[laughter]**
107 SP: Oh.
108 MS: -we're rivals a little bit. **[laughter]**
109 SP: Yeah, just a little. **[laughter]**

Excerpt 2 illustrates a chain of laughter: Conversation is expanding with regard to the topic of SP's children. In [098] and [099], when the first chain of laughter was generated, MS asked an additional question about SP's children's college, then mentioned his own graduating college, UCLA, and finally ended with a humorous expression, "we're rivals" which elicited a big chain of laughter. This is followed by a derailed conversation that continues until [108], showing that this is a typical case of MS derailment, in that it involves MS self-disclosure.

Excerpt 3 (Interview 21)

134 MS: Okay. So that covers most of the history. So now I'm just gonna do a quick physical
            exam, okay? / All right.
/long silence 00:06:30-00:06: 40/
135 SP: My grandma's last name was Seto.
136 MS: Oh, really? / Yeah? /
137 SP: From Kaua'i, she's from Kaua'i.
138 MS: From Kaua'i? / Oh, okay.
139 SP: from there.
140 MS: Um, so I think we do have family kind all over the place. Um, was it pronounced
            Seto? / Because it's funny, like the--
141 SP: Seto.
142 MS: So the Japanese is the Seto but--
143 SP: Yeah, and there's Chinese kind of.
144 MS: Yeah-yeah. Oh, cool.
145 SP: Okay.
146 MS: Yeah, it's funny. I mean, it's a pretty big family and I definitely like, you know, I go
            to those big family gatherings and like, I don't really know everyone, who are
            those-- so, yeah.
147 SP: Yeah-yeah.
148 MS: Can't say for sure.
149 SP: Kind of picky, kind of the same.
150 MS: Okay-okay.
151 SP: Can the kids in the family kind of thing.
152 MS: Yeah. You know, Kaua'i that's not familiar. Um, yeah, not fully sure though, but
            yeah, a lot of us **[h]**[3] are around definitely.
153 SP: Yeah-yeah.

In the third excerpt, during the physical check, the SP began chatting about her grandmother's name. The use of 'we' in the line "I think we do have family kind all over the place," [140] clearly indicates self-disclosure and empathy. This conversation was further extended while keeping the current topic. No laughter was observed, except for a brief laughter in MS's final line [152]. However, there are several MS replies that contribute to

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[3] [h] breath as a laugh/short laugh

empathic communication, such as the placing of a strong force in "Oh, really?" [138] and the positive evaluation "Oh, cool" [144].

Where the Extended Interaction Often Occurred

As presented in the two extracts, there were cases of extended chitchat-style conversations, some of which occurred immediately before the final physical examination. In such cases, it is expected that the two people who met for the first time have already gone through the process of getting to know each other through several interviews and that the tension of the first meeting eased. Therefore, it is predictable that the chain of laughter was not intended but occurred spontaneously.

Conclusion

As a tentative conclusion, we argue that the elements that play an important role in facilitating empathic communication include emotions associated with laughter and extended conversations. Laughter can be explained as part of the linguistic content because it is almost always associated with a positive (associative, curious, happy, etc.) attitude of the producer toward the propositional content of the utterance, regardless of MS/SP.

Most of the cases of 'laughter' collected from the 30 interviews analyzed in this study was, in fact, labelled as so-called positive laughter from our point of view. Negative laughter also contributes to empathic communication.

In the interviews, MS self-disclosure was observed in extended conversations. This resulted in empathic interactions in which a chain of laughter occurred spontaneously. The cognitive pragmatic explanation of empathic communication in such cases is as follows: The participants' attitudes toward the propositional content of the utterance (propositional attitude or higher-order explicit semantic content) were understood by both participants as positive, and this understanding was chained, resulting in an empathic cognitive effect.

In seeking to further deepen the quantitative and qualitative study of verbal 'laughter,' it would be a shortcut to identify the speaker's propositional attitude to each utterance one by one, while clarifying what message the speaker intends to convey with each utterance in the context of the overall discourse context. It would be worthwhile to explore more sophisticated interpretive methods of language along with RIAS, as presented at the beginning of this paper, and make effective use of them in medical discourse analyses.

For Future Research: Keys to a Cognitive-Pragmatic Analysis of Empathic Communication

In the introduction of this paper, we referred to HLE as one of the key concepts in cognitive pragmatic research; while HLE is an appropriate concept for displaying the various propositional attitudes (including emotions) of the speaker, there is another fundamental concept that underpins HLE, called 'echoic use of utterances.' The 'echoic use of utterances' is an interpretive method of recovering speaker's feeling/attitude to the content of what she/he repeats, replace, or summarize the previous utterances. Sperber and Wilson (2012) proposed various types of echoic use of utterances. Let us consider the example of (3) below, as a response to Student A's utterance "I finally submitted the thesis last week!", Student B produces the utterance "You submitted the thesis" with three distinct tones of voice. In each

case, the interpretation can be analyzed based on at least two different attitudes toward the proposition. The first is Student B's affective attitude and the second is certainty. In the case (a) that the utterance is produced with a happy tone, the affective attitude will be (i) associative, and the speaker's certainty is (i) high; that is, the speaker believes the propositional content that the hearer submitted the thesis.

(3) Student A: I finally submitted the thesis last week!
　　Student B: a. (happily) You submitted the thesis! Good for you.
　　　　　　　　b. (cautiously) You submitted the thesis? Really finished?
　　　　　　　　c. (dismissively) You submitted the thesis! You finished!

　　Interpretation) Student B's affective attitude:
　　　　　　　　　　　(i) associative,
　　　　　　　　　　　(ii) concerned/curious,
　　　　　　　　　　　(iii) dissociative
　　　　　　　　　　Student B's certainty (as a propositional attitude):
　　　　　　　　　　　(i) high, S believes P,
　　　　　　　　　　　(ii) neutral (non-biased), S asks whether P, *or*
　　　　　　　　　　　　rather high, S confirms that P,
　　　　　　　　　　　(iii) dissociative, S does not believe P

We would like to argue that the integrative use of RT as an interpretive theory in the field of linguistics with RIAS and other analytic systems that are widely used in medical field can be beneficial in our analysis of medical discourse—esp. conversational data of simulation practicums such as ones that we used in this study. We believe that the interpretation of the explicit meaning of single utterances and the contribution of those single utterances to the discourse as a whole can be effectively analyzed using multiple theoretical frameworks.

Acknowledgement

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AI-Generated Practice for Textbooks: An Exploratory Analysis From the Classroom

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Abstract

Artificial intelligence has made it possible to generate high quality formative practice questions for use in higher education digital textbooks. Adding these automatically generated questions as a study feature for textbooks in an e-reader platform made it possible to democratize the learn-by-doing approach known to increase learning. Faculty in three different courses at a major public university in the United States assigned the automatically generated practice as a completion homework assignment with the textbook reading. In this paper, we investigate four automatically generated question types as well as an AG multi-question scaffolded tutorial using data from these three courses to better understand two research questions: how did these questions perform for students, and how did students choose to use them during their course? Additionally, survey data was collected to identify how students generally perceived the AG practice. Artificial intelligence can lead to unprecedented advances for teaching and learning technologies, but it is necessary to investigate how these tools perform for students in real-world contexts. The analyses from these classroom examples provide insights into how artificial intelligence can further benefit students in their everyday learning contexts.

Keywords: Automatic Question Generation, Textbooks, Student Perception

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Introduction

Of the many uses for artificial intelligence in education, one high value application is automatic question generation (AQG). Formative practice is a well-known high-utility learning method that benefits students of all ages, and struggling students in particular (Black and William, 2010). Integrating formative practice within expository content in a learning by doing approach has been shown to be more effective for learning and increases learning outcomes (Koedinger et al., 2016; Carvalho et al, 2017). Research on AQG has increased in recent years with a wide application of uses (including the generation of formative practice) and varying methods for development, yet few research studies have evaluated AQG systems using student data Kurdi et al., 2020). Recent studies of automatically generated (AG) formative practice in courseware found that the AG questions performed as well as human-authored questions for engagement, difficulty, persistence, and discrimination when analyzing student data (Van Campenhout et al., 2021, Johnson et al., 2022).

This study extends the research on AI generated formative practice by investigating AG questions placed alongside digital textbook content for students to answer as they read. As examined in previous research, this study includes matching and fill-in-the-blank (FITB) questions, but also includes multiple choice (MC), submit and compare (S&C), free response, and the first known investigation of automatically generated scaffolded tutorial activities. This initial research focuses on three courses at two four-year public universities where the instructors incorporated the AI generated practice as part of the course assignments. The goals of this first investigation into the use of AG questions in a textbook learning resource are to 1) determine how the questions performed using student data, 2) explore how students used the AG practice in their learning context, and 3) explore student perceptions of the questions as a learning tool.

Methods

The AQG process for these questions uses the textbook as the corpus for natural language processing (NLP) and machine learning (ML) methods. Using Kurdi et al.'s (2020) AQG categorization, both syntactic and semantic approaches are used for the levels of understanding while the procedure for transformation is primarily rule-based. Essentially, the NLP and ML tools identify important sentences and key terms then transform them into comprehension questions while also sourcing multiple types of immediate feedback. This AQG system also includes multi-question tutorial activities. The AG questions are delivered next to the digital textbook interface as a pop-up panel so students can answer questions and read the text simultaneously.

Figure 1: An example of an e-textbook page with the questions open in a side panel.
The FITB question is shown with scaffolding feedback, and options for
further interactions such as reveal answer, retry, and providing a rating.

In the Fall of 2022, three instructors volunteered to incorporate the AG practice into their course where the textbook was assigned as the primary learning resource. For Cognitive Psychology, the instructor assigned 4% of the student's grade for completion of a minimum of 80% of the practice, due by the end of the course. Psychology had 115 students, was online with synchronous sessions, and had exams as the primary graded component, with discussions, homework, and attendance included. The Sociology course used a Women, Gender, and Crime textbook and the instructor assigned 10% of the course grade to the AG practice, expecting students to complete the chapter reading and practice before coming to class in-person weekly. This class had 50 students and written assignments and projects constituted the majority of the graded components. The final course was a Public Relations (PR) capstone course for seniors, and the instructor assigned about 15% of the students' grade for completing 80% of the practice. The 31 students were expected to read the text and do the practice weekly for the first 8 weeks of the course, with the remainder of the time dedicated to a final project. Instructors had weekly data reports to monitor student engagement and apply points and also sent students a short, anonymous survey after students completed their work.

Results

Investigating performance metrics is a quantitative method of evaluating automatically generated questions that is easily comparable across research studies (Kurdi et al., 2020). In each course, students were assigned a minimum of 80% of practice completion to earn points in the course. Because of this incentivization, engagement with the practice was high across all courses. In Sociology students completed a mean of 86% of assigned practice with 50% of students completing 100% of practice in assigned chapters. In Psychology, students completed a mean of 92% of assigned practice with 68% of students completing all assigned practice. In PR, students completed a mean of 90% of assigned practice and 38% of students completed 100% of all assigned practice.

Course	Metric	Matching	FITB	MC	S&C
Sociology	N	32	109	4	10
Sociology	Mean Difficulty	0.92	0.81	0.88	0.93
Sociology	Mean Persistence	1.00	0.98		
Psychology	N	36	140	8	9
Psychology	Mean Difficulty	0.66	0.63	0.49	0.94
Psychology	Mean Persistence	0.95	0.92		
PR	N	59	141	10	14
PR	Mean Difficulty	0.79	0.86	0.57	0.89
PR	Mean Persistence	0.87	0.72		

Table 1. Mean difficulty and persistence for each question type for each course.

Table 1 reports the mean score on the first attempt and mean persistence (percentage of students initially answering incorrectly who continued until answering correctly) for the question types. For both calculations, only questions with 25 or more responses were included, and persistence was only included for matching and FITB, as MC and S&C had fewer questions and also often fewer students initially answering incorrectly. Sociology had the highest mean scores and also the highest persistence while Psychology had the lowest mean scores yet maintained persistence over 90% for both question types. PR had mean scores in the middle of the range but lower persistence means. It is notable that the S&C questions were open response questions, so mean scores in these cases are calculated by students voluntarily rating their response as correct or incorrect after submitting and reading the expert answer. Free response questions were not included in this table as they are not scored.

In addition to the AG questions that exist as stand-alone items in an activity, tutorial-style questions were also automatically generated. These tutorials are based on specific generated questions and automatically trigger a set of questions or interactions for students based on their response. While tutorials are less common than regular activities, they constituted 10.3% of all data in Sociology, 10.5% of data in Psychology, and 12.1% of data in PR. One tutorial type is attached to MC questions. Once students answered, they were told that another student selected one of the incorrect responses and asked to help that student and type a response (a free response question). While the incorrect responses are anonymous and not from their peers in the course, this tutorial type gives students a metacognitive activity with a social element. For example, a multiple choice question in the Sociology course provides a definition and asks students to select the correct term. The correct response was Lifestyle Theory, and students who selected this option were then prompted with: "Another student answered Life Course Theory. What would you say to help them understand their error?" In total, 27 students responded to this AG tutorial question. Two responses were non-answers and two simply told the student the correct answer (e.g., "it's lifestyle theory you goofy goober"). The remaining 23 students entered explanations to help explain or differentiate Lifestyle Theory and Life Course Theory. One student explained, "Life style theory explains how an individual's life choices affect their victimization. The life course theory explains how all an individual's life events contribute to their victimization." While the initial multiple choice question provided feedback and a chance to retry for students who got the question incorrect, those who got the question correct were offered an additional way to apply their knowledge.

For students answering the FITB questions, there is an additional possible interaction—spelling validation. A spelling mistake or keyboard error would normally render responses incorrect, which would mean the student is not actually evaluated on their knowledge of the content. Using an edit distance calculation, any misspelled response close to the correct answer triggers a suggestion box with possible corrections, including the correct term, allowing the student to select the term they intended before. The answer suggestion rate per course is relatively low (Sociology = 3.4%, Psychology = 2.9%, PR = 3.1%). However, this feature becomes more meaningful when looking at students who received help. A student in Sociology received 30 answer suggestions, meaning, they provided 30 misspelled responses close to the correct response (for example, "canidate," "critisicm," and "philanthrophy"). Instead of being marked incorrect for these responses, the spelling validation tool gave this student the opportunity to identify and submit the term they intended to use. This feature can be very meaningful to students who know the content but may be poor spellers or typists.

Student surveys were distributed by the course instructors. The instructors for Psychology and PR gave students a few minutes in class to complete the survey while the Sociology instructor distributed asynchronously via email. All student responses were anonymous and voluntary. Psychology was the largest class with 115 students and 55% of students responding. PR was the smallest class with 31 students, yet 87% responded. Sociology had 55 students and a 28% response rate, which may be lower due to the difference in survey delivery method. While some questions asked are not reported here for brevity, Table 2 compares student responses from all three courses.

Question	Course	N					
Generally, how do you like using digital textbooks as a learning resource compared to print books?			Much Better	Somewhat Better	About the Same	Somewhat Less	Much Less
	Psych	63	31.7%	30.2%	15.9%	12.7%	9.5%
	PR	27	33.3%	29.6%	11.1%	25.9%	0%
	Soc	44	42.9%	28.6%	7.1%	14.3%	7.1%
How important do you think reading the textbook was to your overall success?			Extremely	Very	Moderately	Somewhat	Not at all
	Psych	63	6.3%	38.1%	46.0%	7.9%	1.6%
	PR	27	14.8%	37.0%	22.2%	25.9%	0%
	Soc	14	0%	28.6%	57.1%	14.3%	0%
In general, do you think doing practice questions while reading is helpful for learning?			Yes	Maybe	No		
	Psych	63	68.3%	22.2%	9.5%		
	PR	27	81.5%	14.8%	3.7%		
	Soc	14	64.3%	28.6%	7.1%		
How helpful did you find the practice questions for studying?			Very helpful	Moderately helpful	Somewhat helpful	Not at all helpful	
	Psych	53	32.1%	32.1%	32.1%	3.8%	
	PR	27	37.0%	40.7%	18.5%	3.7%	
	Soc	14	14.3%	50.0%	35.7%	0%	
How helpful were the practice questions in preparing you for the course assignments and exams?			Very helpful	Moderately helpful	Somewhat helpful	Not at all helpful	
	Psych	53	24.5%	35.8%	32.1%	7.5%	
	PR	27	29.6%	37.0%	29.6%	3.7%	
	Soc	14	7.1%	50.0%	42.9%	0%	

Table 2. Survey questions and responses for all courses.

Some questions were included to get a baseline of students' feelings on digital learning resources in general before investigating the practice questions. Results showed that across

courses there was a percentage of students (21.4–25.9%) who liked digital textbooks less than print books. Students self-reported their reading frequency which generally matched the reading frequency in the course data, but not all students felt the textbook was equally necessary for success in the course. While some students felt the textbook was extremely or very important, some felt it was only somewhat important.

When asked if they felt doing practice while reading was generally beneficial for learning, most students said yes (64.3–81.5%), some said maybe (14.8–28.6%), and a few said no (3.7–9.5%). Psychology was the only course where any students responded that they seldom or never did the practice and those 10 students were asked a different set of follow-up questions. When considering how helpful students found the practice questions for studying, 64.2–77.7% thought they were moderately to very helpful. No students in Sociology thought they were unhelpful, while 3.8% and 3.7% of students in Psychology and PR found them unhelpful. For helpfulness for preparing for assignments and exams the percentages only minimally changed.

Conclusion

This initial investigation gives the first glimpse into how automatically generated questions were used as a study tool with the digital textbook by students in a classroom setting. While instructors expect students to read the textbook, the addition of formative practice as a feature of the reading platform allowed them to incorporate that practice into their teaching and monitor student engagement. Adding a small percentage of points for completing the questions motivated most students to do them while they read, and many students completed 100% of the available practice—more than the 80% required. The data from these questions revealed differences in question difficulty between Sociology and Psychology, yet both had very high persistence. PR presented an interesting case where the difficulty was mid-range, yet it had the lowest persistence which provides cause for further investigation. Other data also revealed the support that spelling suggestions gave to select students. Another encouraging finding is the high engagement with the automatically generated tutorial series of questions. Generating question types for students to engage in metacognitive reasoning expands their learning opportunities beyond typical recognition or recall question types.

Student perception is important to gauge, especially for learning tools developed using artificial intelligence. Survey responses revealed that there is a small percentage of students who prefer print books over digital, do not believe doing practice is helpful for learning, and did not find the automatically generated practice helpful. It is reasonable to expect some students may feel this way. However, the majority of students preferred digital textbooks, thought doing practice while reading was beneficial for learning, and found the practice questions helpful for studying and preparing for assignments and assessments. Student perception of the automatically generated questions were generally positive. While the surveys were anonymous, respondents were self-selected. One limitation was the response rate, particularly for Psychology and Sociology which could impact the results. By contrast, PR had nearly all students respond and some of the most positive perceptions of the practice. It is also noteworthy that the Psychology student survey was delivered prior a large volume of engagement before the last exam. In future research, it would be beneficial to maximize student responses for all courses and deliver the survey after students have finished studying for the term.

This exploration into how students engaged with AG practice is promising and leads to several possible avenues of continued research. An immediate next step would be to investigate the performance of the AI-generated questions on a larger scale to analyze all question types on performance metrics. Secondly, a more in-depth investigation of the tutorials and how they support student learning would be another meaningful extension for AQG research in this area. Lastly, research on how formative practice alongside textbook content benefits student learning, both qualitatively and quantitatively, should be reported across different teaching and learning contexts.

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A Study Examining the Development of STEM Inquiry-Based Pedagogies With TVET Education Lecturers: An International Professional Development

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Abstract
The National Standards Curriculum implemented in 2016 in Jamaica includes expectations that STEM disciplines be integrated into the primary and grades 7-9 curriculum. This integration is framed on an inquiry-based model driven by problem-based and project-based learning. Lecturers therefore need to know about STEM integration and how to model this to preservice teachers. This paper reports on an international collaboration between faculty from a university in Jamaica and Canada respectively, who facilitated a STEM professional development (PD) summer institute in June 2022 for lecturers teaching in the Technical and Vocational Education and Training (TVET) program at the Jamaican university. The study examined the lecturers' experiences (n=22) and the knowledge gained about STEM inquiry-based pedagogies and integration in TVET contexts. Data sources included a questionnaire on demographics and teaching practices, photographs and short video segments from workshops, written feedback after each workshop, and a workshop evaluation at the end of the three days. Findings indicated that participants found the workshops effective with respect to presentation and sequencing over the three days. Participants also indicated that workshops were effective at communicating knowledge about STEM instructional approaches which would be useful to them as TVET teacher educators. Findings contribute to the modest literature on faculty PD and international collaborations and provide insights on PD for lecturers to learn how to integrate STEM approaches in preservice courses. The study also provides a model for capacity building of faculty pedagogy in Teacher Education and contributes to capacity building of a workforce for STEM fields in Jamaica.

Keywords: Teacher Educators, Professional Development, STEM, TVET, International Collaboration

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Introduction

In Jamaica, The National Standards Curriculum 2016 places emphasis on Science, Technology, Engineering and Mathematics (STEM) approaches, Information Communication Technology (ICT) integration, and Inquiry Based Learning (IBL) to promote skills such as critical thinking, collaboration, communication, creativity, and problem-solving in the grades K-9 curriculum. Technical and Vocational Education and Training (TVET) skills were also integrated across grades 1-13. As such, Jamaican teacher education institutions are to prepare pre-service teachers to be able to integrate STEM pedagogies such as project-based learning and engineering design into the primary and grades 7-9 TVET curriculum. TVET lecturers therefore need to know about STEM pedagogies and how to model and integrate these pedagogies in their preservice courses. Research indicates that there is a relationship "between the amount of faculty development and improvements in teaching" (Rutz et al, 2012, p, 43). Professional development in educational contexts may be conceived,

> as structured, facilitated activity for teachers intended to increase their teaching ability. The focus on teaching ability is intended to include a broad range of skills including instruction, classroom management, assessment, and lesson planning. (Sims at al., p. 7)

Sims et al. (2021), in a comprehensive meta-analysis of teacher PD, found that effective PD interventions are those that align with a schools' needs and practices, and take into consideration the limited time teachers have. These factors also apply to university faculty/lecturers who buy-in to PD when they perceive the PD is aligned to their teaching goals, fit into their schedules, and contribute to professional scholarship goals (Jaipal-Jamani et al., 2015). A few studies have conducted research on faculty PD. Manduca et al. (2017) investigated a national geoscience PD program and found that faculty transfer of workshop learnings to teaching practice was supported by: 1) availability of resources (e.g., online) to support and facilitate transfer of workshops learnings and 2) discussions with colleagues during the workshops which motivated faculty and increased their confidence to incorporate changes into their teaching. Qualitative data in the Manduca et al. study suggested that even attending one workshop with colleagues can lead to changes in teaching practice as it supported affective (e.g., changes in beliefs and increased self-confidence and self-efficacy) and cognitive learning outcomes (e.g., developing metacognition and reflection on practice). Meijer et al. (2017) also found that self-study interventions with teacher educators, guided by trained facilitators, did support positive changes in faculty beliefs and teaching practice.

The purpose of this study was to gain insights into lecturers' experiences and the knowledge gained about STEM/TVET pedagogies as they participated in a STEM/TVET summer institute. The following questions guided the research:
- What were lecturers' evaluations of the design of the professional development workshops?
- What were lecturers' perceptions of the usefulness of the knowledge and STEM workshop activities for implementation in their courses?

Theoretical Perspective

A current trend in higher education over recent decades has been a move from instructor-centred teaching or lecture style pedagogy to the inclusion of more student-centred learning or active learning pedagogy (Hoidn & Klemenčič, 2021). This shift has been informed by

views of learning as the making of connections between prior knowledge and new knowledge to construct a more meaningful understanding of the new knowledge (Doyle & Zakrajsek, 2019). This shift in teaching pedagogy has been reinforced by neuroscience research that shows it is only when a person does "the practicing, reading, writing, thinking, talking, collaborating, and reflecting does [the] brain make more permanent connections" (Doyle & Zakrajsek, 2019, p. 18). The integration of active learning strategies such as think-pair-share and small group peer discussions in lectures has been shown to support the development of meaningful and more permanent connections among information that can be transferred in new ways (Hoidn & Klemenčič, 2021). It has also been shown that using multiple senses to interact with new information helps the learner to construct a better representation of the concept or idea (Medina, 2008, Shams & Seitz, 2008). Di Napoli and Geertsma (2020) have used active learning as a conceptual framework to design educator professional development (PD) where "active learning as a conceptual framework encourages interactions, integration and innovation based on informed reflections, feedback and collective knowledge and practice building"(p. 487). They found that to effect meaningful change in teachers' conceptions of teaching and learning that encourage experimentation of and implementation of student-centred approaches in practice, "it is imperative for teachers to discuss not only their teaching, for which a shared pedagogical language is needed, but also to discuss the evaluation results of their teaching that go beyond feedback from students" (p.287).

In this study, we incorporated active learning strategies in the problem-based and engineering design activities for the three-day STEM summer institute. This design encouraged faculty to engage and participate in constructing knowledge, questioning, sharing ideas, doing and reflecting on activities, ideas, perspectives, and giving and receiving feedback. We also provided support such as a STEM planning template to lecturers to guide their planning of follow-up action research in their teacher education courses. This paper presents results on the faculty learning during the three-day summer institute.

Research Context and Methods

The PD was facilitated by two science educators from Canada and one teacher educator from Jamaica. An email invite was sent out to all lecturers in the TVET department at the Jamaican university to attend the STEM PD summer institute over three days. About 25 participants (including lecturers teaching TVET and education courses and a few PhD students) attended the workshop each day over the three days. The workshops focused on STEM problem solving approaches and were linked to objectives in the Jamaican Resource and Technology Curriculum, grades 7, 8 and 9 to illustrate examples in TVET contexts. The Jamaican National Standards Curriculum also requires learning experiences (lessons and units) be structured using the 5E Instructional Model (Bybee, 2014). The workshops introduced inquiry-based learning and problem-solving strategies in STEM such as project/problem-based learning, engineering design, and scientific inquiry. Examples of workshop instructional activities included a STEM design challenge, makerspace stations to create artifacts such as a light up greeting card (Industrial Techniques grade 7 curriculum module), a hydroponics system (Agriculture and Environment grade 8 curriculum module) and a multi-purpose fashion garment/item (Fashion and Textile grade 9 curriculum module). A robotics workshop was also facilitated in the computer lab to introduce programming with LEGO WeDo and Scratch to illustrate how STEM/STEAM objectives can be met. All workshops were followed by a debriefing and reflection session where participants engaged in a pedagogical discussion of the activities in relation to the curriculum outcomes and reflected on how they would

design the activity using the 5E model for lesson planning. For each activity and follow-up debriefing, handouts and templates were provided to guide the activities and discussion. A handbook was created and provided electronically to each participant after the institute to support transfer of activities into practice.

The data sources for the PD program evaluation were a pre-questionnaire on demographics and teaching practices adapted from previously validated science teacher surveys (Hayes et al., 2016), written feedback after each workshop, and a post workshop evaluation filled in on the third day (adapted from Jaipal-Jamani et al., 2015). Findings related to the effectiveness of the workshops were triangulated using additional data such as photographs of workshops and observational field notes made by the researchers/facilitators. The workshop evaluation comprised 8 questions: the first three questions were on the effectiveness of the timing and pacing, presentation of information and sequencing of information; the final 5 questions elicited responses on the effectiveness of the STEM strategies and application in university teaching on a Likert scale of 1 (strongly disagree) to 4 (strongly agree). This evaluation was used to obtain descriptive quantitative feedback and was not validated statistically.

Results

Demographic data from workshop participants are reported below in Table 1. 59% of lecturer participants had over 10 years of teaching experience; 40 % taught preservice courses related to curriculum foundations, special needs, psychology and ICT while the rest of the lecturers taught their TVET specializations such as food and fashion and industrial technology. Since this was a TVET program, 45% of lecturers indicated that they integrated STEM often while 35% indicated that they integrated STEM sometimes in their courses. Over 70 % of lecturers incorporated inquiry-based learning in their courses either often or in almost all classes,

	Likert Scale/Choices/Fill in the blanks				
Full-time teaching experience n=22	0-5 years	6-10 years	11-20 years	Over 20 years	
% Response	27%	14%	36%	23%	
Course Taught n=20	Business	Industrial technology, construction and architecture	Food and Fashion	Electronics/ control systems	Curriculum, psychology, special ed, research, educ. foundations, ICT
% Response	10%	15%	25%	10%	40%
Frequency of STEM integration n=20	never/ rarely	Sometimes	Often	almost all classes	
% Response	10%	35%	45%	10%	
Engage class in inquiry learning through problems and projects	never/ rarely	Sometimes	Often	almost all classes	
% Response		27%	46%	27%	

Table 1: Demographic Information

Results of the workshop evaluations indicated that of the 16 participants who responded, over 80% of participants found the timing and pacing effective to very effective and 100% of lecturer respondents found the presentation of information and sequencing of information to be effective to very effective. Table 2 indicates the percentage of respondents who agreed or strongly agreed for items 4-8 on the workshop evaluation.

The workshops were effective at communicating knowledge about STEM instructional approaches	94%
The workshop was effective at communicating knowledge about engineering design in TVET contexts	94%
The information presented was useful to me in my role as a teacher educator	94%
I have gained knowledge that I will be able to easily implement in my university teaching practice	75%
The PD has provided me with practical applications and resources that will enhance preservice teacher understanding and engagement in STEM pedagogies	81%

Table 2: Lecturer responses in workshop evaluation: agreed or strongly agreed.

The findings from table 2 indicate that the workshops were very effective at communicating knowledge about STEM instructional approaches which would be useful to them as teacher educators. Comments from some qualitative data collected during the workshops aligned with survey results. For example, one lecturer commented; *"The exposure in workshops will enable me to prepare student teachers to introduce STEM approaches in their lessons and gave me an insight in evaluating the students as they deliver STEM lessons."*

Further insights on the workshop experience were obtained from reflections by lecturers on how they might implement STEM/TVET strategies and the constraints and challenges they might experience. For example, one lecturer commented how the nature of the course and time would affect implementation: *"While the strategies are effective, they may not necessarily be easy to implement in my university teaching mainly because most modules are heavily content based and must be completed within a specific time frame."* Lecturers also indicated specific knowledge, strategies and activities they would apply in their practice that they had learned in the workshops. For example, some indicated they would incorporate the 5 E model or use it to develop more effective 5E lesson plans and use the design process; many indicated they would use the hands-on activities, robotics, and the makerspace activities such as Tinkercad and hydroponics. A lecturer also mentioned that they liked the opportunity of learning from each participant's experiences.

Conclusion

The findings show that the hands-on, interactive STEM workshops offered lecturers an opportunity to reimagine their pedagogical design in their teaching. The PD workshops created a space for dialogue and reflection on teaching practices for lecturers who are normally busy with a full teaching load; they were able to come together, learn, reflect and discuss what active learning strategies might require of them as they challenge their practices to consider teaching that is student-centered. The results support Di Napoli and Geertsma (2020) views that meaningful change in teacher practice is fostered by collaborative discussion and reflection among teachers in safe and supportive settings. The findings contribute to the literature on STEM faculty PD and suggests that implementing a three-day,

STEM PD program for lecturers did provide them with STEM knowledge about STEM instructional strategies which was useful to them in their roles as teacher educators. Just under half the lecturer participants indicated they rarely or sometimes integrated STEM in courses. Participation in hands-on workshop activities that modelled STEM pedagogy did encourage more lecturers (75% of participants) to indicate they would be able to easily implement the strategies in their practice. A limitation of the study is that the findings are reflective of this unique STEM/TVET context and may not be applicable to other university contexts. The sample size is also small, and findings are not generalizable. Nevertheless, the study provides insights into the design of STEM faculty PD based on an active learning framework and illustrates how STEM workshops can be designed to incorporate active learning strategies to promote student-centered or active learning pedagogy. Workshops should also be followed up with implementation of learning in teaching practice. As Rutz et al. (2012) assert, developing skills that support reflection on teaching from "observations of student learning, is as important as the individual lessons learned in a particular workshop" (p.47). Hence, lecturers were provided with the opportunity to implement workshop strategies in their teacher education courses and reflect on their practice and student learning through action research.

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Unheard Voices: A Narrative Exploration of Moroccan Science Learners' Experiences With French-Medium Instruction Policy

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Abstract
Claiming the 'failure' of the Arabicization policy adopted a few years after independence, the Moroccan Ministry of Education decided in 2019 to officially reintroduce the French language as a medium of instruction (FMI) for science subjects. This decision ignited a tense debate about languages in the country especially among politicians. In this very polarized political debate, the educational facet was eclipsed and learners' and educators' voices remained largely 'silenced'. This study seeks to break this silence by giving students a voice. Taking a narrative approach, it aims to reveal how language beliefs shape students' experiences in FMI science classes. To that end, fifteen high school students were asked to write narratives about their experiences of learning science in French. The dataset was analysed using inductive thematic analysis. Three central intertwined themes were identified: (a) ambivalent language ideologies; (b) FMI as opportunity; and (c) FMI as hurdle. The results indicate that students are ambivalent about their experiences with FMI policy, in that, they see it as both an occasion to hone their language skills, but also as a barrier to learning science. The study concludes with implications for language policy decision-makers and educators.

Keywords: Language Policy, Narrative Inquiry, Experiences, Beliefs, Language Ideologies, French-Medium Instruction

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Introduction

Recently, Moroccan Ministry of Education has claimed that the Arabicization policy, which was implemented since the 1960s, has 'failed'. This claim was substantiated by a series of educational reports and evaluations. In 2014, the Higher Council for Education, Training and Research (CSEFRS) conducted an assessment of the implementation of the National Charter for Education and Training[1] (NCET) and it concluded that the public education system still suffers from several serious dysfunctions. Ambiguity in language-in-education planning was identified as one of these persistent problems. Based on the results of this report, CSEFRS (2015) proposed another reform named "A Strategic Vision of Reform 2015-2030" (SV). Echoing the Charter, the SV proposed a new language policy called 'Language Alternation' as a new strategy to promote the acquisition of foreign languages. The new policy recommends teaching scientific and technical school subjects through French as a medium of instruction (FMI). Despite the heated debate instigated by this language policy, it was eventually turned into a law in 2019, known as the Framework Law 51.17.

As is the case with most language policies in Morocco, FMI policy took a top-down approach to educational reform. The voices of the major stakeholders, such as students, were not integrated into the decision-making process. Instead, their *voices* were monopolized by ideologically motivated political agendas. Students' readiness and proficiency were not evaluated, nor were their language beliefs gauged before implementation. Learners' beliefs about medium of instruction (MoI) are generally investigated to highlight the impact of the medium used on learning (e.g., Macaro & Akincioglu, 2018). They are also utilized as a lens to gain insight into the process of language policy implementation (LP) and sometimes to uncover the language ideologies held by learners (e.g., Sung, 2022).

Grounded in the conceptualization of language policy as *experiences* (Shohamy, 2009), the present study explores how Moroccan science students' experience the FMI policy in public secondary schools. It takes a narrative approach to data collection and uses thematic analysis as an analytical tool (Braun & Clarke, 2006). Ontologically, this study is underpinned by a critical realist understanding of reality (Maxwell, 2012; Willig, 2021) and an experiential orientation to data interpretation to preserve the meanings ascribed by students to their experiences. The study attempts to answer the following research questions:
1. How do Moroccan public secondary school science students experience FMI policy?
2. What beliefs and language ideologies do they hold regarding FMI policy?

Theoretical Framework

1. The Construct of Beliefs

Beliefs have emerged as a pivotal area of focus in educational research because of their explanatory potential in relation to various aspects of the teaching and learning processes. Fenstermacher's prediction that beliefs will become the "most significant construct in educational research" (Pajares, 1992, p. 329) has, indeed, come true. A growing interest in demystifying both teachers' and learners' beliefs yielded scholarly insight into a multitude of education-related phenomena, such as motivation, comprehension, and self-efficacy to name but a few. Beliefs, however, are defined in different ways. Still, as Skott (2013) notes, most

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[1] National Charter for Education and Training (NCET) is a reform document that was drafted in 1999. Its objective was to overcome the crisis in the education system.

definitions of beliefs share "a common core". In his oft-cited article, Pajares (1992) defines beliefs as "an individual's judgment of the truth or falsity of a proposition" (p. 316). Richardson (1996) states that beliefs are "psychologically-held understandings, premises or propositions about the world that are felt to be true" (p. 103). Beliefs are also defined as "relatively stable, value-laden, mental constructs, which carry a subjective truth value" (Skott, 2013, p. 548). Of interest to us here is the common denominator of these conceptualizations of beliefs, i.e., the assumptions individuals make about the world of experience are *subjective* in nature. It is worth noting that language beliefs and language ideologies are used interchangeably in this study.

2. Language Policy as *Experiences*

In the present study, language policy (LP) is conceptualized as '*experiences* (Shohamy, 2009). This approach foregrounds the way individuals experience the effects of language policies in their daily lives (Shohamy, 2009). Research taking a similar approach to LP is now abundant and methodologically diversified (e.g., Johnson, 2009; Tollefson, 2006). Following Ricento's (2000) three-phase account of language policy and planning (LPP), LP as 'experiences' approach can be contextualized within the third phase of LPP's theoretical trajectory. This third 'wave' (Johnson, 2016) shifted focus to language practices at the micro-level and highlighted the experiences of local agents at the bottom of the LP structure. The concerns in this new humanist tradition are social justice and linguistic rights.

According to Shohamy (2009), shedding light on the experiences of policy subjects is one way to uncover the ideologies that undergird LP, and in so doing "prevent unjust applications of LP within societies" (p. 187). Achieving this goal means that "valid" LPs can be formulated and, therefore, more "linguistic victims" are saved (Shohamy, 2009, p. 188). The value of such an approach resides in its ability to bring the human dimension to the fore in LP design and make the *muted* voices of local agents dwelling at the bottom of the LP structure heard. Shohamy (2009) notes that personal experiences went unnoticed in earlier LP research. She writes:

> Personal experiences have rarely been viewed as part of the domain of language policy, which has traditionally maintained a bureaucratic blindness to, and a detached perspective on, how people experience policies driven primarily by political, national, educational and economic ideologies. The human and personal dimensions have been overlooked or ignored, as though language policies occurred in a personal vacuum. (p. 185)

By taking this approach, Shohamy postulates, researchers will be able to highlight the tension between policy and practice.

Review of the Literature

Research on learners' beliefs about MoI has been conducted in diverse contexts and educational phases. Studies have employed a range of perspectives and methodologies to investigate these issues. In the context of higher education, various beliefs regarding foreign MoI, such as English, have been identified among learners. Both positive and negative beliefs have been reported. For example, learners believe that English-Medium Instruction (EMI) can enhance their English language proficiency (Lee et al., 2021; Macaro & Akincioglu, 2018; Rowland & Murray, 2020). Conversely, other studies have reported that while students

are satisfied with EMI classes, they do not believe that such instruction significantly improves their English language proficiency (Kym & Kym, 2014). Other studies found that foreign MoI is perceived to enhance future work and study opportunities abroad (e.g., Jiang & Zhang, 2019).

In the context of secondary education, although foreign MoI is claimed to impede the acquisition of scientific knowledge (Pun et al., 2022), highly motivated students typically hold positive beliefs about L2 MoI and are generally unconcerned about any potential disadvantages (Paulsrud, 2016). These students view the use of L2 medium as an opportunity not only to learn but also to have fun (Paulsrud, 2016). Limited proficiency in MoI, however, can hinder classroom interaction (An & Thomas, 2021; An et al., 2021). This explains why less proficient students usually express the need to integrate L1 as an instructional strategy since they believe it can reduce anxiety and help overcome comprehension difficulties, particularly in science classrooms (An & Macaro, 2022). Yet, they are aware that L1 integration should be used in controlled amounts (Pun et al., 2022).

In the Moroccan context, we could not identify any studies that operationalized the notion of 'experiences' to examine science learners' language beliefs and ideologies. Instead, previous studies either focused exclusively on language attitudes or used the concepts of attitudes and beliefs indistinctively, overlooking the fact that they are theoretically dissimilar (e.g., Fishbein & Ajzen, 1975). Recent empirical studies that investigated language attitudes in Morocco are reviewed below with a focus on the French language.

Marley (2004) found that although Moroccan students preferred bilingual (Arabic-French) education, they still viewed French as a 'vital' language for its instrumental benefits. Similarly, Bouziane (2020) reported that both tertiary and high school Moroccan students had positive attitudes towards all languages, mainly for instrumental and integrative motives. Moroccan students tended to associate French with modernity and openness, showing the ideological nature of their attitudes (Chakrani, 2011). Social factors such as class were also found to influence learners' attitudes as upper- and middle-class students showed a preference for French to the detriment of other national languages (Chakrani & Huang, 2014).

Research shows that the French language in science disciplines poses problems for Moroccan learners. For instance, Bouziane & Rguibi (2018) found that French was the major reason why freshmen science students switched to literary streams. French is also found to cause content comprehension problems. In this regard, kaddouri (2018) reported that over 85% of BIOF[2] students found difficulty in understanding content taught in French. This was mainly due to science students' limited technical language repertoire (Lahlou, 2018). Moreover, although the use of French in the science classroom exposed learners to scientific discourse, many students failed to produce and master discipline-specific discourses (Ait Sagh, 2022).

The studies discussed so far have used mainly quantitative methods and none of them explored learners' *experiences* with MoI policy through narratives. This study aims to address this conceptual and methodological lacuna by prioritizing students' personal experiences with FMI in science classes. By doing so, it aims to provide a deeper

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[2] BIOF: International Baccalaureate-French Option (Baccalauréat International- Option Français) is a stream of study that was introduced to high school back in 2013-2014 school year.

understanding of Moroccan high school science students' language beliefs and show how they affect their views about FMI policy.

Methodology

1. Participants

Moroccan High school science students (N = 15) participated in this study. All students belonged to the same high school and they were recruited randomly. They belonged to the same age group (16–17-year-old) and were all at the same school level (1st-year Baccalaureate). Students were briefed about the aims of the research and their consent for participation was obtained. The names used in the analysis to refer to participants are all pseudonyms.

2. Data Collection

The narrative approach was used as a data collection method. Participants were asked to write a narrative account about their *experiences* with FMI policy. To make the writing process less daunting, no page limit was imposed. The following prompt questions were provided to help students produce their written accounts:

- What are the challenges that you face in studying science subjects in French?
- What is the positive/negative impact of FMI policy on your studies?
- How do you evaluate your overall experience of studying science in French?

In this study, we use the term *narrative* in a general sense, i.e., an account of a lived experience "written in essay form" (Polkinghorne, 1988, p. 13). Initially, it was not part of the design of this study to make students produce narratives that display a clear "organizational scheme expressed in story form" (Polkinghorne, 1988, p. 18). Put differently, most of the written accounts produced did not have a clear 'plot', however, some of them did have a temporal structure within which students' experiences were framed.

3. Data Analysis

Thematic analysis (Braun & Clarke, 2006, 2022) was used to analyse students' written accounts. The accounts were coded using NVivo software and an inductive approach was taken to the process of coding. First, students' productions were open-coded to develop initial codes. Afterwards, developed codes were collated and examined for potential themes. At an earlier stage in theme development, five themes were developed. Later, these themes were reviewed and reduced to three major themes that we believed best capture students' experiences with FMI policy.

Results

This study reports three major themes (see Figure 1). (a) Ambivalent language ideologies: the set of mixed language beliefs students' have about the languages they encounter in the school domain. (b) FMI as *opportunity*: the positive beliefs students hold about the use of French as MoI in science classes. (c) FMI as *hurdle*: the negative beliefs students hold about being instructed in science in French.
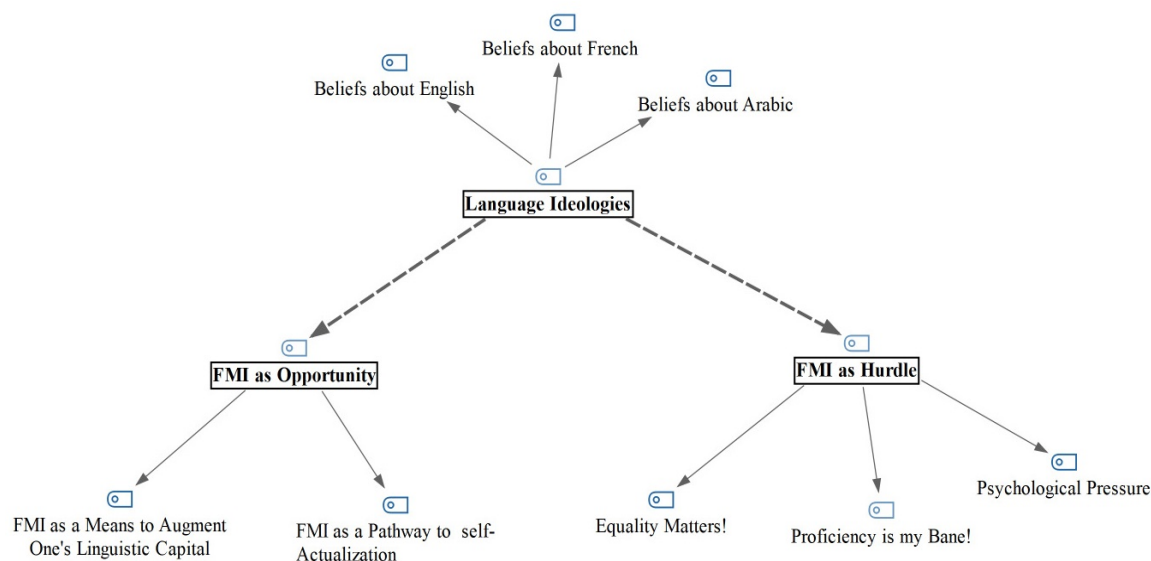
Figure 1: The final themes developed in this study.

1. Ambivalent Language Ideologies

In the sections that follow, we describe the theme of 'ambivalent language ideologies' through a discussion of its three main subthemes: (a) Beliefs about French; (b) Beliefs about Arabic; and (c) Beliefs about English.

1.1 Beliefs About French

Students believe that French is a '*complex*' language. This belief may have been developed from the fact that although they have spent years learning this language, they still encounter serious problems in its mastery. Such a dismissive view of French as an intrinsically complicated language is also due to students' positive experience in learning other rival foreign languages such as English. For example, participant Sarah, writes, "French is not a science language and it is a *complex* language. English is a good alternative; it is easier" [emphasis ours]. Likewise, Oussama declares that he finds scientific French 'complicated'. He writes, "It is hard to memorise scientific concepts in French and I find them complicated…" As evidenced by these cases, students' beliefs about general and scientific French conflate to strengthen their negative attitude toward it.

Viewing French as an 'essential' language is a recurrent belief in the dataset. The majority of students deem learning French as a major goal that one must achieve. The 'essentiality' of French is sometimes stated explicitly and more often implicitly in students' written accounts. Lobna writes, "[French] is an *essential* language…it is good for communication and writing" [emphasis ours]. As implied by this statement, French is viewed as being equal if not superior to other national official languages. This belief rests on the status of French in the education system where it is taught as a subject and used as MoI for a sum of hours that exceeds that allocated to an official language like Arabic. Moreover, the selection of French as MoI for science made it even more prestigious. Also, the fact that French is mandatory in science instruction strengthens this belief. In this respect, Doha writes, "French was selected to teach scientific subjects and it is *obligatory*. 'Obligatory' here means 'very important' and this attests to the fact that French is a *de facto* official language.

1.2 Beliefs About Arabic and English

Students generally believe that Arabic is an easy language. This belief is reinforced by the difficulties they encountered in FMI science classes. Lobna writes, "I used to study in Arabic...the lessons were easy...I did not face any difficulty." As for English, it is viewed as an international language, the language of science, and relatively easier than French. Students believe that EMI is the right alternative to FMI. English is also a source of self-satisfaction for some students. One of the students writes, "English is, and will always be an open gateway...it makes me feel self-satisfied...I gave all my love to it!"

2. FMI as an Opportunity

Some students believe that the FMI policy is a timely solution to remedy their accumulated French language problems and ultimately achieve academic success. They divide their language learning experiences into two distinct phases: an initial phase marked by anxiety and apprehension, and a second one during which they believe they could overcome the challenges, albeit, not entirely. In the ensuing sections, we elucidate the overarching theme of 'FMI as an opportunity' through its two salient subthemes: (a) FMI as a pathway to self-actualization; and (b) FMI as a means to augment one's linguistic capital.

2.1 FMI as a Pathway to Self-Actualization

Students' instrumental orientation is evident in their efforts to overcome proficiency problems in French. FMI is perceived as an opportunity to enhance self-confidence and, therefore, to achieve more. Douae, for instance, states that FMI policy enabled her to "face up to the difficulties, especially the *phobia* of speaking in French" while in the class. Also, future-oriented goals such as getting a good job, pursuing higher studies and studying abroad are believed to be attainable if one masters French. Talking about higher studies, Said writes:

> I believe that teaching science in French has more advantages than disadvantages...because it will help me in my higher studies and… it will also enable me to study abroad without taking the pain to learn French again.

French mastery is, thus, construed as an enabling attribute that leads to academic and professional success and, ultimately, to self-actualization.

2.2 FMI as a Means to Augment One's Linguistic Capital

Some students believe that increased exposure to the French language input in these classes facilitates language development. For instance, the acquisition of vocabulary is a recurring theme in students' narratives. Students affirm that FMI enables them to acquire new vocabulary and broaden their existing lexical repertoire. In this regard, Aida states that FMI classes helped her "accumulate a modest vocabulary asset". Similarly, Mohammed asserts that his FMI science classes enabled him to "learn new vocabularies" which he now uses "to express" himself. Moreover, in addition to general French vocabulary, students believe that FMI also facilitates their acquisition of scientific terminology. Said confidently declares, "I have now acquired scientific knowledge that I can explain in French." Although these examples indicate that FMI can help learners reinforce and enrich their general and discipline-specific vocabularies, it also shows their restricted definition of language acquisition as simply the activity of *picking up* terminologies.

3. FMI as Hurdle

While students show positive beliefs about FMI policy, they also express their frustration with the difficulties they encounter as learners of science through a foreign medium. FMI policy is construed as a *hurdle* to successful learning. This section delves into the theme of 'FMI as hurdle' and describes its three identified sub-themes: (a) Proficiency is my bane; (b) Psychological pressure; and (c) Equality matters.

3.1 Proficiency is my Bane!

Students encounter several challenges stemming from their limited proficiency in French. Comprehension is one key problem. Yahya, for example, highlights that he "started facing difficulties in understanding" scientific concepts after the implementation of FMI policy. However, the level of difficulty in lesson comprehension varies across disciplines. Some students identify Life and Earth Sciences (LES) as the most challenging science subject to comprehend. Doha, for instance, notes, "I faced problems in FMI science subjects and mostly in LES." Similarly, Said admits, "I find it difficult to understand what the teacher says, especially in LES because, unlike other subjects, it is taught only in French." Students' limited comprehension of subjects such as LES necessitates their reliance on rote memorization as a coping strategy. Aida's experience is a testament to this, she explains, "I face a great difficulty in studying LES in French…so I just memorize without comprehension." Moreover, these comprehension issues negatively impact students' overall performance in science subjects, particularly in tests. One of the students writes, "I now try to understand test questions instead of finding the answers, and most of the time, I hand in my paper with nothing on it but my name!"

3.2 Psychological Pressure

The adoption of French as MoI for science subjects has made the workload students already struggle with even more substantial. Despite making concerted efforts to adapt to the new situation, many students report experiencing immense psychological pressure due to the work they have to cope with. Hanane, for instance, states, "I kept struggling with this *problem*...I made an effort." The accounts reveal that FMI policy induced fear in some students, Chaimae, for instance, writes, "I had and still have a fear of studying maths in French." The policy also affects students' self-esteem. Mohamed's experience is a good example, he recounts, "I passed (to the next level), but my success was with a feeling of unworthiness…" Predictably, demotivation and self-exclusion emerged as the result of the psychological pressure students face. Sarah succinctly summarizes this; she states, "I noticed a change in a lot of my friends who used to get good grades, and now they sit at the back seats in the classroom because they cannot cope with the lessons which have become even more challenging." These cases demonstrate that FMI policy places significant emotional pressure on students and, therefore, affects their ability to learn science.

3.3 Equality Matters!

A medium-of-instruction policy can be used as a means of exclusion (Shohamy, 2006). It can deny learners epistemological access (Morrow, 2009). Students' written accounts show that they are aware of the exclusionary role French plays in their science classes. For instance, Mohamed complains that French "doesn't allow" him "to learn much knowledge" because he finds it "hard to learn new information in this language." As such, FMI policy creates

educational *inequality* by denying learners with limited proficiency access to scientific knowledge in the language they are proficient in, especially the students who come from socio-economically disadvantaged backgrounds. Sarah, as a peculiar case, demonstrates awareness of this particular fact. She writes, "I believe the decision was wrong and hasty. It neither took into account the conditions of 'the sons of the people'[3] nor their proficiency in this language". These statements, then, attest to students' awareness of the role of FMI policy in reproducing social inequality and restricting access to knowledge.

Discussion

Drawing on the view that language policy is best understood as *experiences* (Shohamy, 2009), this study examines science students' beliefs regarding FMI policy in public secondary schools. Adopting a narrative approach, the primary aim of the study is to highlight how these learners experience studying science in a foreign medium.

The findings of the study suggest that students hold ambivalent language ideologies about French when used as MoI. While they believe that French is a complex language that hinders their learning of science, they also acknowledge its importance as a de facto official language for achieving various instrumental and integrative goals. Instrumental goals include accessing higher education, securing a job and gaining social prestige. As integrative goals, they perceive learning French as a means to forge stronger social connections and know other cultures. FMI policy is, thus, seen as both an opportunity and a hurdle. On one hand, students believe that it is an opportunity to overcome their lack of proficiency in French and, consequently, increase their chances of academic and professional success. On the other hand, and quite *contradictorily*, students view the policy as a 'barrier' to their learning due to its negative impact on their comprehension of science concepts and the substantial psychological pressure it places on them. Additionally, they think it contributes to social inequality and hinders access to knowledge.

As highlighted in the literature review, a wide discrepancy characterises the results of the studies on students' beliefs regarding MoI. This fact is attributed to the *essential* nature of beliefs which are most of the time inconsistent (Pajares, 1992). The results of this study support this fact as they reveal that students generally hold inconsistent beliefs about FMI policy. In line with other studies (e.g., Jiang & Zhang, 2019; Macaro & Akincioglu, 2018), this study found that MoI is believed to improve learners' language skills, especially vocabulary acquisition. Comprehension difficulties, however, seem to persist mainly due to foreign MoI (Hellekjær, 2010). On the other hand, and in congruence with the findings of Rowland & Murray (2020), this study found that students believe that FMI classes are an opportunity to practice and improve their L2 skills. Furthermore, in line with studies in the Moroccan context, the study highlights students' belief in French as an 'essential' language (Marley, 2004) that facilitates access to higher studies (Bouziane, 2020) and knowledge of other cultures (Chakrani, 2011).

These noticed inconsistencies in students' accounts about their experiences with FMI is attributable to the fact that they hold two opposing beliefs. On one hand, they strongly believe in the prestigious status of French and, at the same time, they believe that their proficiency in this language is low. This unresolved conflict between a firm conviction in the

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[3] This is a literal translation of the phrase in Arabic. The phrase is used to refer to people who belong to the lower strata in society.

dominance of French in the social, educational, and professional domains and their dissatisfaction with their language skills frames their experiences in FMI science classrooms. This also explains why in spite of the language difficulties students encounter, the majority of them readily accept to take the challenge of studying science in French. This confirms the pervasive influence of beliefs and their profound impact on the interpretation of personal experiences. Moreover, it is evident that students' language ideologies and beliefs about FMI policy reflect those already circulating in their society.

The findings of the present study imply that it is a prerequisite for the success of any MoI policy to first understand students' language ideologies, gauge their beliefs about the medium used and assess their proficiency prior to implementation. In Shohamy's (2006) terms, students are the 'consumers' of language policy and, therefore, their opinions matter. In this respect, Shohamy (2006) states that those "who use or resist the languages dictated to them from the top down, have something to say from the bottom up: their voices need to be heard and incorporated in the formulation of policy" (p. 188). The study also implies that L2 acquisition should not be attained at the expense of content learning as this produces educational inequalities. Indeed, denying learners, especially those with limited language proficiency, access to knowledge in the languages they master clearly encroaches on their linguistic rights.

Conclusion

This study explored Moroccan high school students' experiences with FMI policy and looked at their beliefs about its implementation in science classes. The paper was theoretically framed by Shohamy's (2009) conceptualization of language policy as *experiences* and took a narrative approach to data collection. Analytically, the study used thematic analysis (Braun & Clarke, 2006) to identify the major themes present in the written accounts produced by students. The results of the study indicated that students have ambivalent views about FMI policy, construing it as both an *opportunity* and a *hurdle*. That is, while FMI is believed to improve language skills, it is also believed to impede content comprehension and produces educational inequalities.

Based on the findings of this study, it is recommended that decision-makers in the field of education take a participatory approach to language-in-education policy. Integrating the 'voices' of those who 'consume' LP such as learners is a decisive factor for the success of educational policies. Also, to democratize education, science courses should be offered both in Arabic medium instruction (AMI) and FMI and enrolment in each should be optional as this will make students responsible for their choices. In the case of FMI, we suggest offering French for specific purposes (FSP) courses alongside science courses to equip learners with the necessary science technolect. Pedagogical *translanguaging* should also be allowed as a strategy that can mitigate the negative impact of FMI policy. Future research may look at the other contextual factors that influence Moroccan science students' beliefs about media of instruction. This study, however, has some limitations such as the small sample investigated and the fact that all participants belonged to the same level and the same school. Thus, the findings are by no means generalizable.

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"I Don't Have Any Knowledge About Space. What Should I Do?":
Helping Japanese Pre-service English Teachers Survive Their Teaching Practicums

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Abstract

This paper outlines a support structure for pre-service English teachers which is being implemented at a private Japanese university as part of a Japan Society for the Promotion of Science (JSPS) funded research project. Through the design and delivery of practical teaching workshops the researchers are working to provide meaningful support for pre-service English teachers. The paper begins with a brief discussion of the main challenges which Japanese pre-service English teachers face, before going on to describe the support framework which is being constructed for them. Attention then shifts to a description of the support provided for pre-service English teachers immediately before they start their teaching practicums. The single-case descriptive case study highlights the pedagogical challenges and frustrations that one pre-service English teacher experienced during her practicum. The student's teaching practice struggles are used as an illustrative example of the problematic issues that pre-service English teachers must overcome. It also highlights how the researchers are trying to construct a customized framework which meets the unique needs of Japanese pre-service English teachers. This paper provides readers with a window into the difficulties which pre-service English teachers face when being thrown into the teaching arena with minimal support.

Keywords: Pre-service Support, Teacher Training, Workshops

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Introduction

This paper, which is one of a series of articles, emerged from a larger study that explores the needs of Japanese pre-service English teachers. The research project aims to provide pre-service English teachers with practical pedagogical strategies and emotional support. It focuses on a Japan Society for the Promotion of Science (JSPS) funded '*Kaken*' project which aims to support pre-service English teachers. Several researchers (e.g., Cripps, 2023; Mouri, 2020; Tahira, 2012) have reported that the support structure for pre-service English teachers in Japan is notoriously weak. This unfortunate reality, coupled with a short teaching practicum window of only two or three weeks, places aspiring English teachers in a difficult and vulnerable position. How can short practicums, which are an integral part of the teaching license system in Japan, possibly prepare pre-service English teachers for the realities of teaching at Japanese junior and senior high schools? This short paper discusses the support which is being provided by a group of researchers based in Japan to pre-service English teachers at a private Japanese university. The study draws upon data that emerged from the online interactions between one university student and her professor, an online collaborative debriefing session, and the lead researcher's classroom observations. By highlighting the concerns of one pre-service English teacher during her teaching practicum, the paper provides a window into pre-service English teachers' needs in Japan.

Background

Pre-service and in-service English teachers require ongoing support to cope with the myriad of challenges that they will face throughout their teaching careers. As part of a previous research project (see Cripps et al., 2017a, 2017b), the research team members endeavoured to provide assistance for in-service teachers. The five-year research project (2015-2019) identified Japanese in-service English teachers' needs and aimed to address those needs through intensive workshops, an online teacher support centre, and the creation of practical teaching material.

In 2022, the writers of this paper were awarded a five-year JSPS grant to support Japanese pre-service teachers of English. The research team is currently working to identify the specific needs of pre-service English teachers and provide meaningful support in a variety of different ways such as teaching workshops, individualized online support, teaching handbooks, and a professional learning network. Pre-service teachers in Japan face three main challenges as they embark on their teaching journeys: (a) the considerable demands of the New Course of Study guidelines (CoS), (b) poor pre-service training at their university, and (c) a lack of practical teaching experience (Mouri, 2020; Tahira, 2012). To help equip pre-service English teachers with the necessary skills that they will need once they start teaching the research team has started to offer a series of workshops dedicated to addressing these needs. Previous workshops conducted by expert educators from Japan and Australia have focused on issues such as 'Helping false beginners to read/write', 'Strategies to support Japanese English language learners' 21st century skills', and 'Improving students' spoken English skills' (for more detailed information on these workshops see Cripps et al., 2023a, 2023b; Cripps et al., 2023).

A Teacher-Training Seminar Course at Nanzan University

Nanzan University is a private Catholic University in Nagoya, Japan. Many students in the Department of British and American Studies (known as '*Eibei*' in Japanese) have a high level of English as they attended high schools with strong English programmes and/or studied overseas in English-speaking countries. Not surprisingly, a significant number of students in

the *Eibei* programme enrol each year in a teaching license course run by the university. In addition to the teaching license course, some *Eibei* professors also offer teaching seminar courses to third- and fourth-year students. Professor Cripps' seminar course at Nanzan University aims to furnish students with a grounding in teaching methodology and provide them with practical pedagogical skills (see Cripps, 2023 for a detailed overview of the seminar course). The list below shows some of the main the subject areas covered in the two years of Professor Cripps' seminar course:

- Teaching English as a foreign language (TEFL) methodology
- The roles of a teacher
- Learners and their needs
- Motivation
- Learner autonomy
- Evaluation
- Teaching speaking
- Teaching listening
- Teaching reading
- Teaching writing
- Teaching vocabulary
- Teaching with technology

Support Woven Into a Practical Teaching Seminar Course

The provision of support immediately before the pre-service English teachers begin their teaching practicums as part of their teaching license course is a key component of preparing them for many of the challenges that they will face during their teaching practice. Apart from offering a solid grounding in teaching methodology, Professor Cripps' seminar course aims to provide extensive support for his seminar students who are enrolled in the teaching license course and undertake a teaching practicum. Usually, most teaching practicums take place in June. Therefore, two bespoke classes which help prepare students for their teaching practice are woven into the seminar course in May.

Bespoke Class One – Sample Lesson

In this class, Professor Cripps gives a mock English lesson that is designed for high school students. Special attention is paid to how to begin a lesson, generating interest in the topic at hand, offering encouragement and positive reinforcement, as well as strategies to get students to interact and produce spoken English. After the sample class, students discuss the various components of the class and how they would teach the same content.

Bespoke Class Two – Q & A Class

In this 100-minute class, which takes place just before the students start their teaching practice, the students are invited to ask Professor Cripps any questions about teaching. The tables and chairs are strategically organized in a horseshoe formation to encourage open communication with Professor Cripps sitting at a desk in front of the students. At the 50-minute mark the roles are reversed. Each student takes a turn sitting in the 'hot seat' (i.e., in front of the horseshoe) and they have to answer questions set by Professor Cripps related to typical teaching situations that they are likely to encounter. Professor Cripps has a list of 50 questions and the students

have to choose a number which is related to a specific question about teaching. This random aspect injects an element of jeopardy into the proceedings and creates a level of tension and anticipation which the students seem to enjoy. Examples of typical questions are: 'How would you try and motivate students who do not seem interested in your class?', 'What are some of the most effective ways to correct students' mistakes?', and 'How can you encourage students to use English in class?'

At the end of the class, the students are encouraged by Professor Cripps to support each other throughout their teaching practicums by establishing their own LINE group. LINE is a popular mobile messenger app in Japan which allows users to send contacts messages and make voice and video calls. In essence, the pre-service teachers' LINE group acts as a virtual community of practice that offers both practical and emotional support. Several researchers (e.g., Lantz-Andersson et al., 2017; Trust et al., 2016) have reported that teacher forums can serve as a type of virtual staff room where educators can discuss pedagogical strategies, troubleshoot problematic classroom issues, and receive moral encouragement. In addition, Professor Cripps reminds the students that he is always willing to answer any questions that they may have during their teaching practicums.

The section highlighted in the pages that follow provides an illustration of a typical LINE message interaction which frequently takes place between seminar students who are nervously preparing for their teaching practicums and Professor Cripps. It provides an interesting window into the pedagogical concerns and trepidations that most Japanese pre-service educators experience at the start of their teaching journey.

Support During Teaching Practice

The teaching practicum period, which is only three weeks for a junior high school license or two weeks for a senior high school license, is perhaps one of the most stressful and demanding periods that pre-service English teachers experience throughout their time at university. During this time, Professor Cripps offers both virtual and face-to-face support for the students in his teaching seminar course. In addition, he usually observes the teaching practice of at least three of his students at junior high or senior high schools. Unfortunately, it is logistically impossible for Professor Cripps to conduct classroom observations for all of his students because of his teaching load, committee work, and other responsibilities. Therefore, many of the pre-service English teachers in Professor Cripps' seminar course tend to either come to visit him in his research office to ask for advice, or alternatively they request online support with their lesson plans via the LINE message function.

What follows below is a representative example of a typical message exchange which takes place during the teaching practicum period. The LINE message exchange between one of Professor Cripps' seminar students 'Nozomi' (pseudonym) and Professor Cripps took place on June 6, and June 13, 2023. Nozomi had just started her two-week teaching practicum at a senior high school in Aichi prefecture. She informed Professor Cripps that her mentor at the high school had instructed that she would be responsible for teaching a textbook unit which focuses on 'space'. The LINE messages provide a snapshot of the concerns of Nozomi, and how Professor Cripps tries to offer constructive advice to his seminar students.

Figure 1. *LINE message from Nozomi asking for advice*
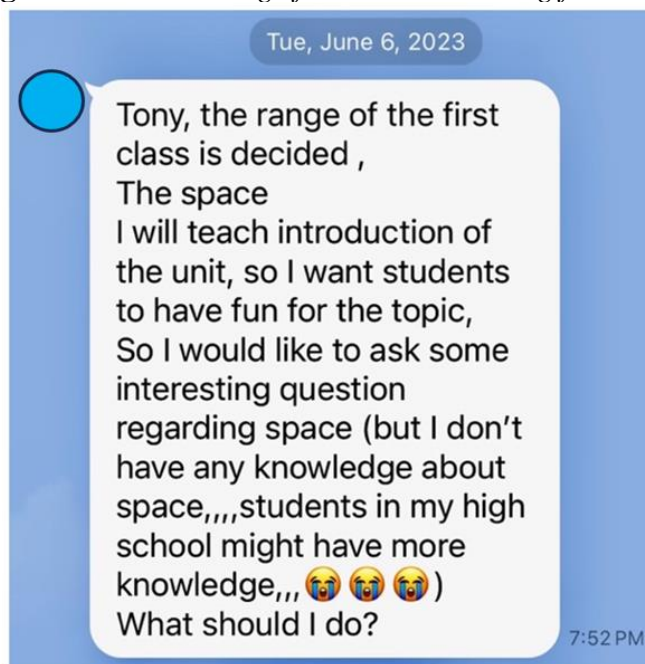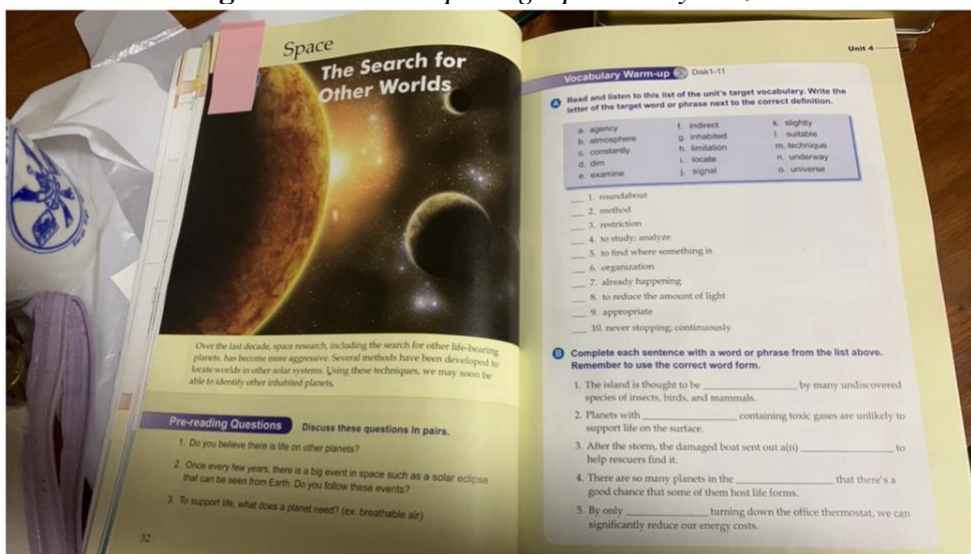

Figure 2. *Textbook photograph sent by Nozomi*

Once the pre-service English teachers have been told which sections of the textbook they will teach, a certain amount of uneasiness sets in, and students often ask for help. In this case, Nozomi was worried about the content of a chapter about 'space' and sent a LINE message in which she wrote: *"I don't have any knowledge about space…What should I do?"* In such a situation, it is important for the seminar course teacher (Professor Cripps in this case) to project a measure of calmness and reassure the student. It is equally important to refrain from being 'a wise sage' who provides 'all the answers'. Instead, it is essential that room is left to allow students to forge their own pedagogical paths.

Figure 3. *LINE message: Suggesting ideas*
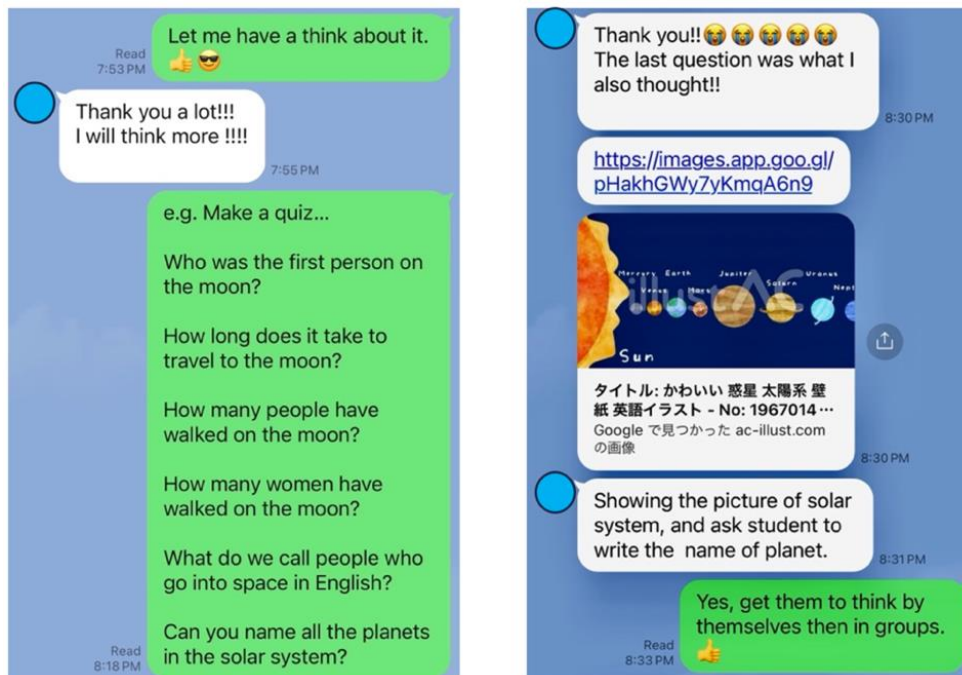
It is imperative for both supervisors and mentors to stay positive and supportive when listening to pre-service English teachers' ideas and concerns. The temptation sometimes is to try and provide pre-service teachers with 'the answers' they seek instead of letting them find their own way. The feedback shown in Figure 3 and Figure 4 was given to act as a catalyst to engage Nozomi's own ideas. No further advice was given until one week later (June 13, 2023) after Nozomi had taught her first two classes.

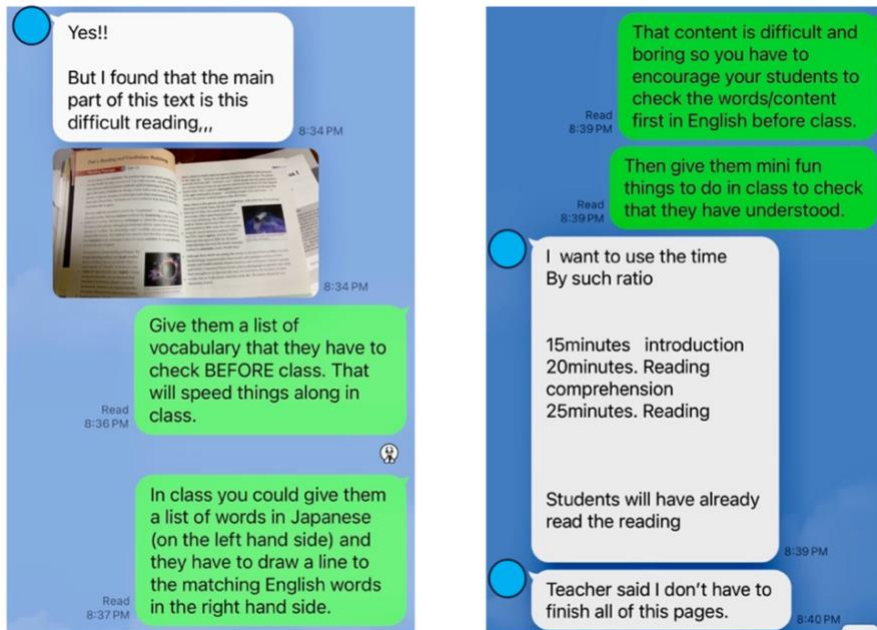**Figure 4.** *LINE message: Continuing the discussion*

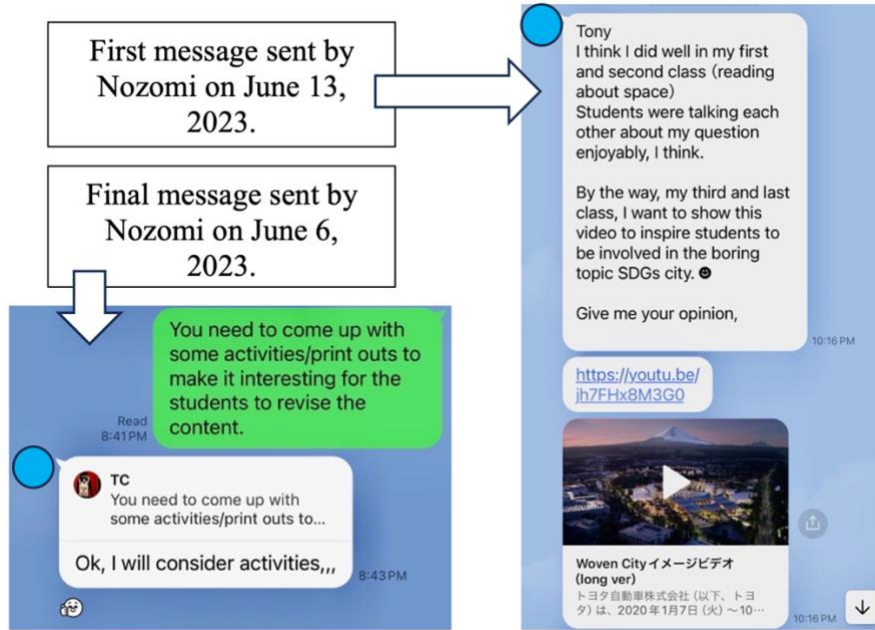**Figure 5.** *LINE message: Continuing the discussion*

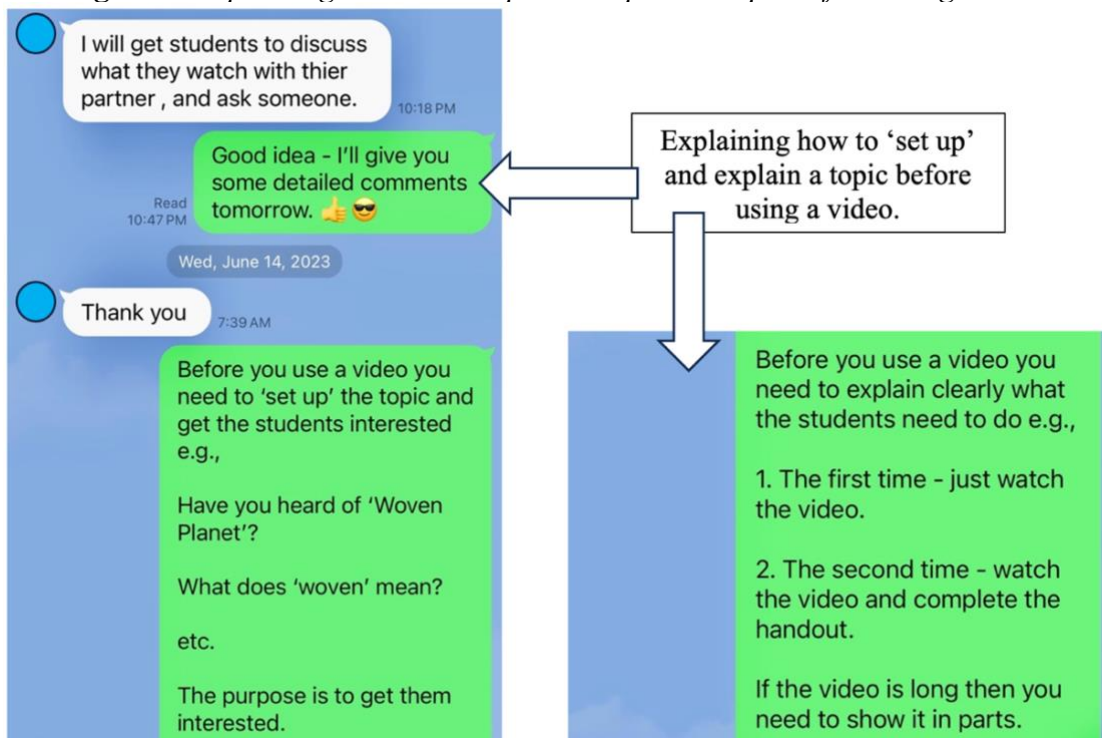**Figure 6.** *Explaining how to 'set up' and explain a topic before using a video*
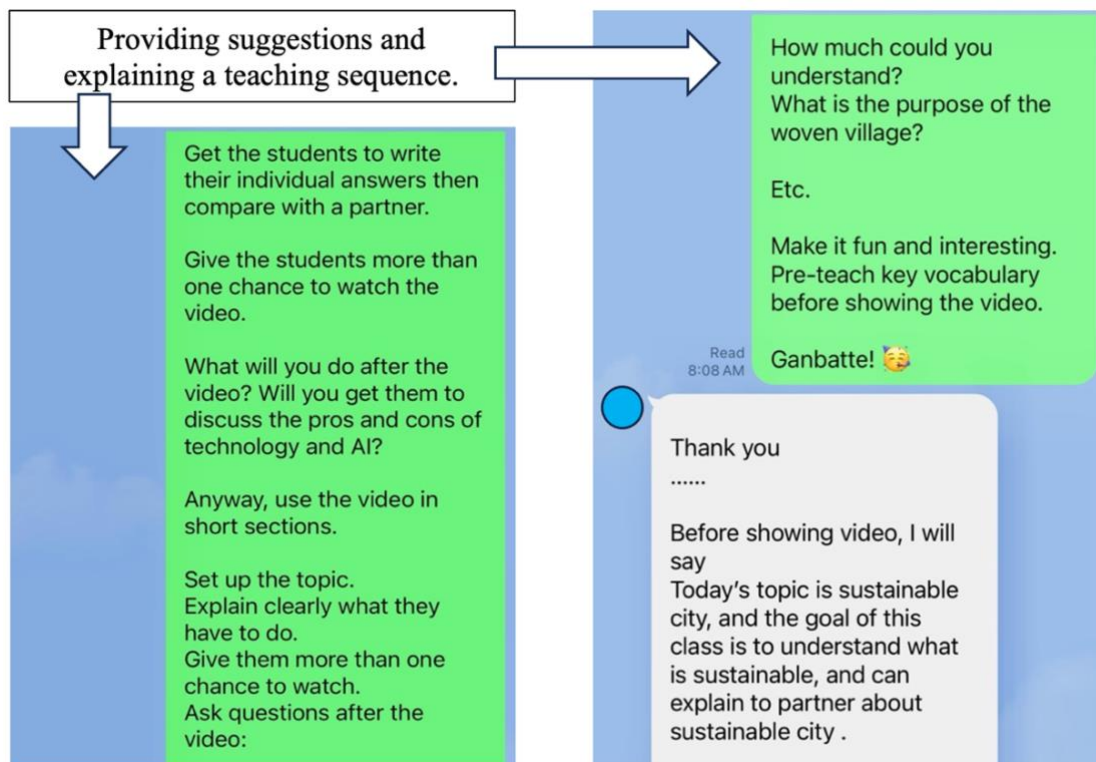
Figure 7. *Explaining a 'teaching sequence' when using a video*

After teaching her first two classes, it was clear that Nozomi's initial apprehensions were alleviated, and she was generally satisfied with her teaching performance. In Figure 7 and Figure 8 she shares her ideas on how she intends to introduce the topic of 'sustainable cities'. Nozomi shows how she plans to 'set up' the topic before outlining how she will try to pique the students' interest in the topic.

Figure 8. *Explaining how to 'set up' and explain a topic before using a video*
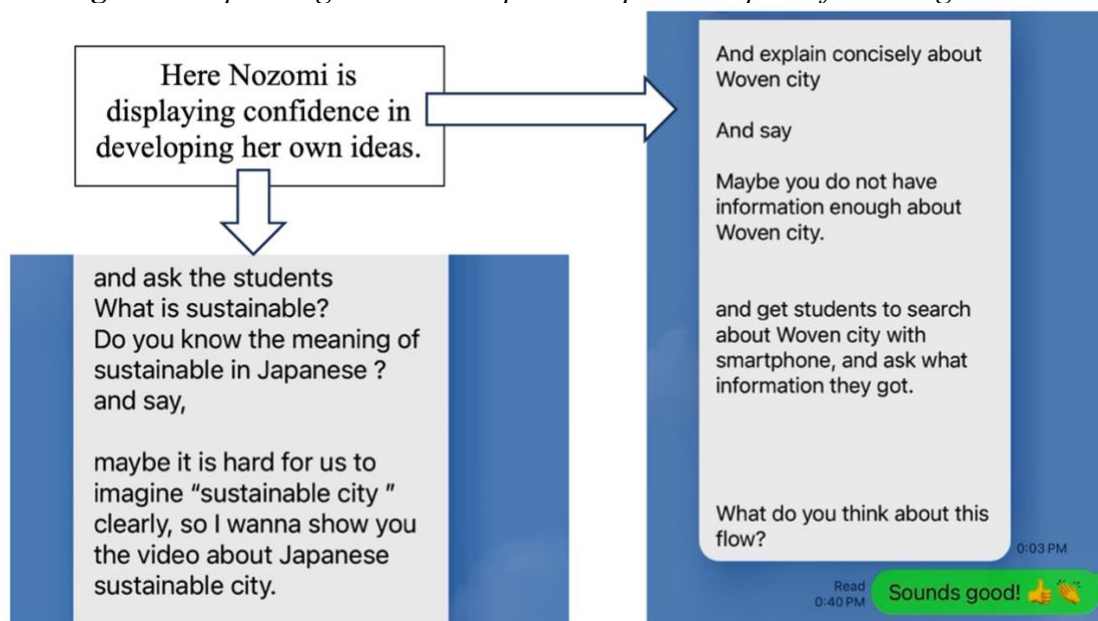
The LINE messages above provide a clear example of the kind of support that pre-service English teachers seek during their teaching practicums. In this case Professor Cripps tries to

offer advice without being too prescriptive. After teaching her first two classes it is evident that Nozomi had developed a certain level of confidence in her own teaching ability. Her initial concerns of *"I don't have any knowledge about space…What should I do?"* soon dissipated leaving Nozomi to concentrate on how she would plan and deliver her subsequent classes.

Debriefing Session

After the teaching practicums have finished, Professor Cripps gets together all his seminar course students who gave practicums for a special 'debriefing' session. During this meeting, Professor Cripps utilizes 'reflective circles' as the technique provides educators with not only mutual support, but also an awareness of different perspectives and strategies (Gardner et al., 2022). This important session, which is offered outside of regular class time, affords the students the opportunity to share their practicum experiences with the other members of the seminar course. On June 21, 2023, this recorded session took place online using the Zoom video conferencing platform and seven students spent over hour sharing their practicum experiences (in both English and Japanese). While it is beyond the scope of this paper to examine this debriefing session in great detail, it is worth noting that it generated a lot of interesting comments and reinforced the value of a teachers' community of practice. This debriefing session will be the subject of a future paper.

Moving Forward

Hopefully this paper has served to give the reader a front-row seat in which to observe the support which is being provided by the *Kaken* research team to pre-service English teachers at Nanzan University. We will continue to offer a variety of different teaching workshops (e.g., making learning more accessible for neurodiverse learners) while exploring other areas of assistance such as the provision of an online support site and teaching handbooks. We also plan to widen our 'follow-up' support by monitoring novice teachers to better understand their initial struggles and teaching needs.

Conclusion

This short paper has attempted to highlight different types of support that are being provided for pre-service English teachers at a private university in Japan. Many university students who are taking a teaching license course often experience high levels of anxiety when preparing for, and taking part in, their teaching practicums. The teacher-training workshops, pre-practicum bespoke classes, and post-practicum formal and informal debriefing sessions briefly outlined in this paper all work to build a protective and realistic support framework for pre-service English teachers.

This paper has provided a unique insight into the online interactions that take place between pre-service English teachers and seminar course leader before, during, and after their teaching practicums. More specifically, the LINE messages from Nozomi to her seminar course teacher Professor Cripps illustrate typical concerns that pre-service teachers experience and demonstrate how instructors and mentors can provide constructive feedback while leaving pre-service teachers free to explore and utilize their own ideas. Expert teachers are adept at adapting to new and difficult circumstances based on their considerable experience. When expert teachers act as mentors to aspiring and novice teachers, they should create a calm and nurturing atmosphere which enables new educators to 'find their own way'. The *Kaken* project that our

research group is working on aims the provide pre-service English teachers with such an environment as well as the requisite skills that they will need for their teaching careers.

Acknowledgements

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The Role of Technology in Art Education in Ghana

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Abstract
Technology plays a vital role in modern art education and offers many opportunities and advancements in Ghana. The purpose of this article is to explore the impact of technology on art education in Ghana and the benefits it brings to both students and teachers. There is the problem of technology to equip teachers with innovative tools and resources, enabling them to create dynamic and personalized lessons. Online platforms offer teachers access to a wide range of teaching materials, including lesson plans, instructional videos, and assessment tools. This study adopts case study under qualitative research using interviews, questionnaires and observation in data collection. The integration of technology into art education has transformed traditional teaching methods by providing students with engaging and interactive platforms to explore creativity. Technology allows students to experiment with different mediums, expand their artistic horizons and develop a deeper understanding of art techniques. The study recommends using digital tools and software, students can explore different art forms such as digital painting, animation, graphic design and video editing. This exposure to different art forms allows students to develop a well-rounded skill set that prepares them for the rapidly evolving digital landscape. Although technology in art education in Ghana offers several advantages, there are still challenges. The digital divide, limited access to the Internet and the lack of technical infrastructure prevent the widespread integration of technology in all schools. In addition, ensuring data protection, the digital literacy of both students and teachers, and the ethical use of technology continue to be areas of concern.

Keywords: Technology, Art Education, Art Forms, Interactive Platforms

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Introduction

Technology plays an important role in modern art education. This makes art education more accessible to wider audience, fostering collaboration and sharing of ideas between students and teacher's innovative tools and resources asserted by Tillander (2011). According to Raulin et al. (2003), technology has opened up a whole new world of possibilities in art education with tools like digital art programs and virtual reality. Basu et al. (2006) support the view that technology in art education allow students to experiment with can be grouped as both traditional and digital. In this context, teachers and lecturers can experiment with painting and drawing digitally using softwares like Adobe Photoshop and Procreate. They can employ 3D sculptures using programs like Blender or Thinker card and deeper understanding of art techniques asserted by (Jones, 1986). Other platforms for teaching and learning materials were Khan Academy and ArtsEdge, which offers a wide range of art lessons and resources for free. ArtsEdge is a software which is operated by Kennedy Center and provides lesson plans, videos and interactive activities.

Slack & Wise (2005) expresses that evolving digital landscape for teachers and students have opened up so many new opportunities, where students have access to a wealth of online resources of multimedia content and provide real time feedback. It's incredible to witness how technology is transforming education and enhancing learning experience for everyone involved opined by Murphie & Potts (2017). Technology provides students and teachers with interactive platforms that make learning more exciting and accessible. With online for example student can participate in virtual discussions, collaborate on projects and access multimedia resources. On interactive platforms, teachers can create interactive lessons using gamification techniques more like an art or game play. This shows how technology has transformed education making it more interactive and personalized for both students and teachers.

Recent studies showed that Jones (1986) delved into understanding the significance of technology in art education. Also Patton and Buffington's (2016) study was about keeping up with our students highlighting on the evolution and standards in art education. The problem statement emphasized that in Ghana, there is the problem of providing students and teachers with engaging and interactive platforms to explore creativity and promote art education. There is also the problem of technology to equip more teachers with innovative tools and resources in Ghana where there is lack of training and support. How can technology be effectively integrated in art education to enhance creativity, accessibility and engagement? Therefore this study sought to delve into the role of technology in art education in Ghana with emphasis on the strengths and weaknesses.

Theoretical Framework

The study adopted Scott and Palinscar (2013) socio-cultural theory by Lev Vgotsky that laid emphasis on the role of social interaction and cultural context in learning and development. This highlights the significance of language, social relationship and cultural practices in shaping educational experience. Socio-cultural theory can provide valuable insight in art education. According to this theory, learning is a social and cultural process that occurs through interaction with others and the surrounding environment. In the context of art education, technology can facilitate collaboration as depicted in (Figure 1). This shows how individuals share social and cultural sources with other people known to be the teachers and students with the exploration of diverse artistic perspectives. By integrating technology into

the art classrooms students can engage in meaningful interactions, share their artwork with a wider audience and gain exposure to different cultural art forms.
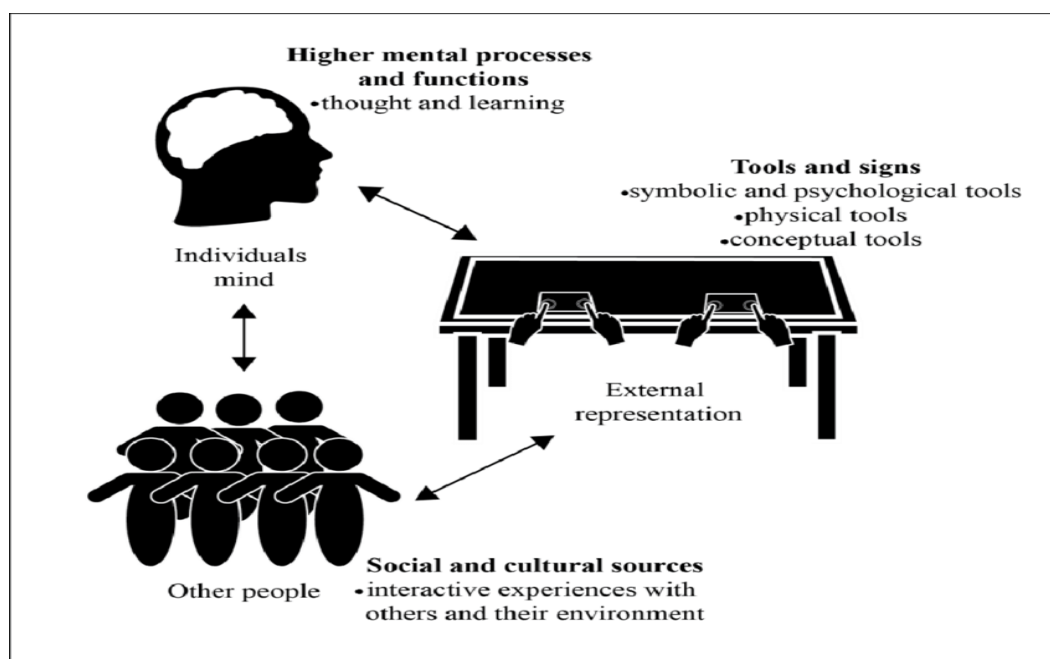

Figure 1: Socio-Cultural Theory
Source: Palinscar (2013)

Research Methodology

The study employed qualitative research design asserted by Leedy and Omrod (2005) for the description, interpretation, verification and evaluation of situations, settings, processes or people. This characterization made it a best option for the research. Since the study was focused on different art education institutions or sectors from the junior level to the tertiary level in Ghana, qualitative multiple-case study was befittingly employed. The deployment of qualitative multiple-case study design allowed the study to compare and contrast the role of technology in the art educational sector showing what was to the disadvantage with the uniqueness and diversities in art education in Ghana from various sectors or institutions in Ghana. The researchers adopted triangulated instruments of data collection being interviews, observations and photographs in data collection. These data collection served as blueprint to gather information on the role of technology in the selected educational sectors and how technology has being utilized in these sectors and what they are lacking via personal interviews, photographs and participatory observations. The personal (one-on-one) interviews were conducted using unstructured interview guides which was validated through pre-testing on other teachers not part of the original sample. Photographs of activities requiring the use of technology by teachers and students in art education were taken so the researchers could give the descriptive and interpretative documentation. The researchers engaged in participatory observation activities of the various art forms by students and teachers, where an informed consent form was filled and signed by rectors and head of departments of schools. An observation checklist was designed and validated through expert review by two seasoned qualitative researchers. The observation checklist was used for gathering data on the activities in the art forms engaged by students and teachers in art education using technology. The researchers used these triangulated data collection instruments to enhance the originality and trustworthiness of the findings of the study.

The population for the study was 18 schools or institutions. Cresswell (2009) estimated that 50% of the total population available for a study could be used to represent the relevant educational sectors for the study. Purposive Sampling was employed to select the various schools or institutions for the study and was later divided into a stratum with similar attributes and characteristics from the junior high school level to tertiary level illustrated in table 1.

Level of Education	Population for the study	Sample of Population
Pre-Tertiary Education		
Junior High School	6	3
Secondary High School	4	2
Tertiary Education		
Technical and Vocational Education	4	2
University Education	4	2
Total Population	18	9

Table 1: Distribution of Accessible Population (Stratified Sampling)

Thematic analysis procedures of organizing, transcribing, reading, familiarizing and using short quotations were used for the study. During the study, participants were pseudonymised to protect their confidentiality and anonymity in tandem with qualitative research method.

Result and Discussion

The result and discussion section elaborated on the strengths and weaknesses of the role of technology in art education in Ghana.

Strengths

Technology provided students with enhanced creativity where wide range of technology provided students and teachers with tools and softwares from different educational sectors that inspired and enhanced their artistic creativity in Ghana. Teachers and students access to a vast array of online resources, tutorials and virtual galleries expanding their exposure to different art forms and styles in Ghana. Interactive learning for teachers and students where digital platforms and applications offer interactive learning experiences, allowing students in Ghana engage with art in a dynamic and immersive way. Lastly, adoption of collaborative opportunities where technology enables students to collaborate through online platforms with peers, artist and experts from around the world, fostering cultural exchanges in diverse perspectives. In Ghana, students from junior high school engage in interactive learning using digital tools and softwares for drawing in art education (Figures 2 and).

Figure 2: Drawing by JHS Student 1   **Figure 3**: Drawing by JHS Student 2

Weaknesses

The weaknesses of the role of the role technology in art education highlight on limited access of digital tools and resources. In Ghana, not all students have equal access to technology and internet resources, creating a digital divide that hinders the ability of fully engaging in technology-based art education. Skill development is also an intriguing factor, whiles technology can enhance creativity, and it is essential to balance it with traditional art techniques to ensure that teachers and students develop foundational skills from all educational sectors in Ghana. Lastly, authenticity brings a scenario on how individuals argue that technology can diminish the tactile and physical experience of creating art in Ghana.

Overall, leveraging the strength of technology and addressing its limitations, art educators can create a balanced and enriching learning environment. This combines both traditional and digital art practices.

Conclusion

In summary, integrating technology in art education can enhance the educational sectors in Ghana. Also incorporating digital tools and softwares, students and teachers can explore new artistic media in Ghana. Lastly online platforms will help students and teachers from different sectors interact and showcase ideas and innovative artworks accessing wealth of online resources using technology in art education in Ghana.

The study therefore recommends government helping by allocating resources to create policies that prioritize art education in schools or institutions with the help of technology. Government should train teachers and students to prepare them for readily evolving digital landscape world for the utilization of digital tools and softwares in art education in Ghana. Lastly, various educational sectors, stakeholders should help in digital establishments of

infrastructures in Ghana with the introduction of technology in art education into the curriculum to provide skills and knowledge to teachers and students with little or no limited access to technology in art education in Ghana.

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"¿Me Entiendes?" Do You Understand Me?
Supporting Multilingual Teachers and Prospective Educators

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Abstract

This paper examines a Multilingual undergraduate course that was created to increase knowledge and understanding for both teachers and prospective educators in responding to language learning competencies for multilingual learners in our local community. One area considered in the design of our course has been the use of diverse resources to provide points of connection. With the ease of access to different media, the use of traditional fairy tales identified as both accessible and translated resources for drawing connections and reaching multilingual learners is considered. However, conventional fairy tales create other issues and challenges in terms of the hidden societal messages /agendas that are conveyed with the use of stereotypical representation and expectations, even within different cultural versions of the same fairy tale. The different perspectives shaped by the intersectionality of student identities are invaluable assets for learning. A Vygotskian approach to increasing language learning and competencies is integrated into the conceptual framework of this paper. Strategies that we have used for teaching multilingual learners and preparing prospective teachers are identified along with an analysis of feedback data from a survey distributed in the pilot study. The tensions that exist with integrating diverse forms of representation to address diversity, equity, and inclusion in the curriculum, for improving diversity in practice and ensuring greater representation with the contributions of diverse and/or minoritized groups in the curriculum is reviewed. The multilingual course is a deliverable to the Up-Lift California Grant from Early Educator Investment Collaborative (EEIC) to California State University, Sacramento.

Keywords: Multilingual Learners, Curriculum Materials, Language Learning

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Introduction

"*¿Me Entiendes*?", "Do you understand me?" This is a common refrain by teachers and prospective educators when communicating with multilingual learners and families. The interest to seek additional resources to help support prospective educators, and current teachers in the field, was initiated through grant funding that was secured to create a multilingual undergraduate course (i.e., *Supporting Multilingual Learners: Context and Approaches)*. The multilingual course was designed to increase knowledge and understanding for both teachers and prospective educators in responding to language learning competencies for multilingual learners. The course was offered as a special interest course that would count towards credit as an elective for a degree program in Human Development, and Child, Adolescent, and Family Studies. As part of the requirements for a degree in teaching in Early Childhood Education, the focus of the course was to ensure greater understanding of the needs and strategies that could be utilized to improve opportunities for multilingual children.

Location and Regional Context

The California State University (CSU) system is a public system of higher education, the largest university system in the United States with 23 campuses spread out across the State. Although regionally in the San Joaquim valley, the current student population is relatively small compared to the other CSUs situated along the coast, the campus is located approximately 2 hours inland from Los Angeles and is the only 4-year institution of higher education within 100-mile radius.

Our students are first generation. Our university is a designated Hispanic Serving Institution (HSI) and a Minority Serving Institution (MSI). Many of our students have limited resources and are often working several jobs to afford the cost of their education. While California is viewed as politically and socially liberal in terms of the State, Kern County is quite conservative. The major industries are oil and agriculture. Several people work in the big oil companies and can quickly earn high salaries with limited education, while a large population of migrant workers work in the fields earning very low wages. This disparity is reflected also in the students we serve.

Conceptual Framework

The guiding conceptual framework for the development of the multilingual course incorporates a Vygotskian approach with effective student learning occurring through active participation. Learner-led inquiry, negotiation, active hands-on experiences coupled with creativity embodies learning processes whereby children learn through engagement. According to Vygotsky, social interactions help children develop their ability to use language. The role of language is critical, as it serves as a tool for thought and communication. "Vygotsky's fundamental theoretical insight is that the higher forms of human mental activity are always and everywhere mediated by symbolic means" (Mahn & Fazelehaq, 2019, p.4). The basic function of speech and language acquisition is based on communicative social interaction. Therefore, simply interacting with others is not enough. Communication is essential, as children acquire language competencies there are modes that help with their thinking, voluntary attention, partitioning, comparison, analysis, abstraction, and synthesis. Therefore, as Vygotsky has contended, learning occurs through interactions with others in the community, (peers, adults, teachers, and mentors). The greater awareness that children have affects their thinking process which impacts their language acquisition.

Multilingual Learners

Multilingual Language learners refers to individual who speak and understand more than one language. According to Yoon (2023:1), Multilingual learners (MLLs), are students who are in the process of acquiring English as a new, additional language. They are one of the most increasing populations in U.S. public schools. In the United States, there was an increase of Multilingual Learners (MLLs) from 4.5 million students to 5.1 million students between 2010 and 2019. Additionally, more than 400 different languages are spoken in U.S. public schools (Yoon, 2023:1).

Second language acquisition requires not only cognitive development of the child, but also recognizing the differences of the child's specific personality and needs. Children learn their native language differently, then when they are learning a second language. Children do not study in the traditional sense, their native language or intentionally learn their native language. Rather, children acquire their native language without conscious awareness. With second language acquisition however, children are intentionally learning the language through the learning of alphabets, reading, and writing. Therefore, it is important to identify the student's home language or native language to provide the support and assistance for student learning. It is crucial for teachers therefore, to understand that there is a variation of experiences and needs of children and language acquisition. Differences in learning may also extend to how language is passed on from one generation to the next. Customs, beliefs, skills, and values of the children may also influence language learning.

Diversity- Traditional and Culturally Adopted Fairy Tales for Multilingual Learners

One aspect that was considered in the design of selected pedagogy used to be integrated into the multilingual course was the use of diverse resources to provide points of connection for multilingual learners. With the ease of access to different media, the use of traditional fairy tales was identified as both accessible and translated resources for drawing connections and reaching out to multilingual learners. The stories from the original Grimm Brothers' Fairy Tales and Hans Christian Anderson offer traditional interpretations of fairy tales. Non-traditional fairy tales from various authors provide a combination of bilingual and multicultural versions of a fairy tale based on the same original traditional stories but offer insight into different cultural values or traditions. Fairy tales have been used to explain why cultural elements in a particular society were deemed important. Fairy tales also provide children with the possibility of using play and their imagination where they can change versions of fairy tales according to their understanding.

While fairy tales were a known point of connection, there were also issues and challenges with the use of conventional fairy tales in terms of the hidden societal messages/agendas that are conveyed with the use of stereotypical representation and expectations. Unfortunately, even within different cultural versions of the traditional fairy tale, inaccuracies persist. A brief examination of traditional tales versus cultural or non-traditional tales highlights some of the patterns and concerns that were noticed with the use of fairy tales in teaching multilingual learners.

Cinderella is a popular fairy tale known around the world. It is about a young woman who becomes a servant to her step-mother and step-sisters after the death of her biological father. Cinderella is eventually rescued by the prince.

Contrast the Grimm version of Cinderella with the Mexican Cinderella Story by Tomie dePaola, entitled "Adelita: A Mexican Cinderella Story". In this version, Adelita has the same misfortune as the traditional Cinderella with being left in the hands of her stepmother who mistreats her after the death of her father. The difference in the Mexican version is that everyone is invited to a party at the family ranch for the homecoming of the rancher's son. Adelita attends the party, and loses her slipper. As in the traditional version of Cinderella, the son seeks to find the person who fits the slipper to marry. Adelita marries the son and lives happily ever after.

The design of the adopted tale book cover (Figure 1), displays a cultural version with the Mexican Cinderella Story. As indicated in the title of the book, the adoption simply changes the context of the tale, but the story remains essentially the same.
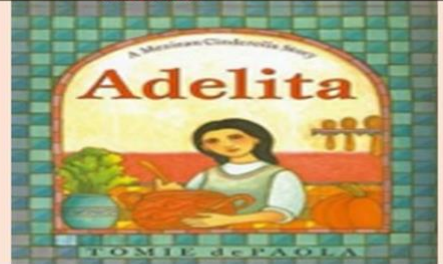

Original Tale	Adopted Tale
Cinderella Carl and Wilhelm Grimm	Adelita: A Mexican Cinderella Story Tomie dePaola (Mexico)
2018, Sterling Publishing Toronto Canada	2022, Puffin Books New York

Figure 1: Cinderella – Traditional Version and Mexican Version

The premise of the non-traditional Snow White fairy tale by Jehan Jones-Radgowski also replicates a similar alignment to the traditional tale in the African American version of Snow White and the Seven Dwarfs. Whereas the traditional tale is about a young girl named 'Snow White' because her face was white as snow, the cultural version does not attribute the same meaning to Snow White's name with any physical features. Simliar to the traditional version, Snow White must flea from her step-mother who is jealous of her beauty. Instead of Snow White meeting 7 dwarfs, the African American version depicts Snow White with 7 children, yet the title of the tale remains Snow White and the Seven Dwarfs. Ultimately, the prince saves Snow White in the non-traditional version, but rather than marry her, the prince becomes her friend, not her husband. Some critics may consider this cultural version of Snow White reflective of more contemporary current lifesytle relationships and family arrangements with Snow White not marrying the prince. However, the 'happy ever after ending' is reinforced in this version, in the same way as is reflected in the original tale.

From the design of the cultural tale, the representation of the Snow White character and the seven children highlights the racial difference between the original Snow White tale and the cultural tale. Additionally, the coverpage of the cultural tale depicts the posioned apple which the step-mother uses in her attempt to kill Snow White. In the cultural version, when the step mother bites from the apple herself, there is no magical power to resusitate her due to her excessive vanity. Similar to Cinderella, the trope of the evil step-mother is reinforced in both versions of the fairy tale and also represented in the depicition of the step-mother on the coverpage of the book (Figure 2).

Original Tale	Adopted Tale
Snow White and the Seven Dwarfs Carl and Wilhelm Grimm	Snow White and the Seven Dwarfs Jehan Jones-Radgowski
2018, Sterling Publishing Toronto Canada	2022, Picture Window Books North Mankato, Minnesota

Figure 2: Snow White and the Seven Dwarfs

While there are attempts to alter the visual representation of the key characters in the cultural versions of traditional fairy tales, attempts to address the intersection of language and culture appears to slowly emerge in the cultural rendition of Little Red Riding Hood, entitled "Caperucita Roja" by Liz Doolittle. As in the traditional tale, Caperucita Roja is a young girl charged with the task of taking food to her grandmother. Along the way, she is tricked by the male wolf to take a longer path, so that the wolf can arrive to her grand-mothers house before her. The story and cultural context remain the same. The only difference is the use of two different languages (English and Spanish) in the cultural version.

A cursory view of the cover page of the book (See Figure 3) does not reflect any specific cultural dress, traditional markers, or visual cues to suggest a different version of the classic Little Red Riding Hood tale other than the title of the book written in Spanish. Without any visual ques to guide and highlight the intersection of language and culture, this version of the tale basically replicates the traditional version except for the use of a different language. In this case specifically, the tale is replicated, without nuancing any cultural differences or traditions which might be expected or anticipated in a Spanish language version of Little Red Riding Hood.

Original Tale	Adopted Tale
Little Red Riding Hood Carl and Wilhelm Grimm	Caperucita Roja Liz Doolittle
2018, Sterling Publishing Toronto Canada	2015 Unitexto Digital Publishing

Figure 3: Little Red Riding Hood and Caperucita Roja

In the original tale of Sleeping Beauty, the curse of a spindle pricking the finger of the princess causing her to fall into a deep sleep is placed by the 13th fairy who felt slighted for not being invited to the party at the castle. The curse was placed for eternity; however, another fairy reduces the curse to 100 years. The curse or spell is broken with the prince

finding the princess and kissing her. As the prince resuscitates the princess bringing her back to life, they marry and live happily ever after. In the cultural version entitled La Bella Durmiente by Carol Ottolenghi (2009), the story and cultural setting remain the same (See Figure 4), but the language of the story is Spanish.

Original Tale	Adopted Tale
Sleeping Beauty Carl and Wilhelm Grimm	La Bella Durmiente Carol Ottolenghi
2018, Sterling Publishing Toronto Canada	2009 Carson Dellosa Publishing LLC North Carolina

Figure 4: Sleeping Beauty, and La Belle Durmiente

The traditional version of Rapunzel is also replicated in the cultural version, but one major difference is the inclusion of Indian culture and characters, however the story line remains the same. In the original tale, a mother is punished when she asks her husband to steal fruit from another person's garden. The punishment is that the first child of the couple will be given to the witch who places Rapunzel in a tower. Rapunzel remains trapped in the tower, until a prince witnesses how the witch climbs the tower using Rapunzel's hair. When the prince hears singing and plans to rescue Rapunzel, the witch arrives and cuts Rapunzel's hair and banishes her to the forest. The witch pretends to be Rapunzel when the prince returns and proceeds to climb the tower. The witch places a curse on the prince blinding him, however the prince manages to escape and wonders through the forest, until he hears the singing of Rapunzel and explains to her what occurred. Rapunzel cries, and her tears magically bring sight back to the prince. They live happily ever after.

Although the cover page of the cultural version of Rapunzel by Chole Perkins depicts Indian culture (See Figure 5) with the use of an Indian Rapunzel character with long black hair, the cultural traditions, values, beliefs, and customs of Indian people are not emphasized in a meaningful way within the story line. The cosmetic version of the cover page provides a weak form of representation of culture with the skin color of the main character, but no other significant attributes of Indian culture that move beyond the superficial level of clothing, food, music, or dance.
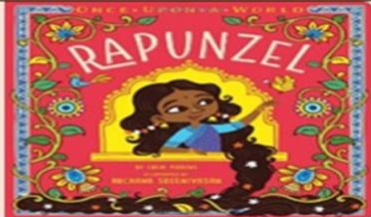
Original Tale	Adopted Tale
Rapunzel Carl and Wilhelm Grimm	Rapunzel Chole Perkins
2018, Sterling Publishing Toronto Canada	2017, Little Simon New York

Figure 5: Rapunzel original version and cultural adopted tale version

In the African American version of the Princess and the Pea, the context is completely different from the original tale. Here, a mother initiates a competition to find a suitable wife for her son. The requirements of any of the eligible candidates is that they should be able to cook and feed her son. This requirement reinforces stereotypical representation of women in the home and domestic duties. The woman who cooks the best pot of black-eyed peas is given the blessing from the mother to marry her son.

The cultural tale in this case diverts significantly from the original tale. The addition of cultural foods and the expectations of mothers for their son's could be viewed as a closer depiction of cultural values and traditions. However, these various expectations can also be viewed as reinforcing stereotypical roles for women within the cultural group as well as the broader society. The value of being a dutiful wife is allocated greater currency than the role of the princess in the original version of the Princess and the Pea. For contemporary women within the African American culture, the focus on domestic duties alone over their intellectual abilities and contributions traps women into a single defining role. This form of representation limits the vision of possibilities for young African American girls to consider or aspire towards, if the prize of the princess is to be based on her success in the kitchen alone.

The visual representation of the Princess and the Pea by Rachel Himes reflects an African princess dressed for work in the kitchen (See Figure 6). The depiction of the Princess and the alignment of culture through food, may present some level of authenticity as reflected in past traditions, but it does not provide the breadth of abilities that the Princess may possess that would make her a suitable partner for the Prince.

Figure 6: The Princess and the Pea, original and adopted African American Version

Culturally Relevant Course Materials – Equity Minded Teaching

As endorsed in the current educational literature, it is essential to recognize the inherent complexities and multiplicities of identities within the classroom community, as well as the value of the contributions that emanate from people with different experiences, and perspectives framed by their context and location. The different perspectives shaped by the intersectionality of student identities are invaluable assets for learning. An overview of the theoretical framework on second language acquisition necessitates that educators focus on the development of children who are Multilingual Learners (MLLs) with evidence-based teaching practices for supporting MLLs.

Some of the strategies for working with Multilingual learners that should be considered are as follows:

1. Schools should gather cultural information about the child and family upon enrollment in the class (Heffington & Cody, 2023, p. 312).
2. Educators should partner with families to provide opportunities for families to participate in the classroom (Andriaschko, 2023, p. 71).
3. Children should see themselves represented in the classroom (Heffington & Cody, 2023, p. 312).
4. The curriculum should incorporate and support diverse languages, cultures, and traditions (Mouhaya, 2022, p. 3).

Within the Curriculum, educators should ensure that the form of instruction that is utilized integrates peer to peer discussion and exploration. Educators can ensure greater understanding by adapting books when reading to encourage deeper comprehension of the material. For multilingual learners, daily opportunities to practice writing in all subjects will help increase familiarity of content areas while also accommodating for the needs of multilingual learners. As many students learn visually, educators should consider utilizing difference spaces in the classroom by creating examples that can be posted in and around the classroom to serve as reminders of the resources that are available.

Student Voices

A pilot survey was administered to students enrolled in the multilingual undergraduate course to assess student learning experiences. Findings were based on 29 students (27 females, and 2 males), in a class consisting of seniors (56.5%), Juniors (39.1%) and Sophomores (4.4%), with three major ethnic groups represented (Hispanic/Latinx 82.6%, African American 13%, and Asian/Pacific Islander 4.4%) the feedback received indicated the following results: 82.61% of students felt prepared to support the learning of children/students who are MLLs, with 86.9% feeling prepared with knowledge on children/students who are MLLs and 86.96% feeling strongly prepared with instructional skills to support the learning of children who are MLLs. Futhermore, 82.61% of the students strongly agreed or agreed that the department provided them with high-quality fieldwork experience, and fieldwork opportunities to refine their instructional skills.

Participants reflected on their career goals upon graduation and indicated that their most common career goals included becoming an early childhood care and education professional (29.41%) or pursuing a credentialing program to become an elementary education teacher with a multiple subject credential (26.47%). Additional notable goals were to work as an early interventionist (14.71%), pursue a credentialing program to become a middle/high school education teacher with a single subject credential (2.94%), and become a social worker (8.82%). Other participants indicated a desire to work in special education abroad, work as a dual language instructor, pursue a doctoral degree, and pursue roles in education leadership.

Conclusion

In conclusion, diversity of representation necessitates that educators encourage the creation of *Communities of Practice*, (Wenger, 1999) where children begin to trust their own understanding and knowledge. This exchange between students and educators fosters a space whereby children become co-constructors of knowledge where they can create stories that enable them to display their bilingual and biliterate skills. Furthermore, it is essential to not only acknowledge, but also value and embrace the different social constructions of identity of

students. As Salazar (2013) has asserted "superficial and uncritical focus on methods often privileges whitestream approaches aimed at assimilation, ultimately robbing students of their culture, language, history and values, thus denying students' humanity" (p. 4). Educators must also be prepared to respond to the dynamics of power and privilege that impact how diverse groups are often represented and differently situated within the broader context of society. Students and educators whose perspectives are shaped by their intersectionality are invaluable assets to educational institutions in response to the realities of an increasingly globalized world. There are differences within cultures, within families, and within siblings. What is appropriate in one family and/or culture may not be appropriate in another. Educators must be cognizant of the uniqueness of each child, and the impact of how their differences are shared, welcomed, and accepted in the classroom.

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Developing Qualitative Research Methodology:
Using Focus Groups as a Single Research Method in a Student Motivation Study

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Abstract

This paper presents the process that was used to design a research method for a study using focus groups as the main data collection method to investigate male students' experience of higher education in the United Arab Emirates (UAE). The methodology design process covered research paradigm, ontology, epistemology, and research characteristics and considerations. The alignment between research question and research method was then explored followed by the justification for using focus groups as the only method to conduct the study. The intention was to choose a research method that will dictate collecting and analyzing data from a representative sample of the student population to reach an understanding of the elements that impact motivation by the students themselves. Student motivation, whether it is intrinsic or extrinsic, is a complex construct involving multiple theories such as behavioral, humanistic, and cognitive theories implying that there are multiple factors that impact student motivation. The intent was to understand how students' college and non-college experiences affect their decisions to continue or drop out of college. In this regard, focus groups was used in this study to explore participants' feelings and beliefs that shape their behavior and perceptions through their discussions and recollections of their study experience. Besides obtaining thorough clarification of the different accounts of participants to the same issues, focus group helped the researcher obtain valuable insights opinions, views, emotions, and impressions of the participant students using their own expressions and words.

Keywords: Paradigm, Ontology, Epistemology, Focus Groups, Methodology, Student Motivation

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1　Methodology

This paper focuses on the methodology used to design a study (Alkaabi, 2016) which explored the aspects of the UAE social environment that students perceived important to their learning, and that impact their motivation and decisions, in some cases, to opt out of college.

1.1　Research Paradigm, Methodology & Method

1.1.1　Paradigms: Introduction

In scientific research, it is important to choose a research paradigm. A paradigm is a "comprehensive belief system, world view, or framework that guides research and practice in a field" (Willis, 2007, p. 8). Paradigm designation varies from one author to another (Guba, 1990). In its classical, simplistic designation, a paradigm can be quantitative or qualitative in nature (Willis, 2007). A more recent addition is a mixed paradigm utilizing both quantitative and qualitative approaches (Creswell, Clark, Gutmann, & Hanson, 2003).

A modern, generally accepted designation is the three paradigms of post-positivism, critical theory and interpretivism which are dominant in social science research literature (Willis, 2007). Each paradigm has its own "values, terminology, methods and techniques to understand social phenomena" (Kumar, 2014, p. 31).

Post-positivism accepts scientific methods and objective data where the nature of reality is external to human mind (Saunders, Lewis, & Thornhill, 2009). On the contrary, in critical theory, explaining the structure of reality is accomplished using ideological and value oriented subjective inquiry to "determine local instances of universal power relationships and empower the oppressed" (Willis, 2007, p. 83). Interpretivism utilizes a subjective inquiry approach where reality is socially constructed and has two major notions; rationalism, the notion that empiricism is not always the better way to gain knowledge; and relativism, the notion that reality is shaped by one's experience and culture (Willis, 2007). Interpretivism is sometimes referred to as constructivism.

There are three characteristics that set paradigms apart, ontology, epistemology and methodology (Guba, 1990). Characteristics of the current research ontology, epistemology and methodology are analyzed hereafter, followed by the paradigm chosen to reflect these characteristics.

1.1.2　Research Ontology and Epistemology

A paradigm contains assumptions about issues of truth (ontology) and knowledge (epistemology). In Figure 1-1(a), ontology and epistemology can be thought of as branches of philosophy called metaphysics, which at its core is concerned about the what and how that dictate ontology and epistemology in nature. The what part is set to find out the characteristics of things and the how part is set to question how we know that these things exist (Willis, 2007).
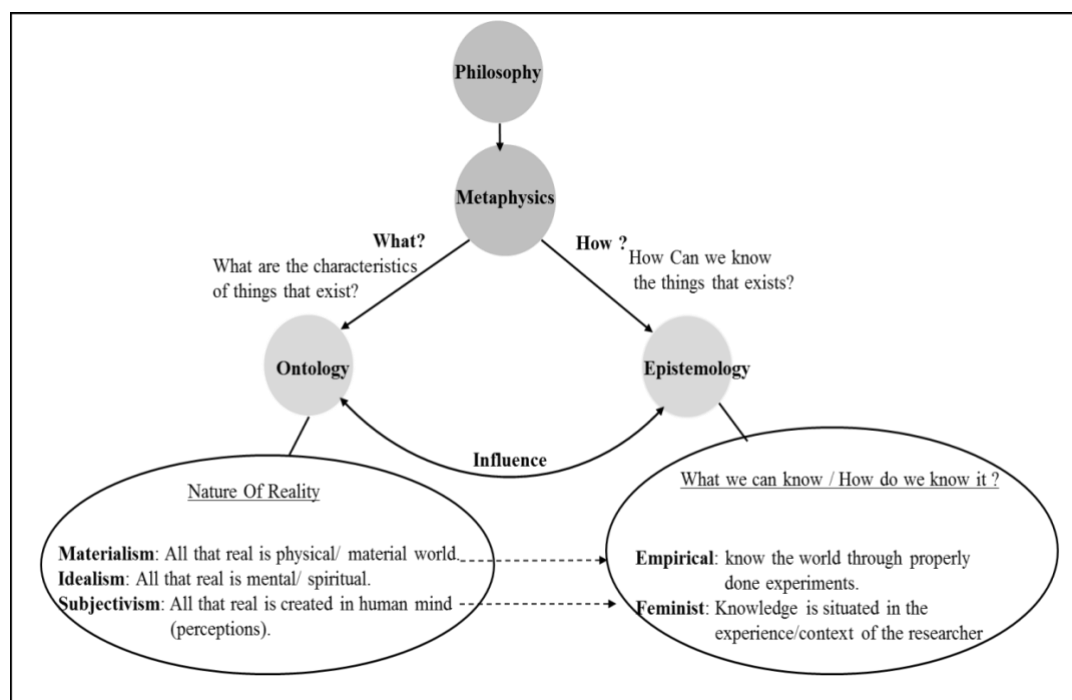
Figure 1-1: Ontology vs. Epistemology
Source: Modified from Willis (2007, pp. 9-10)

Ontology is concerned about the nature of reality while epistemology is concerned about how we know this reality. In ontology, there are different positions, mainly materialism, idealism and subjectivism. Materialism stresses that all that is real is physical world, while in idealism all that is real is mental. In between these two strands, subjectivism proposes that all that is real is in the perceptions of the human mind.

These ontological positions influence epistemological views. Materialistic ontology drives an empirical epistemology approach in which one knows about the world through properly done experiments. On the contrary, a feminist epistemology is derived by subjectivist ontology. It claims that knowledge is situated in the experience and context of the researcher.

Further, a paradigm describes laws and theoretical assumptions, instrumentation techniques, a guide to work within its epistemology and ontology and how to apply the whole framework into the practice of research design (Willis, 2007, p. 8). A paradigm will dictate the progress of research from the design process to the conclusion (Flowers, 2009). According to Rubin and Rubin (2012), a research paradigm gives the researcher:

1. Guidance on how to conduct research.
2. Research standards to follow that are specific to the paradigm chosen for the study.
3. Weakness and strength of the techniques utilized for the research. The researcher should benefit from the strengths as well as address, and minimize the effects of, the weaknesses in the design.

The understandings of ontology and epistemology were used to determine the research paradigm and the related design. Considering that ontology is concerned about reality, and how the researcher views reality, the research took into account that reality is subjective. To be more specific, the researcher followed a subjective ontology, where reality exists in the experience of the students that will take part in the research.

This dictates that the research epistemology proposes that knowledge is gained through observation and interpretation of these experiences students have. Therefore, true objectivity is difficult to achieve in this social research because the researcher's values and preferences are present (Flowers, 2009).

1.1.3   Research Characteristics

The study (Alkaabi, 2016) has several characteristics. First, the central phenomenon of the research circles around the elements that impact UAE male students' motivation, leading them to diminished academic achievement and inevitably in some cases to drop out of college. The quest here is to develop an understanding of these phenomena; an understanding that the literature review in the previous chapter concludes has not been fully realized prior to the current study.

Second, the literature review, has played a small part in exposing the elements that impact UAE male undergraduate motivation, but has played a bigger role in justifying the need for the research. This justification comes from the fact that UAE research into students' perspectives on the subject at hand is at best scarce and inconclusive. Third, the research questions have been formulated to be general enough to comprehend students' own experiences.

Fourth, the intention in the methodology is to choose a paradigm and a research method that will dictate collecting and analyzing data from a representative sample of the student population to reach an understanding of the phenomena as viewed by the students themselves without neglecting to mention researcher reflexivity and bias. The above mentioned characteristics are synonymous with a qualitative research paradigm. Thus, the research is best suited to employ a qualitative approach. The research characteristics, as mentioned previously, are mentioned in Table 1-1 (b) below.

Table 1-1: Research Characteristics

Research Stage	Qualitative Research Characteristics	Current Research Characteristics
Research problem	Exploring a problem and developing a detailed understanding of a central phenomenon	Yes (Motivation of UAE Male Undergraduates)
Literature Review	Having literature review play a minor role but justify the problem	Yes (scarce UAE research/ Gap exists)
Purpose/ Research Question	Stating the purpose and research question in a general and broad way so as to the participants' experience	Yes
Data collection	Collecting data based on words from a small number of individuals so that the participants' views are obtained	Yes Data to be collected from small students sample
Data analysis	Analysing the data for description and themes using text analysis and interpreting the larger meaning of the findings	Yes Results are to be shown from a student's perspective
Discussion	Writing the report using flexible, emerging structures and evaluative criteria and includes the researchers' subjective reflexivity and bias	Yes Discussion is based on student's views and mentions of researcher role and bias.

Source: Modified from Creswell (2011, P16)

1.1.4　Research Considerations

Current research considerations are listed in Table 1-2 below. These considerations have a close resemblance to those of interpretive constructivism (Rubin & Rubin 2012). The six considerations of interest include how people view and attribute meaning to events or objects; people have different perspectives of the same event and hence reach different conclusions; multiple and sometimes contradicting views of the same event occur and can simultaneously be true; people in groups create and share understandings amongst themselves; knowledge is sought using a deductive approach and the researcher's self-awareness is realized.

Table 1-2: Considerations of Interpretivism & Current Research

Interpretive Constructivism considerations	Current Research Considerations
How people view an object or event and the meaning that they attribute to it are what is important	It is important to know how students: View their college environment (classes, teachers, facilities, etc.) View their social environment (families, friends, etc.) Interpret the events or incidents that impact their motivation
People look at matters through distinct lenses and reach somewhat different conclusions Multiple, apparently conflicting versions of the same event or object can be true at the same time.	Students construct their views, opinions based on their own experiences, expectations and bias. Students will often offer different perspective, disagree or contradict each other's view on certain events or objects based on their own view and 'reality'.
Groups of people create and share understandings with each other	Students study together at the same college, and routinely interact with their colleagues, teachers and are subjected to similar events, college rules or experiences. Students then, create and share their understandings of the 'things' or 'realities' in their environment with each other. For example, they might share similar views on a certain teacher or subject they have.
Follows a deductive approach to knowledge	Students' views, stories and recollections of events, their words, the way they say it and their modes when they say it is important to deduce the themes of the research.
Researcher self-awareness is emphasized	Researcher is not neutral. Researcher role including bias and assumptions and how the research is influenced by it is exposed. Researcher will learn how to listen to students, and acknowledge that their understandings are different than his.

Source: Modified from Rubin and Rubin (2012, pp. 19-20)

The study at hand focuses on the exploration and impact of both social issues specific to UAE culture and academic issues on student motivation. Reflecting on these considerations, the research shares common principles of interest. These include the importance of how students view their experiences; the awareness that multiple versions of truth exist in students' opinions; the fact that students being in groups in the classroom or the college environment implies that they share common understanding; themes will be deduced from students' opinions and views; and finally the researcher places emphasis on reflecting and presenting his own self-awareness and the steps followed to minimize its effects on the research. An

integrated knowledge is at core of the researcher's interest with the rejection of reductionism (Boersema, 2008).

1.1.5   Research Paradigm: Interpretivism

In light of the research ontology and epistemology and research characteristics and considerations highlighted in the previous sections, the research adopts an interpretive/constructionist paradigm to be able to understand what drives or inhibits UAE undergraduate student motivation. The considerations of the research reflect an interpretive paradigm. The general characteristics of an interpretive paradigm are presented in
Table 1-3 below.

Table 1-3: Interpretivism Paradigm Characteristics

Nature of Reality	•	Socially constructed
Purpose of the research	•	Reflect understanding
Acceptable methods and data	•	Subjective and objective research methods are acceptable
Meaning of data	•	Understanding is contextual
	•	Universals are deemphasized
Relationship of research to practice	•	Integrated activities
	•	Both guide and become the other

Source: Adapted from Willis (2007, p. 95)

1.1.6   Research Methodology: Qualitative Descriptive Approach

The third characteristic of a research paradigm is methodology, which is the "identification, study, and justification of research methods" (Johnson & Christensen, 2012, p. 589). Typically, researchers have been adapting the four main types of qualitative methodological approaches including phenomenology, ethnography, case study and grounded theory. However, researchers are not obliged to follow the typical methodology choices and in fact, when considering the topic, time and available resources, a qualitative descriptive methodology can be a useful alternative to the mainstream approaches in qualitative research (Neergaard, Olesen, Andersen, & Sondergaard, 2009). Qualitative descriptive studies are the least theoretical of qualitative methodologies and aim to comprehensively summarize experiences of individuals or groups in their natural settings (Lambert & Lambert, 2012).

Descriptive research has been used in many educational research studies. Descriptive studies on students in educational settings have covered many subjects , such as the context of students' perceptions on satisfaction and self-confidence (Ma, 2013), student leadership and self-motivation (Collins, 2012), academic caring (Mackintosh, 2006), student personal qualities (Pitt, Powis, Levett-Jones, & Hunter, 2014), students' reflective practice (Duffy, 2009), perceptions and behaviour of university students (Daniels & Roman, 2013), computer learning (Smith, 2007), students' self-management techniques (McDougall, 1998), students' achievement (Fransisca & Zainuddin, 2012) and student motivation (Chang, 2010; Griner, 2012; Haller, 2014; Järvelä, Volet, & Järvenoja, 2010; Oliveira et al., 2014).

A qualitative descriptive approach, represented in Figure 1-2 below, is adapted for this exploratory research to uncover the determinants affecting students' motivation in college.

Student motivation, whether it is intrinsic or extrinsic, is a complex construct involving multiple theories such as behavioral, humanistic and cognitive theories (Eggen & Kauchak, 2012), implying that there are multiple factors that impact student motivation. Examples of these factors could include, teachers, parents, administrators, interests, personality, pedagogy, technology and interaction. Therefore, the study should follow a design that ensures understanding the elements that impact motivation of students as a group rather than an individual.

The intent is to understand how students' college and non-college experiences affect their decisions to continue or drop out of college. Knowing what students go through in their first year of college is vital to understanding how their motivation is affected. Several groups, from different classes and colleges are studied where students describe their current experience to further explore and understand the impact of students' experiences on their motivation.
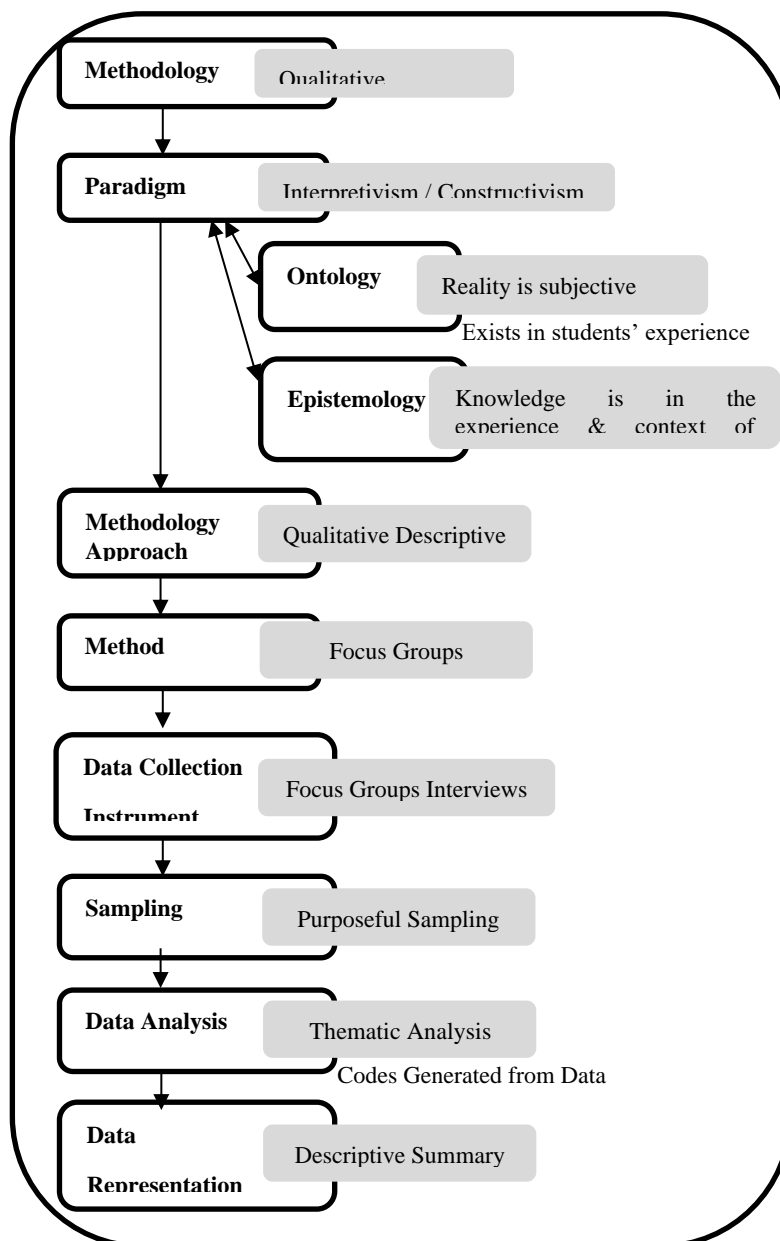

Figure 1-2: Research Methodology and Method
Source: Developed for this study

1.1.7   Research Method: Focus Groups

While a methodology is typically a general approach to the study, a method is a specific research technique that is aligned with the methodology (Silverman & Marvasti, 2008). Focus groups are group interviews (Morgan, 1997) in which participants engage in a discussion of a topic chosen by the researcher or moderator (Morgan, 1998). Focus groups can be defined as "carefully planned series of discussions designed to obtain perceptions on a defined area of interest in a permissive, non-threatening environment" (Krueger & Casey, 2000, p.12). Focus groups are also considered a form of unstructured interview that are "generally better for studying perceptions, attitudes, and motivation" (Connaway & Powell, 2010, p. 17). In this regard, focus groups explore participants' feelings and beliefs that shape their behaviour and perceptions (Connaway & Powell, 2010) in their discussions which are then used as a prime data source to be analyzed to answer the topic's inquiry (Liamputtong, 2013). Besides obtaining thorough clarification of the different accounts of participants to the same issues, a focus group helps researchers obtain valuable insights and "information about feelings, thoughts, understandings, perceptions and impressions of people in their own words" (Liamputtong, 2011, p. 6).

Focus groups have been used in a variety of educational research studies such as personal motivational characteristics and environmental social supports in college outcomes (Dennis, Phinney, & Chuateco, 2005), college students' behaviour (Deliens, Clarys, De Bourdeaudhuij, & Deforche, 2014), teacher impact on students (Siegle, Rubenstein, & Mitchell, 2014), the use of technology in the classroom (Venkatesh, Croteau, & Rabah, 2014), perception of college learning (McIntosh, Fraser, Stephen, & Avis, 2013), undergraduate students' attitudes (Lea, Stephenson, & Troy, 2003), student autonomy and motivation (Spratt, Humphreys, & Chan, 2002), students' perceptions about e-book use in the classroom (Lim & Hew, 2014) and students' instructional preference in their first year of college (Latham & Gross, 2013). When planned well, the technique can be efficiently used to carefully answer the research question. Following is a discussion of alignment between the focus group technique and the research question and its use as a sole research method.

1.1.7.1   Research Question & Method Alignment

This study was constructed following a qualitative descriptive method design to acquire first-hand knowledge and gain a better understanding of what social issues affect student motivation. It is essential that the research design follows a baseline design process. The flow of design of this study took into account Onwuegbuzie and Collins' (2007) guidelines for a sound research design technique, where research goal, objectives, purpose and research questions guided the selection of the research design. In other words, the methodology and method chosen, analysis technique and discussion presentations were carefully constructed to answer the research question.

Revisiting the research question, it is stated as what is the perception of first-year UAE male undergraduates of the factors that impact their motivation at UAE public higher education institutes? In order to be able to answer this question, an exploratory research method was designed to bring students to share, discuss and give their opinion in a friendly environment. Exploratory studies have been used in educational research to identify various phenomena or gain more insights into factors that have an effect on student learning and achievement outcomes (Dabbagh & Kitsantas, 2005; Ertmer et al., 2007).

The intention was to design such a method in a way that would encourage participants to share their thoughts more openly and discretely than they would in comparison to observation or individual interviews. Focus group interviews were chosen for this study because this technique expands the researcher's options between the research question and a suitable qualitative method to answer it (Morgan, 1997, p. 17). Focus groups allow the study to "explore the nature and effects of ongoing social discourse in ways that are not possible through individual interviews or observations" (Kamberelies & Dimitriadis, 2008, p. 396). Table 1-4 below lists a comparison between focus group and both individual interviews and observation.

Table 1-4: Focus Groups vs. Observation and Individual Interviews

Focus Group	Individual Interviews	Observation
Explore group characteristics and dynamics as relevant constitutive forces in the construction of meaning and the practice of social life.	Individual interviews strip away the critical interactional dynamics that constitute much of social practice and collective meaning making	
Can be used strategically to cultivate new kinds of interactional dynamics and, thus, access to new kinds of information.		Observations are a bit of "Crap shoot" in terms of capturing the focused activity in which researchers may be interested.

Source: Adapted from Kamberelies & Dimitriadis (2008, p. 396)

Although the settings for group discussions are considered less natural than the usual natural environment that surrounds observation study, group discussions have an edge when it comes to the time duration and type of participant behaviour that is of interest to the study (Morgan, 1997). From a time perspective, the study at hand was inclined towards gathering data in a more limited timeframe than is usually required for observational study. Also, the focus was on discussing students' behaviour, related to the focus group, but not on studying their behaviour as would be the case in observation methodology.

From a social context, in focus groups students were able to make "meaning of their past and current life experiences" ("Overview of focus group methodology," 2012, p. 28). When compared to individual interviews, focus groups have the edge of observing interaction in a group. The ability to see the differences in opinions and experiences and the richness of content these differences introduce is immediate in focus groups, but in individual interviews these differences are reached after analyses of separate interviews (Morgan, 1997).

Further, Krueger's (1994, p. 44) rationale for using focus group interviews is adapted by the researcher. This rationale favors the use of focus group interviews when: exploratory study is required; a communication gap between groups of people is present; the purpose of the research is to uncover factors; the themes of the research are to come from the group and the information in question is needed for a larger quantifiable investigation. In Table 1-5, the researcher has listed this study rationale for using focus group that adhere to Krueger's (1994) recommendations.

Table 1-5: Rationale for Choosing Focus Groups for the Study

	Krueger's Rationale	Researcher's Rationale	Agree?
1	Insights are needed in exploratory study	The research is exploratory in nature to understand what students' think about the factors influencing their motivation	√
2	There is a communication or understanding gap between groups or categories of people	Students have different understanding of motivation than the policy makers and instructors. This research offers a chance to open a channel of communication between students and educators to better enhance students motivation.	√
3	The Purpose is to uncover factors relating to complex behaviour or motivation.	The research at hand is set to uncover a multitude of factors affecting student's motivation in college and non-college environment.	√
4	The researcher desires ideas to emerge from the groups	There is a host of factors studied internationally that impact student motivation. However, due to the specificity of the UAE culture, the researcher hopes to understand, from the students themselves, what UAE specific factors emerging as important to their motivation.	√
5	The researcher needs additional information to prepare for a larger-scale study.	The themes emerging from focus group data analysis will be used in a post-PhD quantitative study to generalize the finding of the study.	√

Source : Adapted from Krueger (1994, p. 44)

Focus groups "produce data that are seldom produced through individual interviewing and observation and that result in especially powerful interpretive insights" (Kamberelies & Dimitriadis, 2008, p. 397). Therefore, in this study, focus groups have been used instead of observation or individual interviews because it was better suited to answer the research question (Connaway & Powell, 2010; Liamputtong, 2013).

The use of focus groups permitted students to discuss the topic in a friendly, supportive, culturally appropriate and non-confrontational environment. Given that little qualitative work has previously been done to uncover the thoughts of male students in the UAE, these focus groups will provide educators and policy makers with important insights. They will help us better understand the bigger picture, the phenomena of students' dropping out from higher education and the factors educators and policy makers should be aware of when designing educational pedagogy, instructions and intervention programs.

1.1.7.2   Focus Groups as a Self-Contained Method

The assumption that focus groups are to be used only in conjunction with other research methods stems from marketing research (Morgan, 1998) which has used focus groups mainly as a preliminary data collection tool or in a mixed method design (Morgan, 1997). Since then, focus groups were used more often in social science, among other fields like health and marketing, as a self-contained research method (Connaway & Powell, 2010; Liamputtong, 2013). In fact, focus groups "like other qualitative methods, can be a well-chosen, self-contained means for collecting research data" (Morgan, 1997, p. 18).

When focus groups are used as a self-contained method, they can be used for complex decision making, uncovering important issues, exploring new areas, and observing perceptions (Connaway & Powell, 2010). In this research, they were used as a tool to

examine the research question from students' perceptions. Focus groups as a self-contained research method can bring not only participants' opinions and attitudes but also their perspectives and experiences to form a richer and deeper understanding of the research subject in a way that is not possible in other methods.

The main characteristic of a self-contained focus group is that the research findings that are drawn from sharing and comparing experiences and perspectives can stand on their own as an acceptable body of knowledge (Morgan, 1997). People like to compare and share their experiences with others in a subject of interest and are less likely to challenge others' opinions in a group interaction. Knowing one's perspective is a better way to know what and how participants think in a certain way that led to formation of their own attitudes and opinions (Morgan, 1997).

From a methodological point of view, the focus group is a valid methodology just like grounded theory, narrative or communication theory ("Overview of focus group methodology," 2012, p. 26). Focus groups is a great tool for "revisioning epistemology, interrogating the relative purchase of both lived experience and theory, reimagining ethics within research practice, and enacting fieldwork in ways that are more attuned to its sacred dimensions" (Kamberelies & Dimitriadis, 2008, p. 396). The main argument for preferring focus groups over other methods for this research is the group interaction that takes place during the sessions that "reveals participant experiences and perspectives that may not be accessible without group interaction" (Liamputtong, 2013, p. 78).

1.1.7.3 Focus Groups Advantages

There are many advantages of focus groups as noted by Krueger and Casey (2008), Liamputtong (2013) and Morgan (1997). These advantages include:
- Focus groups are quicker and less costly than individual interviews in collecting in-depth knowledge.
- Focus groups are flexible. This helps finding valuable and unexpected information that will enrich the findings of the research.
- Focus groups emphasize the interactions of the participants to produce information that gives an in-depth insight to human behaviour.
- Interaction amongst participants motivates some of them to talk about their own experiences when they see others share an experience similar to theirs.
- The chance of misunderstanding the topic of discussion is slim since participants are able to ask anything and clarify for each other in case of topic misunderstanding.
- If planned well, focus groups can stimulate participants' interests and enthusiasm and help build trust amongst the group and the researcher and can lead to participants forming friendship with each other.

1.1.7.4 Focus Groups Limitations

Limitations of focus groups are not necessarily weaknesses in design but more of characteristics that the research acknowledged in the design process to avoid pitfalls and errors in data gathering, analysis and discussion. Some of the limitations of focus groups (Morgan, 1997) include the following:
- Information gathered from the sessions represent the participants' voices only and usually are not sufficient for a generalization to the population.

- Results are qualitative in nature and numbers are not in the interest of the researcher nor the research.
- Since the focus is on group interactions, complex beliefs and practices of individuals cannot be covered in focus groups.
- The perceptions and views of participants relate only to the topic of the discussions and cannot be used to forecast the behaviour of the participants in different areas or topics.
- Some issues that are related to group discussion might be present such as groupthink, where one person's opinion is nodded by the whole group, and cold groups, where not enough discussion and information is carried on. These could impact the quality of data and researcher or moderator should be prepared to overcome such situations during the session.

1.2   Conclusion: Summary

The methodology design of the research follows an interpretive view as a philosophical approach. The nature of the relationships between research objectives, aims, purpose and questions have been explored in the research design. A descriptive qualitative approach has been chosen as the guiding principle for the design of the research. The study utilized a focus group method design to answer the research questions and fulfil the aims deemed important for the study as shown in the previous sections.

Note

A portion of this article is taken from the author's PhD thesis (Alkaabi, 2016).

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Enhancing Undergraduate Cell Biology Learning Through the Application of Gamification

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Abstract

Learning cell biology presents challenges for undergraduates due to its intricate nature, demanding comprehension of complex cell structures and functions within the human body. To address this, the integration of game design principles into non-game contexts, known as gamification, offers an innovative solution. While traditional learning methods encompass lectures and tutorials, the introduction of gamified elements can foster active learning and provide alternative didactic strategies. This presentation centres on evaluating the impact of gamification in improving students' learning experiences and comprehension of cell biology. This case study employs gamification through collaborative creation of edible 3D cell membrane models, evaluated by instructional staff. This process is accompanied by quiz-style activities targeting cell functions, along with a Pictionary-style component featuring various cell organelles. The session will offer insights garnered from this initiative, encompassing student and lecturer preferences, encountered challenges, identified opportunities, and the rationale behind its current structure, as well as future plans. The outcomes of this initiative revealed an improvement in collaborative teamwork, leading to enhanced communication skills and the reinforcement of fundamental subject knowledge. Challenges within the classroom context encompass student participation in activities and their preconceptions of an ideal undergraduate biosciences educational environment. By engaging students through active, game-inspired learning methodologies, educators can elevate understanding and engagement in intricate subjects like cell biology.

Keywords: Cell biology, Gamification, Undergraduate, Collaborative Teaching

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Introduction

There is a range of evidence that game-based learning and gamification are associated with increased enjoyment and motivation, despite conflicting data in recent years (Crocco *et al.*, 2016). The pandemic of 2019 increased the need for diverse online activities within higher education, but the application of these in return to in-person lectures, tutorials and workshops has posed a unique conundrum.

Gamification in learning is a concept whereby the learner is exposed to activities and teaching that emulate the positive aspects of playing a game, both in terms of participation and in goal achievement (Hamari, 2019). The application of game-based learning has increased in the field of higher education, with positive outcomes being reported from both a teacher and a student perspective (Chan and Lo, 2022). Game-based approaches are best used in low-stakes contexts to reduce interference with intrinsic motivation (Norgard *et al.*, 2017). Game-based approaches allow for repetition and are therefore often used for activities related to skill or knowledge acquisition/practice.

There is the potential for intellectual snobbery to exist within the student population, stemming from students' preconceptions of how a biological science degree "should" be taught, in addition to their initial motivations for pursuing such a degree (Barr, 2019; Hsu and Dudley 2022). However, the use of gamification can bridge the gap between students who may be more technologically literate, or who have access to a wider range of resources and those who may not have access to such things. Resource availability is a determinant that is considered when planning teaching sessions, and the use of simple paper-based activities with the materials provided by the teacher can prove to be as effective as a more complex simulation-based activity that requires the use of software (Lean *et al.*, 2006; Gobert, 2022).

Another consideration when planning activities in a higher education setting is whether or not there are any barriers to learning. These barriers may exist on the side of the teachers, or the side of the students (Watson and Yang, 2016). Whilst resources are a barrier these are not the only one; the willingness of teachers to learn how to use games, the time required to create such activities and the uncertainty of how student engagement and satisfaction may change, can all lead to a reluctance on the part of the teachers to implement such activities.

The cell biology requirements of the Biosciences Foundation Year at the University of Surrey encompass the basic understanding of how a cell works, along with the specialised vocabulary required for the subject. The formation of a specialised vocabulary is crucial when developing the learners' knowledge base, and so the initial exposure to such language must be planned with both recall and understanding in mind (Krajcik and Sutherland, 2010; Marintcheva, 2012).

Session Design

Students were placed into teams at the beginning of the academic year. These teams were then used throughout the semester to separate students into streams depending on their intended undergraduate degree subject (e.g. Sports & Exercise Science, Biomedical Science etc.) and to encourage a collaborative effort for all activities. The teamworking approach to cell biology learning has been shown to not affect student satisfaction negatively, something that is important when considering the long-term effectiveness and viability of a new teaching strategy (Kitchen *et al.,* 2003; Wright and Boggs, 2002).

The selection of activities was based on availability of resources, as well as accessibility for students at all levels of understanding. The sessions were planned by week and by topic (Figure 1). The initial introduction of the topic was done in the first week via pre-recorded lecture, accompanied by blank slides for students to take notes, as this has been shown to be effective in increasing attendance and engagement, as well as student recall (Bhaisare and Kamble, 2006). Following this, a Pictionary-style session was done to aid students in identifying the basic structure of organelles, which encouraged recall of the content that had been provided in the video. Then, the teams were given instructions to create a diagram representing the cell as a city. In this, students were encouraged to use the pre-recorded materials, the internet, and their textbooks, to ensure that they had included all the appropriate structures and to allow them to understand how they work within the cell.
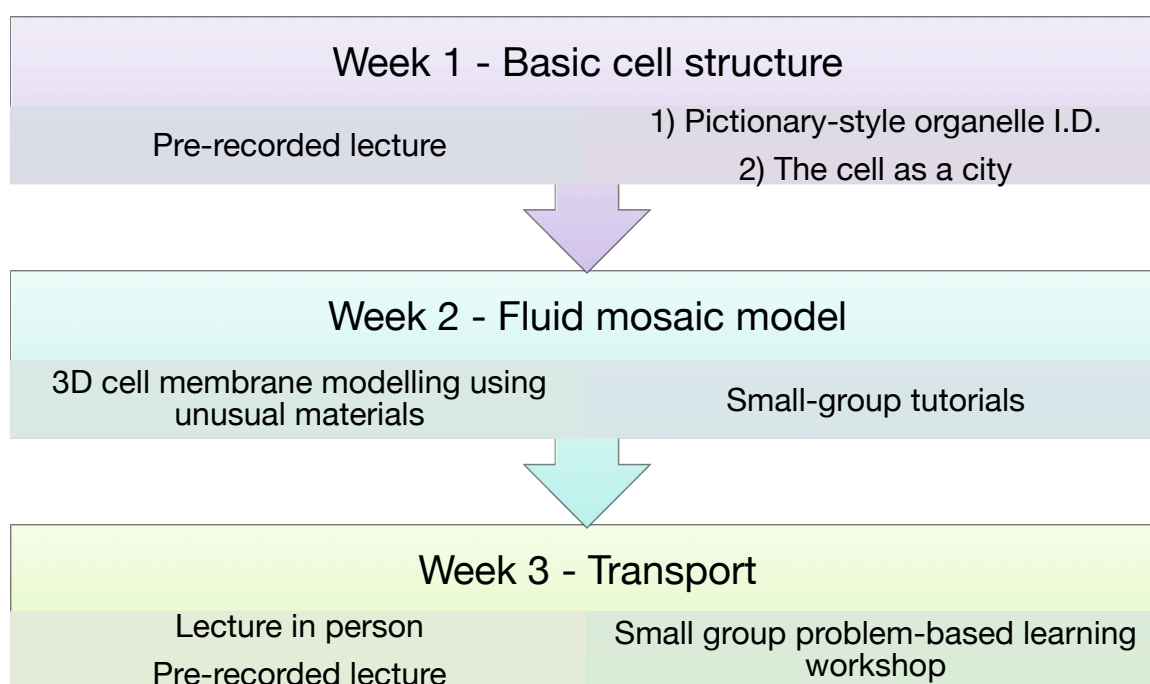

Figure 1: A timeline of game-based activities in relation to content taught
in a traditional lecture theatre.

The second week of the topic began with the students creating a 3D model of the cell and its surrounding membrane. This was implemented as a problem-based activity, seeing as students had not seen some of the definitions of each component previously. The use of problem-based learning in cell biology has been shown to consistently be a preferred method to teaching, and has more favourable outcomes (Xu *et al.,* 2021). So, they had to use the session to determine where each component goes to create the 3D shape required. Then, that same week, a small tutorial was done to discuss which were the correct answers and what the functions of each element were in the context of the organelles learned the previous week.

Finally, for the last week of the topic, students learned how the organelles and components of the membrane work to allow movement of substances in and out of the cell. This was done through a pre-recorded video, an in-person lecture and then finally a workshop using problem-based learning to wrap up the cell biology content.

Each team ended up with a range of outputs that were shared on a dedicated Teams site (Figure 2). The students were able to keep a record of their work and revisit the information when needed.
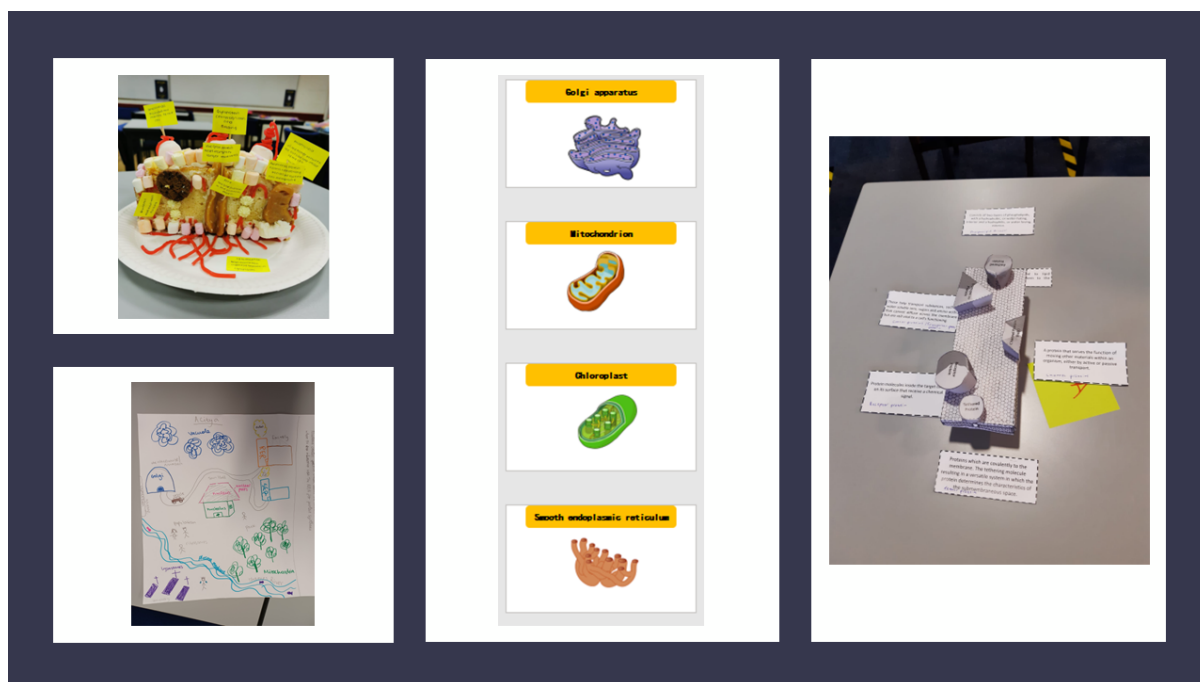

Figure 2: Examples of class activities carried out as part of the gamification sessions.

Discussion

These sessions provide an initial introduction to cell biology, and any basic vocabulary associated with it. However, to increase the difficulty of the content to match the change in degree levels, a more complex system would need to be considered. These activities could be moved to sessions where a revision of previous years' content is carried out before exposure to new material, but the transition might not be as smooth as initially thought. This also raises the interesting question of whether or not students should focus on recall or understanding, especially with regards to scientific terms.

In the context of cell biology on the Biosciences Foundation Year at the University of Surrey, the terms learned can be transferred to molecular biology, physiology, and biochemistry among other topic areas. However, there has been an increase in demand for students who can understand their areas of study, and who can apply these as independent researchers and learners (Manix, 2022). Therefore, only some of the game-based learning could be used to develop these skills. Once again, the transferable nature of each activity would need to be evaluated for each discipline and each level of study.

Where biological sciences are concerned, the preconceptions of students as to what a traditional classroom may look like could lead to a trivialization of the classroom interactions instead of an enrichment. Gamification has long been used in school settings, and so the repetition of such activities may cause students to lack the engagement that educators may otherwise be trying to gain from them.

Conclusion

The outcomes of this initiative revealed an improvement in collaborative teamwork, leading to enhanced communication skills and the reinforcement of fundamental subject knowledge. Student engagement increased, and so incorporating active learning methodologies informed by gamification and pedagogical theory has the potential to enhance comprehension and engagement within challenging subjects such as cell biology. A more structured approach to this work accompanied by qualitative and quantitative measurements, would be an interesting avenue to explore further with future cohorts.

Acknowledgements

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Bridging the Digital Divide: Empowering Ghanaian Youth Through Prudent Internet Usage and Social Media Training

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Abstract

The use of the Internet has significantly influenced modern human interaction and life as Facebook, Twitter, Instagram, and WhatsApp have become the dominant media for communication and business. Ghana, along with other countries, has witnessed a surge in Internet users, with over 23 million people accessing the Internet by the beginning of 2023. Current scholarship examines social media in various disciplines including education, banking and business. However, there are growing concerns about the efficient use of social media in Ghana. This study explored internet usage practices among the youth in Ghana, encouraging a more prudent and beneficial way of leveraging the digital landscape.The study analyzed data from a specific Non-Governmental Organization (NGO) training program by comparing it with existing national records and policies. The findings underlined an urgent demand for further training opportunities for youth in Ghana, a need that remains unmet.The study also contributes to the understanding of the challenges and opportunities of Internet usage and the impact of social media in Ghana, emphasizing the importance of NGO training initiatives and the relevance of continuous efforts to equip Ghanaians with the necessary digital skills and knowledge to make informed decisions in the ever-evolving digital era.

Keywords: Social Media, Internet, Digital Literacy

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Introduction

Social media adoption has grown rapidly in recent years and is now used in various fields such as education, communication, human capital development, social and professional interactions. As a result, the use of social media has become prominent, making digital literacy an essential and ongoing topic.The current scholarship on social media in developing economies is scanty with most of the literature concentrated on the benefits and challenges of social media. Despite scholarship on social media, internet use and ICT, little attention has been focused on training the youth on prudent Internet usage as cases of misappropriation such as the dissemination of explicit content and fraudulent activities persistently surface through social media channels. Furthermore, the already little scholarship has neglected the role NGOs play in aiding the achievement of ICT agenda in Ghana.

Researchers have advocated for the integration of the Internet in education, particularly in underserved rural areas. Others have also highlighted the revolution of the banking sector after the introduction of internet banking and the emergence of mobile money facilitating payments (Owusu et al., 2017; Owusu et al., 2020). Apart from the positive impact of social media, there are growing concerns about the negative impact of social media usage, particularly among young people (Katz and Rice 2002). The excessive use of social media for leisure activities, such as posting memes and scrolling, can lead to poor time management, negatively affecting mental health (Allcott et al., 2020) and limiting opportunities for productive activities (Zulkifli & Mohammed, 2023). Also, unwise social media use can lead to privacy concerns, increased rates of low self-esteem and suicide among young people (Zulkifli and Mohammed, 2023), and potential health issues, including mental health problems and sleep deprivation (Zulkifli and Mohammed, 2023).

A global review of the literature on social media use in Ghana showed little work on prudent use of social media among the youth. Therefore, this study investigates the importance of empowering the youth through a comprehensive understanding of social media as a powerful tool. The primary objective of the study is to explore internet usage practices among the youth in Ghana, encouraging a more prudent and beneficial way of leveraging the digital landscape. To achieve this, the study uses data from applicants and valuable feedback from participants of a two-day social media marketing boot camp and a four- day web development workshop in Ghana. The study also generates recommendations and draw conclusions by comparing these insights with existing statistical data. The outcomes of the research have significant consequences for shaping educational programs and helping young people navigate the digital landscape with responsibility, ultimately leading to the development of a society that is digitally savvy and mentally resilient.

The State of Internet in Africa and Ghana

During the past decade, there has been a significant increase in global Internet usage, particularly in Eastern Asia leading with a remarkable usage rate of 24% as of January 2023. Currently, there are about 5.48 billion unique cell phone users worldwide, which represents 64.4% of the global population.GSMA Intelligence reported a 1.9% increase from the previous year. Additionally, social media remains a crucial factor, as an estimated 8 billion individuals access social media platforms, and 4.9 billion of them are connected to the internet in 2023.

Although West Africa has an internet usage rate of around 4%, it is considerably lower in other African regions, such as Middle Africa with 1.1%, Southern Africa with 0.9%, and Northern Africa with 3.3% (Kemp, 2023). Among these regions, Ghana, a sub-Saharan African country in West Africa, distinguishes itself due to its unique circumstances as one of the most peaceful nations on the African continent.

This peaceful environment is a significant advantage enjoyed by the Ghanaian youth and the general population. Unlike several other countries, Ghana has not encountered Internet shutdowns, as seen in Sudan, Burkina Faso, Algeria, Zimbabwe, Sierra Leone, and Somaliland. These shutdowns incurred an estimated loss of $261 million in Sub-Saharan Africa in 2022, according to Africa Business Communities (2023) and Gagliardone and Stremlau (2022).

Ghana has seen a big surge in Internet use, especially among young people, as global Internet use has also increased. Many Ghanaians have embraced the digital age, using the Internet for business, entertainment, political campaigns, and free speech. According to Kemp (2023), as of 2023, Ghana had 23.05 million Internet users and 6.60 million social media users. Additionally, Kemp's digital report for 2023 shows that Internet usage in Ghana increased by over 1.9% from 2022 to 2023, following a global trend of similar growth.

Scholars have conducted research on Internet usage across various sectors in Ghana, covering entrepreneurship (Erogul et al., 2019), education (Yebowaah et al., 2018), banking (Owusu et al., 2017; Owusu et al., 2020), and health (Wynn et al., 2016). This array of research contributes to comprehending the potential of the Internet to foster advancement and growth in diverse areas.

In summary, while the global landscape witnessed a steady rise in Internet usage, Africa's varying adoption rates across regions underscore the need for targeted efforts to bridge this digital divide. Ghana's peaceful environment and uninterrupted Internet access are crucial assets that facilitate its integration into the digital era.

However, challenges persist, as youth grapples with the challenge of the Internet's immense possibilities and potential pitfalls. Nevertheless, the transformative potential of the Internet remains undeniable, empowering individuals to establish connections, access information, and explore new opportunities, thus making it a powerful tool for personal and societal advancement.
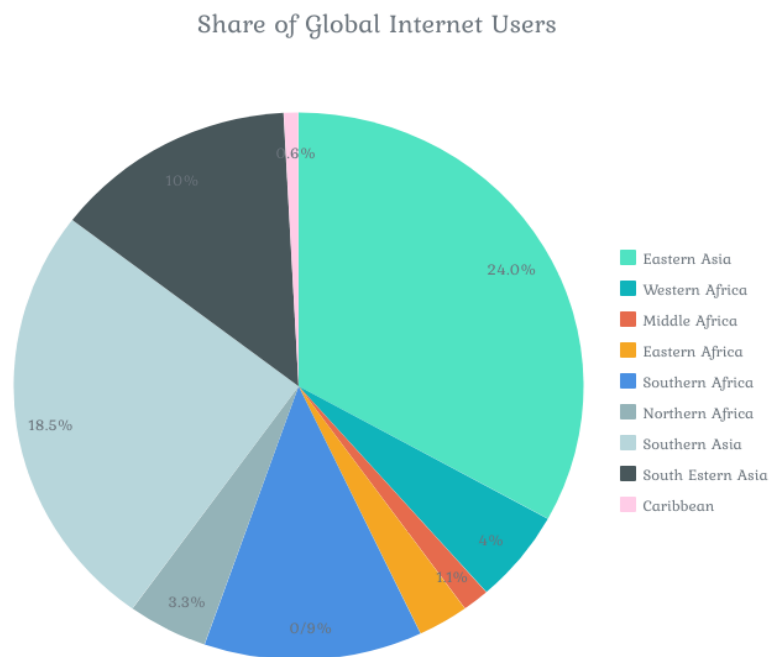
Figure 1: Share of Global Internet Users

By charting a course toward prudent Internet usage, Ghana can pave the way for an inclusive and thriving digital future where the Internet becomes a powerful ally for personal development, national progress, and global connectivity. Embracing this vision, Ghana stands poised to capitalise on the digital revolution and secure its position at the forefront of Africa's digital landscape.

Digital Literacy in Ghana

In 2003, Ghana formulated the Ghana Integrated Information and Communication Technology for Accelerated Development (ICT4AD) policy, delineating the country's vision of the digital era. Recognising this demographic dividend's transformative potential, one of the objectives of the ICT4AD policy emphasises the nation's youthful population as an economic asset. With a significant youth population within working age accounting for 60.4% of the population of Ghana, as of 2023, many Ghanaian youth still lacked essential training and access to the Internet, hindering their ability to fully participate in the digital economy.

The contribution of Information and Communication Technology (ICT) including Social Media (SM) to Ghana's Gross Domestic Product (GDP) has been noteworthy, accounting for approximately 3.6% and a staggering 1.7 billion dollars in 2017 (Oj & Oj, 2021). Since then, this figure has exhibited consistent growth, illustrating ICT's pivotal role in Ghana. Moreover, as Ghana evolves in the digital age, the demand for digital skills within the labour force is projected to surge, which is expected to encompass nearly nine million individuals by 2030.

However, the increased demand for digital skills brings to the forefront the pressing need to address the digital literacy gap among Ghana's youth ; as a significant portion of the young population still lacks access to quality digital training and internet connectivity, constraining

their potential to contribute actively to the country's economic growth. As Ghana positions itself to fully embrace the digital revolution, the necessity to equip youth with relevant digital skills becomes paramount.

Looking ahead to 2030, the demand for digital skills is projected to escalate even further, requiring training for an additional four million individuals (IFC, 2019b). By this time, the number of individuals in need of digital skills training was estimated to reach nearly 19 million. Failure to bridge this gap between demand and access to digital literacy may hinder Ghana's ability to fully capitalise on its youthful population's potential as a driving force for its growth and prosperity.

More comprehensive and targeted strategies are required to address this challenge. Ghana must prioritise digital literacy and education, especially in underserved regions, to ensure that all segments of the youth population can actively participate in the digital economy. Investments in digital infrastructure and the creation of accessible digital training programs can empower the youth with the necessary tools to thrive in this digital age.

In conclusion, Ghana stands at a critical juncture where the potential of its young population intersects with the digital revolution. Realising the vision of the ICT4AD policy requires an unwavering commitment to digital literacy and inclusivity. By investing in the digital education and training of the youth, Ghana can unlock its potential as an agent of economic growth, innovation, and progress, positioning the country at the forefront of Africa's digital transformation.

Theoretical Framework

For a better comprehension of how Ghana can bridge the digital divide through NGO training programs, this study delves into the nexus of social media usage and the digital landscape in Ghana. Embracing the transformative power of social media, this study employs an innovative prudent social media usage framework. Using this framework, the study uncovers the complex network of relationships that form the foundation of the digital landscape in Ghana and how it could possibly be used prudently by the youth.

The prudent social media usage framework recognizes social media as a comprehensive platform that encompasses multiple communication channels and networking tools that facilitate interactions and knowledge sharing among individuals, communities, and businesses. At the same time, it acknowledges the underpinning ICT infrastructure, good internet, political stability as the support structure that enables digital interactions, comprising the hardware, software, and networks that form the digital ecosystem. The framework further emphasizes the potential of social media as a potent driver of economic development (Song et al., 2023) that foster innovation, entrepreneurship, and digital empowerment.

Through the prudent social media usage framework, the issue of prudent and rational use of social media as a factor to be considered is emphasized. The framework highlights that social media in itself is not a great tool but only through its rational use.

This framework complements and helps to understand the NGO's training program that targeted the prudent use of social media. It underlines the relevance of the role NGO's play in shifting the general focus of ICT agenda alone to a more detailed concept of leveraging social media through its prudent use.

This study carefully examines data and feedback from participants of a two-day social media bootcamp and how their experience has shaped their use of social media. This in turn projects the role that training the youth on the prudent of social media can play in shaping the digital landscape in Ghana.

Methodology

The prudent social media usage framework presents a strong and comprehensive method for examining the complex nature of social media use as well as the critical role of NGO training in Ghana. Through the utilization of this conceptual lens, this study provides valuable insights that can guide policymakers, stakeholders, and entrepreneurs in harnessing the transformative potential of social media in Ghana. By adopting this extensive perspective, Ghana has the opportunity to lead the way in Africa's digital transformation and unlock new avenues to bridge the knowledge gap as well as the digital divide.

To adhere to these methodological principles, the researcher opted for a mixed research design, which enabled the capture of the intricate nuances and multifaceted nature of the research topic. The data collection process began with the dissemination of an online application form across various social media platforms in Ghana, targeting youth demographics. This approach not only facilitated swift and efficient registration but also ensured accessibility to a diverse pool of potential participants.

To further understand the motivations and interests of the applicants, comprehensive phone interviews were carried out. These interviews presented a chance for interactive dialogue, allowing the investigator to explore the perspectives, aspirations, and experiences of the participants in depth. The trainings took place on 24th June,2023 and 18th to 22nd September, 2023 respectively.

The study is anchored on two core research questions, each designed to explore different facets of the Internet's influence on Ghana's youth.

1. What is the current state and demand for social media training among the youth in Ghana?
2. What role can NGOs play in achieving ICT agenda in Ghana?

The above questions serve as a guide in the analyses of data collected before, during and after the NGO's training program in Tamale, Ghana.

Context of the Case Study

Eduvision is an NGO in Ghana which was established to provide digital training to young girls in underserved communities in Ghana's Northern parts. As part of its training program, it organized a two-day social media bootcamp for 35 girls in Tamale,Ghana. The training took place at the Afritechlab on the 23 and 24th June 2023. The training program received girls and boys from various tertiary institutions in Northern Ghana. During the training, topics discussed included Social Media Marketing, Branding, web development and Chat GPT. At the end of the program, participants received certificates of participation and provided feedback in written and recorded video form. Selected girls were further enrolled into a mentorship program to provide academic and professional guidance.

Discussion

High Demand for Training Among the Youth

The growing presence of social media in the lives of the youth is exponential. The same can be said about the quest and curiosity for knowledge. According to the World Economic Forum, in their article *Over 2.5 Billion People Use Social Media. This Is How It Has Changed the World*, (2022), every two people out of three use social media worldwide. The same article explains that there is a higher usage of social media among young people between the ages of 18 to 24. The number of users decline among older counterparts and varies from one SM platform to the other (*Over 2.5 Billion People Use Social Media. This Is How It Has Changed the World*, 2022).

On the other hand, current research shows the average knowledge lifespan is less than two years in what researchers call "half-life of knowledge" (Kirchhoff, 2022) meaning that people need to stay abreast, upgrade and continuously learn new things to be able to catch up with the fast-paced world. According to current scholarship on social media training, many young people are exposed to lots of information daily through social media. Many of these young people go to social media to shop, read, interact with family and friends, and sometimes to simply scroll. This shows that social media has become an unavoidable part of young people's lives.

Analyzing data from the NGO's training program, the program received about 87 applications. Though the training targeted young Ghanaian girls between the ages of 15 and 35, applications came from boys and non-Ghanaians as well. These out of the bracket applicants explained in their application their need and demand for training even if they do not fall within the criteria for selection (see figure 2).

This shows that young people are thirsty for knowledge on how to navigate the internet sphere prudently. In the application, an Uzbekistani girl explained:

> *My intended major is Computer Science. As a girl in Uzbekistan, I believe that access to technology and to the knowledge about it can change my life fundamentally. I live in a remote part, near the Aral Sea, with few career opportunities. But with access to the internet and knowledge of programming, I can make a living and be more independent. It helps me to master the field of technology, increase my knowledge and create additional opportunities for myself in the future. I have already started learning independently, using online classes. However, I believe I can learn more effectively in a program with dedicated mentors and teams of other students. I am especially excited to work on a real-life project, not just a homework assignment for a class. Moreover, I hope to develop my communication skills and get exposed to people and perspectives from around the world. I want to broaden my worldview. I want to find a team of people who can help me become a mature professional in the field of technology.*

The training also received applications outside the stipulated age bracket of 15 -35. It received applications from people above 35 years. About 3 percent of applicants were above the age bracket (See figure 2). 9% of applicants were boys or men while the remaining 91% were female.
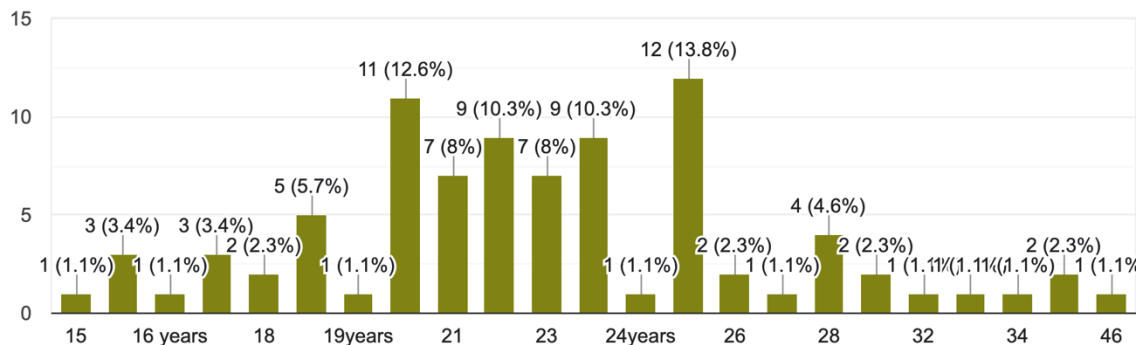
Figure 2: Age Range of Applicants

In the analyses of the data, the investigator observed the enthusiasm and the eagerness with which applicants looked forward to the training program. The interview part of the selection process showed a young populace that was eager to learn about social media and its prudent use. The selected participants had a lot of positive feedback to give and asked organizers of the training program to expand to accommodate a wider age bracket and young boys as well (See annex for some testimonials from participants of the bootcamp and workshop).

Contribution of NGOs in Achieving ICT Agenda in Ghana

NGOs have always played critical roles in every sphere of development. There are NGO's who provide help such as clean water, infrastructure, career guidance, poverty reduction (Banks & Hulme 2012), consultancy and many more to underserved communities in the world. In the world of ICT, researchers have explored the relationship between ICT and NGOs. Ghana alone boasts of hundreds of NGOs all working towards sustainable development of the country. With the rise in ICT trainings, NGOs have also tuned their agenda towards ICT trainings. With the growing need for ICT training and projected digital literacy demand in Ghana, NGOs such as Eduvision plays a great role in achieving the national ICT agenda in Ghana.

According to data gathered during the two-day training and feedback gathered after, the role of NGOs in aiding in the achievement of the ICT agenda was highlighted. Additionally, NGOs can reach far-to-reach communities through their work making it easier to bring training to rural areas. The work of Eduvison in the Northern part of Ghana received many great reviews from participants stating how happy they are that an NGO thought about them in that manner.

According to participants, most NGOs are in the Southern parts of Ghana thereby cutting them off many benefits they could have gained from such trainings. Not only do they feel cut off by NGOs but most girls in the Northern parts of Ghana do not receive the same attention and training as their counterparts in the South of Ghana.

Leveraging Social Media for Advantage

Social media can be a friendly ally or a fierce enemy depending on its usage. The benefits of Social Media usage cannot be overemphasized. During the analysis of data and feedback

from the NGO's training program, I realized that many young people know how to use social media but not for profitable ventures. In one of the reviews, a girl reiterated that:

> "The bootcamp opened my eyes to what I'm missing out not using social media to my advantage."

Many young people grew up with the idea that social media is only for chatting and interacting or just for fun preventing them from leveraging same for personal development which multiplies Ghana's benefits. Many businesses are thriving on social media while others have used same for remarkable personal branding that has opened up opportunities that they would otherwise will not have.

Additionally, navigating the digital landscape with prudence will curtail cyber-attacks on the youth and prepare them for such. Cyberbullying and internet fraud will be decreased projecting a more positive image of the country. The youth will become aware of the many other uses of social media which was not visible to them before.

Recommendations

The outcomes of this study carry significant implications for promoting sustainable and equitable internet usage in Ghana. Given these insights, it is of utmost importance for policymakers to prioritize and implement targeted strategies that aim to harness the full potential of the internet for societal development. Furthermore, it is essential for policymakers to prioritize equipping individuals with the necessary digital skills to fully capitalize on the opportunities presented by internet usage. This involves investing in comprehensive digital literacy programs that empower citizens with the knowledge and competencies needed to navigate the digital realm effectively. By strengthening digital literacy among the populace, Ghana can enhance its human capital and foster a tech-savvy workforce capable of driving innovation and productivity.

Furthermore, partnerships between government, private sector organisations, and civil society can foster an enabling environment for digital skill development, creating opportunities for mentorship, internships, and work-based learning experiences. By engaging in interdisciplinary research, stakeholders can gain insights into the specific digital skill needs of youth and tailor training programs accordingly.

In light of these recommendations, it is paramount for the Government of Ghana to take proactive measures to ensure widespread and affordable internet access for all citizens. Initiatives such as capacity-building programs and public-private partnerships can play a pivotal role in extending Internet services to underserved communities and remote regions. Additionally, establishing a dynamic regulatory body can facilitate the creation of a conducive environment that encourages private sector investment and innovation in the internet and telecommunications sector.

Conclusion

The research findings emphasize the significant role of the Internet and social media in shaping modern society, particularly in Ghana. The Internet has become an indispensable part of daily life and serves as both a formidable adversary and valuable ally, depending on its use. It is vital to understand and promote prudent use of the Internet among youth to

safeguard their mental health, privacy, and overall well-being. The study highlights the pressing need to provide comprehensive ICT training programs, such as the social media bootcamp, to equip youth with the necessary skills to navigate the digital landscape responsibly. By harnessing the potential of social media for personal development and life improvement, youth can leverage these platforms to their advantage, build meaningful connections, and access previously inaccessible opportunities.

This research highlights the importance of Internet literacy and its significant impact on economic growth and development. Ghana's young and vibrant population is a rich asset for the country's progress, making it crucial for policymakers to prioritize digital literacy initiatives. By bridging the digital divide and ensuring equal access to education and digital skills, youth can become active participants in the digital economy and drive sustainable economic growth. In conclusion, this research calls for a collaborative effort from all stakeholders, including government, non-profit organizations, educators, and families, to promote responsible internet and social media use. By embracing the opportunities offered by the digital age while mitigating its potential risks, Ghana can create a more inclusive, empowered, and thriving society.

To capitalise on these opportunities and address these challenges, it is imperative for every country, including Ghana, to adopt comprehensive strategies. Policymakers must prioritise digital literacy and Internet accessibility, particularly in underserved areas, to unlock the potential of Ghana's youth population and foster inclusive economic growth. Promoting gender equity and empowering the youth through social media training and awareness initiatives can create a generation of digital-savvy individuals capable of leveraging the Internet responsibly for the benefit of both themselves and the nation.

In the pursuit of digital empowerment, interdisciplinary research plays a crucial role in investigating the diverse implications of internet use across sectors such as entrepreneurship, education, banking, and health. Through evidence-based insights, Ghana can effectively optimise its strategies to harness the Internet's transformative potential.

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Transforming Education in the Digital Age:
Harnessing Technology for Enhanced Learning and Engagement

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Abstract

Digital technology has established itself as a crucial element in contemporary education in a society that is becoming more interconnected. Digital tools that provide fresh ways to interact with educational content are being integrated into traditional pedagogical practices. This integration is not only aiding the education process, but also transforming it as a whole. This paper examines how digital tools are altering the education process through a systematic literature review of articles published during the past 10 years. We focus in our analysis on the impact of different digital tools on learning and memory via finding answers to the following research questions: (1) How do different digital tools, like interactive simulations, online forums for collaboration, and multimedia resources, make a prolonging effect on learning and memory, subsequently changing the effectiveness and efficiency of traditional practices? (2) How do various digital tools accommodate various learning styles? (3) How does digital technology enable collaborative and interactive learning environments? (4) How do digital technologies and access to online education modify the roles of both; educators and learners? (5) How do educational institutions effectively manage the difficulties of integrating digital technology while maximizing the advantages of technology-assisted learning? Through answering these questions, we underscore the profound impact of digital technology on education, emphasizing how it revolutionizes traditional learning paradigms. We also highlight the need for a well-rounded strategy that considers the altered roles of educators and learners, along with the potential technological challenges. Finally, we suggest future research opportunities for this prevalent field.

Keywords: Digital Technology, Education, Learning Process, Digital Transformation

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Introduction

In today's interconnected society, digital technology has become a critical component of modern education. The expansion of the digital revolution is transforming educational processes that rely on knowledge transfer, communication and social interactions. This transformation affects all actors in the system: learners, educators and institutions themselves. The resulting learning experience can be seen as diverse and disorderly compared to traditional approaches that package knowledge neatly. Instead, networked knowledge emerges from co-creation among experts and amateurs alike - challenging individuals to shift their mindset away from consuming others' content towards becoming creators themselves participating collaboratively in generating new insights together (González-Zamar et al., 2020).

According to Celik (2023), the past decade has brought about significant changes in learning due to the integration of technology into education. This transformation has resulted in increased accessibility and expanded opportunities for education institutions beyond traditional classroom settings. Amongst these innovative solutions, Artificial Intelligence (AI) holds immense potential towards revolutionizing the learning process as a whole (Rawas, 2023). AI along with other recently emerging digital tools have unique potential to provide personalized education to every learner and can enhance collaboration, communication abilities and ultimately improve academic performance (Rawas, 2023). Through the utilization of innovative technology, personalized instruction, improved feedback and tailored learning experiences are now possible. This has led to a more effective and inclusive educational environment that engages learners across all ages. By offering solutions to traditional challenges in teaching and learning (Bennett & Szedlak, 2023).

Digital technology is transforming education as we know it (Bahroun et al., 2023). Nonetheless, ethical implications as well as challenges in implementing such technology pose significant hurdles yet to be addressed (Rawas, 2023). As this transformation advances, it's important to investigate its applications while considering any implications or obstacles that may arise when shaping the future of education with digital technology at the forefront (Bahroun et al., 2023). Hence, the objective of this paper is to analyze how digital transformation has influenced the education sector by highlighting both its advantages and obstacles in implementing novel technologies for teaching and learning. Additionally, it investigates educational organizations' involvement in promoting the incorporation of digital tools within their programs while examining how such initiatives can reshape educators' and learners' roles.

In order to reach the stated goals, this study review existing literature on digital transformation within educational contexts. This inquiry draws attention to essential concepts, theories and empirical studies in an effort to supplement current research efforts related to the topic of digital transformation in education. Ultimately, this paper offers suggestions for researchers and practitioners regarding further areas for examination and analysis to ensure effective digital integration in the education system.

Methodology

The approach employed in this paper to attain the research objectives involves a systematic strategy for acquiring and scrutinizing literature on the topic of education and digital transformation. To begin the data collection process, a literature search was conducted by

carefully selecting appropriate keywords and terms to capture relevant publications on the desired topic comprehensively. In this study, "Education", "Digital Technology", and "Transformation" were used as combination keywords for searching titles, abstracts, and keyword fields on Scopus and Web of Science databases. This resulted in the retrieval of 709 articles published between 2016 to 2023 that are focused on digital transformation of education. The process of selecting literature was guided by the PRISMA statement, a well-regarded methodology for systematic reviews and meta-analyses that emphasizes transparency and rigor (Figure 1) (Bahroun et al., 2023). This approach ensured the thorough identification, evaluation, and selection of pertinent articles to enhance dependability and replicability. The first retrieval stage yielded 396 items; however, after eliminating no English language copies and duplicate publications from consideration there were 209 remaining.
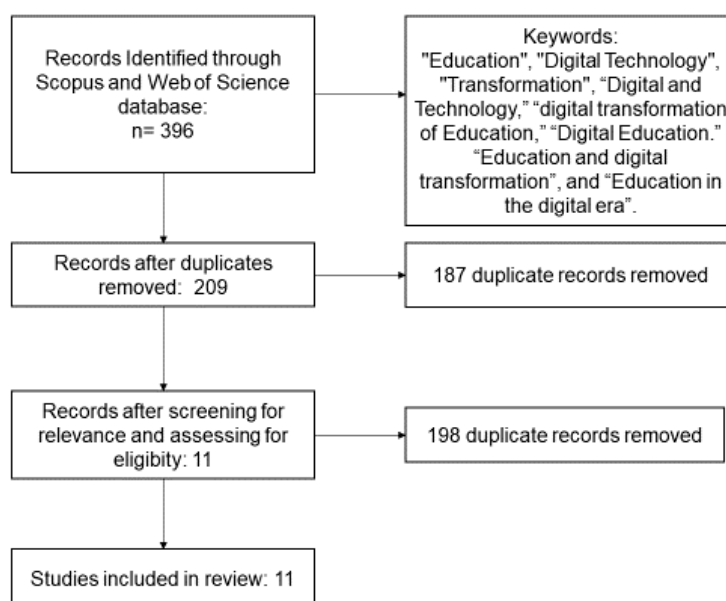

Figure 1: Literature screening method and stages.

Upon careful examination of each publication, we eliminated those articles that were not pertinent to our research methodology. Consequently, we whittled down the collection to 11 review papers and publications covering the period from 2016 until 2023. The graphical illustration in Figure 2 displays how the number of relevant articles has progressed chronologically over this span with respect to the topic at hand.
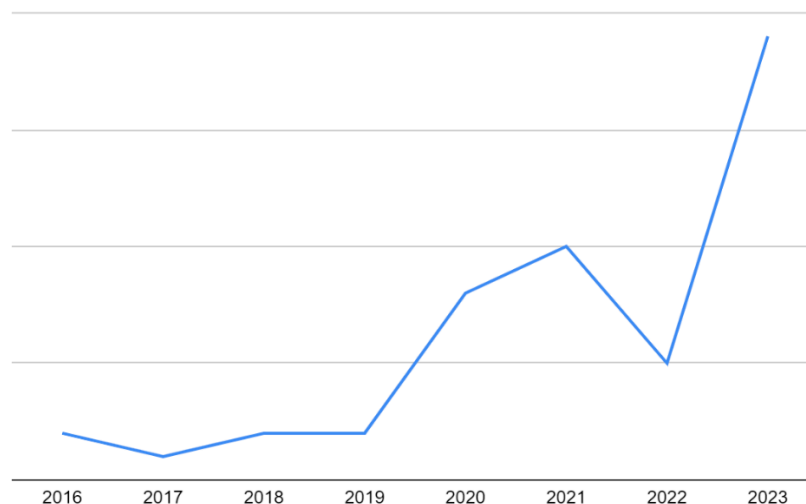
Figure 2: The number of papers and publications in relation to digital education.

The chart depicted above illustrates that a substantial number of articles in our compilation were published in 2023. Notably, the area of digital education encountered significant and rapid advancement between the years 2020 to 2023, signifying an increasing focus on research related to this subject matter. This spike in scholarly studies can be attributed to the latest pandemic as well as popular artificial intelligence tools that gained widespread interest resulting in innovation within the field of education. As research activity rises, it indicates a growing acknowledgement by educators and researchers of the advantageous possibilities that technology integration can bring to educational settings.

The third step of the research process involves analyzing content, which entails meticulously examining and categorizing vast amounts of data such as scholarly articles. By doing so, researchers can spot recurring patterns and themes that emerge from the information compiled. Specifically in this case, our analysis focused on digital technology's influence on education by grouping relevant papers into distinct categories according to central themes or subthemes. This approach enabled us to explore various impacts stemming from digital innovation within education while drawing informed conclusions based upon these findings with greater ease.

The subsequent sections of this article depict a content analysis carried out in accordance with the methodological steps described earlier.

Results and Discussion

The aim of this study is to analyze a set of research papers that focus on the digital transformation within education, while also examining its potential impact on teaching and learning principles. Table 1., in the appendix, illustrates the themes uncovered during analysis of these publications.

The aforementioned publications have explored the profound and rapid changes taking place in education as a result of digital technologies. These changes are reshaping how learning is approached, delivered, and managed. It has been emphasized that this transformation encompasses more than just converting existing materials into digital equivalents - it also

involves digitizing the operational models of educational institutions. There were three phases identified in regard to this process: digitization (the introduction of digital tools), digitalization (integrating technology into teaching practices), and finally, full-scale diffusion throughout education systems known as "digital transformation". Each phase brings its own set of challenges which require unique support structures such as professional development for educators or infrastructure investment. Research indicates that most scholarly work focus on the integration stage rather than the complete digital transformation of current educational frameworks. At present, experts emphasize fusing physical classrooms with virtual spaces through online resources towards developing flexible yet effective study environments (Saykili, 2019; Malik &Malik, 2017).

Such integration focused perspective advocate for moving beyond traditional, content-focused education models towards a more learner-centric approach that incorporates technology and promotes life-long learning. Researchers argue that traditional educational methods are becoming increasingly mismatched with contemporary learning, given the widespread availability of information and digital technologies. Instead, they propose a move towards personalized educational models which cater to individual learners' needs within their respective contexts. This approach prioritizes flexible learning frameworks geared toward lifelong skills development as essential for future societal growth in this dynamic world. Unlike static knowledge acquisition focused on theoretical concepts often disconnected from practical applications found in conventional schools, these authors suggest integrating interactive collaborative environments, such as workplaces or community spaces into teaching methodology amongst online platforms, "outside-the-box" strategies like game-based instruction, alongside various other innovative techniques including flipped classroom modules, microlearning, self-learning, and Deschooling. Such proposal encourages abandoning previous paradigms and enhancing technology use aimed at changing society through education reform. This shift requires re-examining the structure, objectives, and delivery of education to cultivate competencies that facilitate purposeful and fruitful learning process. According to researchers, digital tools can provide substantial support for educational goals; however, they should not substitute human roles but rather complement them by creating a more streamlined and contemporary learning environment. The experts highlight the significance of taking into account various factors that influence successful implementation such as individuals' involvement in digital transformation along with systems and mechanisms responsible for ensuring data protection while incorporating advanced automation techniques. Ultimately, researchers aim to utilize intelligent automation technology within e-learning platforms and other digital campus resources to optimize resource management which is pivotal towards sustainable modernization for educational institutes (Fischer et al., 2022; Jangjarat et al., 2023; Malik & Malik, 2017; Azevedo & Azevedo 2020).

Researchers examined the ways by which digital technology can improve education and enhance the learning experience. This includes providing interactive and engaging activities that can increase understanding and retention of information, supporting collaboration among learners from diverse backgrounds through access to various resources, and enabling self-directed exploration while also improving administrative tasks such as grading or record-keeping processes. Moreover, digital tools are found to offer tailored support is based on individual learner's needs, encouraging engagement, that lead to better performance outcomes (Saykili, 2019; Adipat et al., 2021; Phoon et al., 2021). Technology also allows automation of assessments thus minimizing educator biases and positively impacting educators too (González-Zamar et al., 2020). Virtual reality, specifically, is seen to offer more intuitive

ways of interacting with complex concepts optimizing learners' style and ultimately leading towards mastery faster than traditional methods (Phoon et al, 2021). Similarly," less-revolutionary" but heavily applied technological advancements include eTexts accessibility via online libraries, webcams and teleconferencing, and Online School Portals, are stated to create flexible learning environments and offer real-time interactive sessions, supplementing more traditional distance learning methods. Finally, AR textbooks are innovative teaching content delivery systems available now generating interest worldwide due their captivating nature and optimal clarity (Malik & Malik, 2017).

The mentioned benefits of digital technology in education can only be harvested through educators' cooperation and competence. Researchers explore the crucial role of educators in the digital transformation process and highlight their readiness and competencies as key factors. The traditional educator identity, once a central figure in classrooms, has shifted towards becoming part of an educational support network that prioritizes creating conducive environments for self-paced learning. This change is due to innovative approaches such as individualized learning, specialized evaluation, knowledge discovery instead of content coverage. Consequently, educators are expected to develop new skills and adopt innovative methods to effectively guide learners through digital age education (Saykili, 2019; González-Zamar et al., 2020; Malik & Malik 2017; Jangjarat et al., 2023).

Similar to educators, learners' role and required competencies are changing as education evolve. Recent studies highlight the importance of cognitive abilities and the active participation of leaners in their own learning experiences. This shift towards personalized approaches highlights a larger trend reflecting constructivist beliefs about how knowledge is constructed through engagement with one's environment (Phoon et al. 2021; Jangjarat et al., 2023). However, some researchers have expressed concerns regarding recent declines in critical thinking skills among learners resulting from overreliance on AI tools such as ChatGPT. While these new technological advancements hold promise for ease-of-use when it comes to finding information or generating content quickly—without requiring effortful cognition—they may weaken true comprehension levels if relied upon too heavily at the expense of deeper understanding needed for good academic performance outcomes (Bahroun et al., 2023; Jangjarat et al., 2023).

The changes of learners' cognitive abilities are considered one of the many stated challenges of digital education. Among many, several challenges require immediate attention, such as unequal access to technological resources, inadequate training and support for educators to effectively use technology, resistance from some educators based on preconceived notions of teaching and learning, knowledge gaps among educators regarding technology usage coupled with high costs associated with implementing new technologies, lack of nuanced human interaction crucial for collaborative learning and social development, and technical problems that could interrupt the learning process. Additionally, there's an intergenerational communication gap between educators 'digital immigrants' and learners 'digital natives', implying different levels of comfort or competencies when using technology (Malik and Malik 2017; Saykili, 2019; Adipat et al., 2021; Jangjarat et al., 2023; Fischer, 2021; Rawas, 2023; Azevedo and Azevedo, 2020; Bahroun et al., 2023; Phoon et al., 2021). These challenges are compounded by concerns over academic integrity, ethical considerations, and data privacy. As digital technology continues to shape education practices, it is crucial for institutions to tactfully overcome these barriers while ensuring fair access and seamless integration of such tools. Overcoming these challenges remains critical in unlocking the full potential of educational technologies.

Final Remarks and Recommendations

Norris et al. (2013, p. 3) stated that "just because we are changing a great deal does not mean we are transforming". Despite the extensive shift towards digital education, research indicates that most efforts are merely transferring existing practices without genuine transformation (Bahroun et al., 2023; Hughes 2021). The reviewed research suggests that the practical implementation of digital transformation in education is still ongoing, as we are currently at the phase of integrating digital technologies into educational systems and assessing its consequences and obstacles. The main objective of reviewed work is ensuring the leverage of technology to improve learning process and teaching practices, enhance educational outcomes, and equip learners and educators for the digital future.

Although studies have made an advancement in this field there is still room for further research needed in this field. Despite highlighting the importance of online learning in preparing for future opportunities and challenges in education, the reviewed papers do not analyze how effective online learning is compared to traditional methods nor explore standards assessing its quality. Such area of research is urgently needed and considerably overlooked. More research need to be done to measure the effectiveness of digital practices in educational settings, whether on the short-run, or the long-run.

It is worth mentioning the lack of coverage to important topics in current scholarly work, such as technological environment management within educational settings and the identification of critical components pertaining to professional digital competence. Papers tend to prioritize technical solutions over adequate pedagogical integrations for various educational settings when discussing how to incorporate digital tools efficiently. Not to mention the limited discussion surrounding the practical implications of developing digital competencies regarding its direct impact on learner outcomes or teaching practices. Although studies have suggested ways to improve the management of digital learning environment and the utilization of technology in education, an excessively optimistic outlook on technology's role without enough emphasis on the quality of teaching strategies may understate that not every use of technology is equally effective in all educational contexts. Accordingly, a contextual based evaluation of digital learning management and efficacy is recommended.

Same displayed optimism about using technologies in education is visibly overshadow any potential limitations or drawbacks, and lead to the overstatement of digital integration efficacy in enhancing learning experiences. Despite several papers indicating the lack of compelling evidence regarding digital products effectiveness in education, many still overemphasize the advantages of these products overlooking instances where technology integration has not positively affected outcomes or has presented new problems, such as distraction or screen fatigue or distraction, logistical hurdles, resistance to change, or potential long-term impacts on social and cognition behavior. Subsequently, certain core challenges for digital integration are being overlooked, such as cultural norms that specific institutions face while evaluating whether educators possess enough readiness needed before adopting innovative techniques seamlessly, learners altered cognitive abilities, and generational gap among educators and learner. Hence, fully examining technical, cognitive, and sociocultural obstacles presented during digital integration and providing strategies and effective frameworks to overcome them is urgently needed.

In sum, studies suggest major modifications in educational approaches by incorporating new technologies into learning and promoting a lifelong, flexible approach to education driven by

personal interests. Nevertheless, most of these studies tend to be descriptive and offer abstract thinking; offering broad recommendations that might lack detail in implementation strategies for practitioners to follow. While researchers are successfully criticizing the traditional education system, they fail to address potential challenges of the digital education, like resistance to change or limited resources that may hinder the adoption of proposed paradigms such as online learning. Thus, more comprehensive and thorough work on this area is yet to be done in order to prepare institutions along with all stakeholders for future education paradigms.

Conclusions

This research delved into the profound impact digital technologies have on education, fundamentally changing how we learn and manage information. It identified that incorporating technology requires more than just digitizing existing resources; it demands an overhaul of operational structures to fully harness its potential. At present, most institutions are focused on integrating these tools rather than embracing a complete transformational shift. In this nascent phase where virtual meets physical classrooms, researchers advocate for adaptable environments that blend online flexibility with personalized learning models. The study revealed significant changes required in both educator and learner roles as well as competencies necessary for effective integration of technological advancements at every level. Various digital tools employed in education represent their ability to personalize the experience while providing support through lifelong pattern formation. However, this process faces numerous challenges such as resistance from those who lack skill or fear change. Hence, the study outlined limitations regarding extant literature whilst suggesting possible areas ripe for future exploration.

Appendix: Themes extracted from papers in the field of digital education.

Themes	Authors	Focus
The impact of digital connective technologies on education in the digital era	Saykili 2019	Suggests that educational organizations undertake a thorough and contemplative overhaul to conform with the digital era by revamping teaching techniques, administrative processes, and ethical practices across the academic spectrum.
	Malik and Malik 2017	Explores the significant alterations in education due to technological advancements. Although some conventional methods persist, it is universally acknowledged that integrating technology plays a vital role in involving contemporary pupils and preparing them for a worldwide digital era - even with pushback against change and inconsistent funding sources.
Transform methodology in educational settings	Azevedo and Azevedo 2020	Underscores the need for substantial restructuring in both academic curriculum and networking/social channels to integrate information and communication technology into education.
	Jangjarat et al. 2023	Indicates that smart education has a generally favorable impact on learning outcomes; however, its efficacy is reliant on the surrounding circumstances. Concluded that while smart education has displayed potential in enhancing academic outcomes, the appropriate integration of technology and environment should be given utmost importance for its triumphant execution.
The shift in paradigm toward online learning	Bennett and Szedlak 2023	Explores the changing landscape of online and remote coaching as well as coach advancement (ORC/CD) is a current topic, especially in light of the COVID-19 outbreak which has expedited the shift towards internet-based sports coaching environments. Advocate for the significance of adopting a 'new culture of learning' that is well-matched with the digital era and acknowledges both the exceptional difficulties and rewards offered by virtual classrooms.
The shift in paradigm toward "Outside-the-box" strategies	Azevedo and Azevedo 2020	Explores innovative approaches to digital education that surpass conventional teaching methods, also known as "Outside-the-box" strategies. These methodologies prioritize adaptability, flexibility and innovation in catering to the various requirements of both learners and educators amidst cutting-edge technological advancements.

The shift in paradigm toward Flexible learning	Fischer 2021	Discusses the incorporation of various frameworks and theories to provide insight into how learning environments can be transformed in a post-COVID-19 era. With these combined efforts, traditional paradigms can give way to more adaptable, inventive, and technology-driven approaches that promote effective learning strategies.
The shift in paradigm toward Lifelong learning	Fischer 2021	Acknowledges lifelong learning as a ubiquitous phenomenon, highlighting the paramount importance of lifelong learning and its multifaceted nature beyond conventional adult education or training.
	Saykili 2019	Introduces a theme that discusses the reconceptualization of education as an ongoing experience that surpasses traditional limitations of time and place, mainly due to easy access through digital resources.
	Rawas 2023	Advocates for a framework of lifelong learning, recognizing it as a crucial facet for forward-looking societal progress. Underlines that lifelong education involves cultivating a mentality and expertise to respond to alteration, cooperation, and troubleshooting in an ever-evolving domain.
Digital technology role in enhancing learning experience	Bahroun et al. 2023	Scrutinizes the integration of GAI in educational environments and its ability to greatly augment learning experiences by providing tailored assistance, easily accessible data, and facilitating varied classroom scenarios that promote active participation.
Digital technology role in enhancing learner engagement	Jangjarat et al. 2023	Claims that personalized and interactive digital tools have the potential to enhance learner engagement, motivation, and academic performance. Implicates those technologies are inferred to have the potential to make various educational activities easier, including strengthening traditional classroom teaching, assisting individual learning processes, promoting professional growth and development, as well as facilitating remote education.
	Phoon, Idris, and Nugrahani 2021	Showcases how VR technology can elevate learner participation and engagement through providing channels for hands-on learning experiences. Identifies VR ability to accommodate various learning styles, thereby promoting inclusivity in education. Additionally, it provides controlled and secure environments for practicing skills that may carry real-world risks with instant feedback - optimizing practical skill acquisition.

Digital technology role in improving the efficiency of the education system	Jangjarat et al. 2023	Indicates the advantages of utilizing digital platforms in education are numerous, encompassing heightened pedagogical effectiveness, superior communication channels and customized learning prospects.
Digital technology role in democratizing education	Azevedo and Azevedo 2020	Explores the impact of AI, VR, and gamification on education by examining how these tools can promote fairness in learning outcomes across different groups. Emphasizes that diverse educational needs and preferences can be supported by such tools, which are capable of addressing varying learning styles and paces. Stresses the significance of utilizing such tools to encourage networking and collaboration beyond conventional classroom limits.
Digital technology role in providing support for special needs	Adipat et al. 2021	Highlights the capabilities of assistive technologies to offer customized assistance for learners with special needs, allowing them to engage with the curriculum and actively participate in their educational experience.
Digital technology role in altering assessment methods	González-Zamar et al. 2020	Suggests the necessity to broaden the scope of competencies by implementing a variety of assessment techniques.
The application of various digital tools in educational settings	Malik and Malik 2017	Mentions various educational technologies and their impacts, comprising e-texts alongside Virtual Libraries, Online School Portals, Webcams combined with Teleconferencing as well as Mobile Apps complemented by Augmented Reality.
	Saykili 2019	Suggests that education institutes can overcome their obstacles with the aid of digital tools and applications like hybrid learning environments, open educational resources, distance learning, and massive open online courses. However, integrating these solutions will necessitate careful consideration.
	González-Zamar et al. 2020	Focuses on the intersection of arts and digital technologies in higher education, examining their impact on learning and teaching.
	Adipat et al. 2021	Mentions various educational technologies, including Games and Gamification, Remote Learning Tools, Educational Simulations and Models and their respective impacts.
	Phoon, Idris, and Nugrahani 2021	Notes that although education has undergone transformations over time, the integration of digital technologies like VR brings about a significant impact on how learners acquire knowledge by providing interactive and practical avenues for learning.

	Rawas 2023	States ChatGPT's possible uses in tertiary education include individualized learning, collaborative instruction, computer-aided assessment, and smart tutoring.
Educator Role as a knowledge facilitator	Saykili 2019	Explores the changing responsibilities of educators as they transition from conveyors of knowledge to supporters and enablers of learning. Suggested that instructors should acquire fresh skills and embrace inventive pedagogical approaches to lead learners in the era of digitalization.
	González-Zamar et al. 2020	States that educators are transitioning from sole knowledge transmitters to facilitators of learning, utilizing digital technologies as tools and settings for promoting active, learner-centered learning methods.
	Malik and Malik 2017	Highlights the significance of technology in education as it transforms the role of educators from conventional content providers to more refined positions made possible by digital resources.
Educator Role as a learner	Jangjarat et al. 2023	Underscores the role of educators as a complex and multifaceted role that evolved to adapt to the integration of digital technologies into educational settings.
Educator Role as a guide on the side	Fischer 2021	Asserts educators change roles from being the main provider of information to serving as facilitators or supportive guides.
Educator professional digital competence	Bahroun et al. 2023	Focuses on how GAI can assist educators in producing dynamic and personalized learning materials that meet their learners' unique requirements. Emphasizes the importance for educators to receive training and engage in professional development.
Learners' role as knowledge co-creator	Bennett and Szedlak 2023	Presents heutagogy as an educational approach that places the learner at the center and is especially well-suited for online and remote coaching and development contexts. Advocates the idea that coaches and educators should act as facilitators rather than conventional instructors, by aiding learners in acquiring the skills essential for self-directed learning.
Learners' role as active participants	Jangjarat et al. 2023	Articulates the present-day active and collaborative role of learners. States that learners are no more passive receivers of information but instead, they become active participants who work together to engage critically with educational materials and take ownership of their learning journey.

	Saykili 2019	Recognizes that there has been a change in the way learners participate in the learning process, especially with technology becoming more prevalent. Emphasizes that learners are shifting towards being active participants in their education instead of simply receiving information passively.
	Malik and Malik 2017	Indicates that significant impact of technology on the role of learners in the education process, as they move from a passive role of simply receiving knowledge, to an active role of decision-making and hands-on engagement.
Digital technology role in altering cognitive processes of learners	Bahroun et al. 2023	Acknowledges noteworthy concerns about the excessive dependence on GAI, potentially influencing learners' ability to develop critical thinking and problem-solving abilities.
	Malik and Malik 2017	Highlights several inherent challenges to technology integration in learning process such as inequitable access to technological resources, insufficient training and support for educators, reluctance towards incorporating technology into teaching methods. Asserts on the knowledge/skills gap among educators when it comes to using technology effectively.
	Saykili 2019	Tackles the obstacles posed by traditional administrative frameworks and insufficient policies that hinder the incorporation of digital tools, leading to resistance towards change.
Digital divide, lack of competency and resistance to change	Adipat et al. 2021	Acknowledging that technological progress presents challenges to educators, as it may prove difficult for them to abandon conventional teaching methods and embrace innovative pedagogical techniques.
	Jangjarat et al. 2023	Explores the obstacles associated with incorporating digital solutions into education management. These hurdles include significant financial investments required to introduce and sustain new technology, the ongoing issue of unequal access to these resources exacerbating disparities among learners, staff hesitance towards adopting technological advancements in addition to concerns regarding safeguarding personal data privacy as well as implementing effective cybersecurity measures for securing sensitive information.

	Azevedo and Azevedo 2020	Highlights the digital gap as a major barrier that impacts learners and educators alike, resulting in inequalities in academic standards and achievements. indicates that lack of competency among educators poses a significant challenge, resulting in a divide between digital advancements and teaching practices. Incorporates the difficulties associated with poor internet connectivity, limited device availability, and inadequacy of certain digital platforms for specialized subjects that require hands-on equipment or interaction. Emphasizes the hurdle of restructuring educational procedures to support and maintain a successful digital shift.
Challenges of specific type of digital tool integration	Rawas 2023	Identifies the difficulties involved in incorporating ChatGPT into education, encompassing probable prejudices, lack of intricate human communication, technical interruptions hindering learning progression and associated expenses and resource augmentation required for apt application; not to mention significant privacy concerns regarding vast amounts of AI-processed personal information.
	Phoon, Idris, and Nugrahani 2021	Notes that the incorporation of VR technology into the current educational system poses a challenge due to its complexity, necessitating a complete overhaul of conventional teaching techniques. Moreover, educators need training to develop and deliver VR-enabled courses efficiently, which requires extensive time investment as well as access to robust computing resources and fast internet connectivity. Emphasizes the importance of learner engagement, while highlighting how keeping learners isolated from each other can result in diminished cooperation and a weakened sense of community within the learning setting.
Digital technology impact on academic integrity	Saykili 2019	Delves into the pressing matters pertaining to incorporating digital tools, which encompasses possible diversions, dishonesty through cheating and plagiarism as well as immoral misbehavior.
Digital technology impact on privacy, security, and equality	Rawas 2023	Investigates the ethical concerns pertaining to digital technology in higher education and their connection with the cruciality of preserving privacy as well as data security.

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Coaching Future Innovative Leaders Across Disciplines

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Abstract

This study's focus was how to coach and mentor students, faculty, leaders, and administrators using three different Leadership Coaching models (FUEL, GROW and Transformational Leadership Model. Each Model will be discussed in terms of their use, effectiveness, challenges, and weaknesses. Specific highlights will be presented from an ongoing 4-year study of Doctor of Education (EdD) candidates in a doctoral program at Plymouth State University. Purpose of the study was to investigate and apply different coaching models to build retention, increase completion rates and foster transformational opportunities for students for new employment options upon the completion of their degree.

Keywords: Higher Education, Mentoring, Coaching, Doctoral EdD Programs

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Introduction

Candidates in Doctor of Education (EdD) programs tend to struggle to completion of their dissertation and their programs. Studies show that 40-60% of students do not complete their programs, (Lyons- Lawrence, 2022). Plymouth State University found in New Hampshire, NH. has had a EdD program since 2009. Graduation rates since the inception of the program were in the 80-90% completion rates for the years prior to the substantial change in leadership 2017 and programming in 2019.

In 2017-18, the faculty and director of the program decided to join the prestigious Carnegie Program for Educational Doctorate as the basis for the new revisions in the program. Director of the program leads the massive curriculum changes with the first cohort admitted to the new program in May 2019. The cohort began with 10 students. The director who serves as both advisor and mentor began using three different models within the coaching and advising sessions with the students within this program. It was at this time that the coaching and mentoring was decided to advise students and build retention and graduation levels. A time log was kept from 2018 on documenting every appointment with students and the purpose of the meeting. It was at that time the director in conjunction with the student introduced the model that would best address the concerns, growth or transformation of the student and their leadership skills as a doctoral student.

Program Demographics
- 3 Doctor of Education Programs
- Leadership, Learning and Community
- Higher Education in Administration and Leadership
- Higher Education in Curriculum and Learning

Student Demographics
- Ages 33 to 70
- Locations: USA, Canada, Kenya, Peru, China, Vietnam, India, France
- Disciplines: Education (K-12) teachers, principals, superintendents, special education, counselling, curriculum and instruction, Speech and Language, Library Science, Media and Technology, Wellness, Mental Health, Youth Violence and At Risk
- Abuse and Trauma
- Nursing, Business, Science, Military, Dental hygiene, Urban Planning, Mathematics, Agricultural Science, English, Environmental Science, Psychology
- Higher Education: Deans, Vice President, Residential life, Student Affairs, Campus Accessibility and Disabilities, Advancement, Faculty Development and Training, Professional Development. Data management, Internships

Graduation and Retention Rates

In table 1 please find the summary data for each of the cohorts for the last six years. The chart is divided by the following categories: Year, Number of applications for the program, number of admitted students, retention, and graduation of the students within each year Cohort.

	2016	2017	2018	2019	2020	2021	2022
Program	Original 8-year time frame	Original 8-year time frame	Original 8-year time frame	Revised CPED 4-year time frame	Revised CPED 4-year time frame	Revised CPED 4-year time frame	Revised CPED 4-year time frame
Total Applicants	20	7	26	12	12	13	16
Enrollment	17	4	22	10	10	8	10
Retention	16 - 94%	4 - 100%	16 - 77%	9 - 90%	10 - 100%	100%	100%
Graduation	15 - 94%	3 - 75%	95%	100%	90% there are still 2 remaining	Students have 4 years to graduate by 2025	Students have 4 years to graduate by 2026

Table 1. Application, Retention and Graduation Rates

As indicated in the above chart the numbers are indicating a rise in graduation and retention rate due to the use of the new format for coaching and mentoring students during advising throughout their four-year program.

The three models were the FUEL model, Transformative Leadership Model and GROW model. Each model will be discussed throughout this paper.
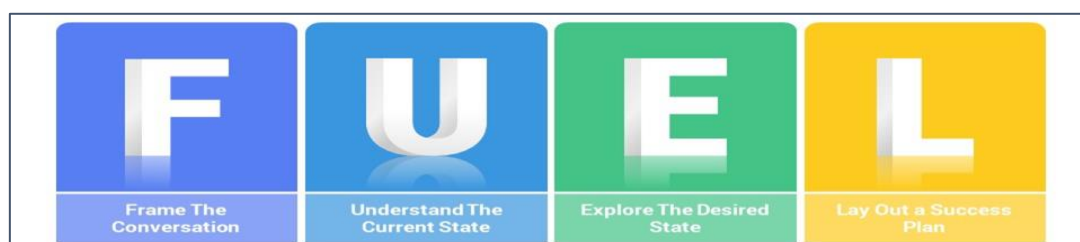
FUEL Coaching Model

Figure 1. John Zenger and Kathleen Stinnett developed the FUEL model in the book, *The Extraordinary Coach: How the Best Leaders Help Others Grow*.

The framework was developed to drive conversations around behavioral coaching needs. The FUEL coaching model is versatile and pairs open-ended questions from the coach with the coachee's analysis/ownership of their own performance. The FUEL model uses a strengths-based accountability approach (Zenger & Stinnett, 2010).

Figure 2. FUEL Model of Coaching
www.linkedin.com/pulse/how-use-fuel-model-coaching-step-guide-leaders-joseph-abraham

Strengths of the Model

Ownership in a development plan comes from the coachee's buy-in. This is the main benefit of using the FUEL coaching model.

- Buy-in is increased when the coachee feels they have control over the process.
- Coachees have input in the situation, solution, and action steps.
- This ownership creates a strong coach/coachee relationship.
- Increased motivation & engagement.
- Increases coaching skills through collaboration - higher EQ (The Peak Performance Center, 2022.

Challenges of the Model

Encouraging buy-in from the coachee can be challenging; this takes a certain level of trust and high EQ/SQ from the coach.

FUEL is designed to achieve behavioral changes, often addressing revealing questions that can be hard to discuss and confront.

One objective of the FUEL coaching model is to have the coachee feel in control of the process; this takes patience, empathy, and flexibility - which can take time.

Coaching does not happen in a vacuum, so a FUEL coach should be present, caring, inspiring, rigorous, caring, and inspiring – these qualities are crucial to ensure results, however, can often be demanding of the coach (Blackbyrn, 2023).

Personal Skills Needed for Successful Implementation

Coaching Students over a 4-year time span indicated that the students needed the following characteristics and dispositions to be successful through the coaching and mentoring. Depending on the issues presented it became very clear very quickly whether the FUEL Model would be the correct model to use in the advising and mentoring sessions.

They needed:
- ➔ Emotional Intelligence - EQ
- ➔ Spiritual Intelligence - SQ
- ➔ Patience
- ➔ Vigilance - self-awareness
- ➔ Prudence
- ➔ Growth Mindset – challenge their beliefs
- ➔ Vision - be able to identify goals that were realistic
- ➔ Transparent Communication - rapport
- ➔ Ethical Decision Making – guidance to identify their moral compass

In conclusion this model was used successfully about 75% of the time. The student needed to have a strong foundation in who they were and how to solve problems. If the student was in crisis mode it needed to be addressed so that the student was able to proceed through the steps successfully.

The GROW Model

GOALS: REALITY: OPTIONS: WILL

This model was used when students were seeking guidance and coaching on how they could grow and develop within the program as their identity was evolving and changing as a doctoral student. These students were seeking self-improvement and ongoing change.

Goals needed to be articulated early in the session. The student was asked a series of questions to establish the goals. We needed to start by setting a SMART goal. (Kunos, 2017) What do you want to do or where do you want to go? Student goal will determine the focus of the coaching. (Grant, 2011).

Reality: What are the factors that impact you from achieving the goal? (Kunos, 2017) Where are you now versus where do you want to be? What do you need to achieve your goal?

Options: What possible routes/actions can be taken to reach the goal? (Whitmore, 2017) Think about it as if there were no obstacles standing in your way. (Whitmore, 2017).

Will: TWO Parts: accountability + follow-up/feedback. Commit to a plan of action. (Deiorio et al., 2022) What needs to happen in the future to convert this idea into an action /result? (Whitmore, 2017). What is your motivation to reach your goal?

Strengths of the GROW Model

- Simple, straightforward design: easy to understand and follow, can be implemented for group coaching or 1:1 coaching (Kunos, 2017)
- The flexibility of the model: can start at any stage, and revisit stages as needed (Wilson, 2020)
- Bridges the gaps between present and future: reality check-in (Thipatdee, 2019)
- Aligns with the SMART goals approach: adding onto already existing, familiar approaches (Kunos, 2017)
- Promotes self-efficacy: highlights awareness and responsibility (Mogonea, 2022)

Challenges of the GROW Model

The student needed to have the following characteristics to be able to use the model successfully.

- Emotional Intelligence: Hearing and understanding differing viewpoints and/or suggestions
- Forward Thinking
- Identifying and presenting potential problems or idea shortcomings
- Positive emotional contagion
    - Positivity about the outcome and the ability to implement change
    - Confidence in what I am presenting and my clear vision

This model was used successfully with students who were not in chaos, we able to see what a future could hold and be ready to challenge themselves in ways of personal growth and development. This model had a very high success rate of about 96% when student interacted with the director during advising and coaching sessions.

Transformative Leadership Model

The transformative leadership model was used with students who contacted the director for advising as they neared the end of their program with the successful defense of their dissertation. These students were wondering what the next steps would be once they achieved their degree. The students at this level were considering life changes as well as advancement in their chosen disciplines. They wanted to explore what the future could look like now that they were EdD graduates.

The transformational model conceptual framework is found in Figure 3.

Figure 3. Transformational Model

The four key components of the TLM are:

Idealized Influence: Which is practice what you preach mentality, charismatic leadership, Lead with integrity (Ugochukwu, 2023).

Inspirational Motivation: Establish a clear vision. Carry oneself with optimism about the future, radiate positivity (Ugochukwu, 2023).

Intellectual Stimulation: Inspire innovative thinking, Intentional conversations about the future, (Ugochukwu, 2023).

Individual Consideration: Personalized supervision, Requires high level of emotional intelligence, (Ugochukwu, 2023).

Strengths of the Transformational Leadership Model

Increase in Morale and in Retention: Transformational leaders make employees feel valued (Indeed Editorial Team, 2021). People don't leave jobs, people leave people.

Clear Goals and Expectations: The TLM helps establish clear goals for employees leaving little room for ambiguity of what expectations are (Thompson, 2019).

Evokes Passion: Transformational leaders make those they work with feel passion and excitement in their work. This leads to a decrease in burnout and an increase in retention (Thompson, 2019).

Increases Organizational Integrity: The consistent communication within this model creates a culture of transparency and passion to 'do the right thing' (Thompson, 2019).

Encourages Consistent Communication: Transformational leaders drive flow of communication to provide clear and direct messages. This encourages those involved within the organization to do the same (Thompson, 2019).

Weaknesses of the Transformational Leadership Model

Long vs Short Term Goals: Transformational leaders focus on long term goals. This leaves room for short term goals to have less priority (Indeed Editorial Team, 2021).

Big Picture: Transformational leaders are visionaries who think big picture. However, the implementation the vision, and execution can get lost in the mix (Thompson, 2019).

Sustainability of Expected Communication: The expected amount of communication is difficult and takes intention to follow through on (Thompson, 2019).

Efficiency in Decision Making: Transformational leadership requires leaders to talk to all stakeholders involved individually especially when in the process of decision making (Indeed Editorial Team, 2021). This can significantly slow the organizational decision making (Indeed Editorial Team, 2021).

Burnout: Burnout can be high for employees who are not as dedicated or inspired to live and breathe the organizational values the way in which the transformational leader expects them to (Thompson, 2019).

Tension with buy -in: A transformational leader is all-in. If things have been done differently within an organization in the past, the transformational leader may experience push back and difficulty getting buy-in from employees (Thompson, 2019).

The findings of the study indicated that the following leadership skills were necessary for the implementation of this model in the student's future growth and development in their disciplines.

Integrity and Transparency. They must remain transparent even when it may be difficult to do so. Transparency creates organic space for integrity to live.

Communication: They must be continuously motivated to maintain a feedback loop and also not be afraid to have difficult conversations.

Charisma: They must maintain charisma even though there are difficulties with individuals or team members.

Active Listening: Be mindful of the space they use. Intentionally create space for communication and a repetitive stream of feedback.

Intentionality: Intention must be present to be forward thinking and successful.

Self-Discipline: Self-discipline is crucial in maintaining consistency with transformational leadership practices.

This model was successful about 92 % of the time it was used. The issues of maintain contact after the student had completed the program was the challenge. Follow up between student and director needs to be ongoing and continuous to measure the success of the coaching over a long-term period.

Conclusion

There is no formal conclusion at this point in the study as the data continues to be gathered with the remaining and new cohorts in the program. In summer of 2023 Cohort 7 which started their program in 2015 now have 100% completion rate. Likewise, Cohort 11 has achieved 100% graduation and completion rate as well. Cohort 12-13 are on track to have 100% completion rate as well. The impact of the three coaching models have indicated a high level of success in helping student complete their doctoral program. As of right now the program has a 94.4 % completion rate for all cohorts (8,9,14,15) that are active as of the writing of this article. In closing advising paired with coaching and mentoring will successfully enable doctoral students to complete their doctoral degree and become effective and transformative leaders across disciplines.

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Digital Technologies in Pre-school Education in the Czech Republic and Norway

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Abstract

This paper presents the results of a research project that aims to interpret the differences or similarities of pre-school education (PE) in the Czech Republic and Norway. Using Bereday's methodological comparative model, this study specifically focuses on a comparison of the anchoring of the importance of digital technologies in the Czech The Framework Educational Programme for PE and the Norwegian The Framework Plan for the Content and Tasks of Kindergartens. The study highlights the notion of digital technology in PE mainly because of the educational innovations in schools from 2020 onwards in the context of the digitization triggered by the closure of schools at the time of the COVID-19 measure. With the upcoming changes in Czech education, kindergartens need to develop (not only) the basics of algorithmic, logical and computer thinking in children, but also to focus on the need for kindergartens to keep up with technical and social developments, as digital technologies are now a common part of the world around us. It should also be the intention of PE teachers that children gradually become familiar with digital technologies and learn to use them to their advantage and avoid risks. The aim of this content analysis is to provide a comparison of curricular approaches to digital technologies through an analysis of PE frameworks in the Czech Republic and Norway.

Keywords: Pre-school Education, Digital Technologies, Bereday's Methodological Comparative Model

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Introduction

The aim of the paper is to interpret the differences or similarities of preschool education (PE) in the Czech Republic (CZE) and Norway (NOR). At present, CZE is undergoing a revision of the framework educational programmes from pre-primary education to secondary vocational education. In 2021, there was a so-called minor revision and now a so-called major revision is underway. For our purposes, we are based on the valid Framework Education Programme (FEP) for PV, which is effective from 1 September 2021 (MEYS, 2021). As far as the Norwegian Framework Plan for Kindergarten is concerned, we are based on the regulations on the nursery school (NS) Framework Plan for the Content and Task updated on 1 August 2017 (udir.no, 2017). Since the FEP is being revised in CZE, which is also based on the Strategy of Education Policy of CZE 2023+ (S2030+), the focus on digital technologies in FEP PE is also key for us, as the goal of this S2030+ is to modernize education so that children can stand up to the dynamic and ever-changing world of the 21st century. S2030+ was approved by the Government of the CZE by its resolution of 19.10.2020 and is the basic document of The Ministry of Education, Youth and Sports (MEYS), which determines the work, objectives, and tools of education policy. The S2030+ also responds to current trends, such as the perception of technological progress as a revolution in the field of digitization. Furthermore, S2030+ aims to continuously improve the quality of PE and involve more and more children in it. To improve quality, S2030+ sees a transformation of the content of education with an emphasis on key competencies, support for teachers and individualized work with children. It also justifies the need to adjust the content of FEP PE and update the content of education in schools, which also means supporting children's motor development, physical activity and fitness, initiative, independence, problem solving, creativity, teamwork, and the use of age-appropriate technology (Strategy 2030+, 2020).

As far as Norwegian early childhood education and care is concerned, we find inspirational stimuli in the content of the NS. The Norwegian Plan of the Content and Tasks of the NS is a regulation to the NS Act and was updated in 2017 (Regjeringen.no, 2023). The Framework Plan stipulates that the content of the NS must be comprehensive, varied and adapted to each individual child and group of children. The concept of the Norwegian Framework Plan is based on the idea that all children must experience a safe environment for play, development and learning in quality NSs with sufficient staff with good expertise. The Norwegian Framework Plan is a governing document for Norwegian NS, which is based on the Nordic traditions for NS. This tradition is an example of good practice, a model associated with high standards from an international perspective, advocating a socio-pedagogical attitude that emphasizes the intrinsic value of childhood and promotes the versatility of the child's development. The Framework Plan builds on the tradition of Norwegian NSs, where play has a central place while considering everyday life in NS, parents' expectations, and does not neglect digital tools in education and digital practice to contribute to young children's play, creativity, and learning (Regjeringen.no, 2023).

Methodology: Background and Setting of Research Goals

For the analysis and comparison of curricular documents, we used Bereday's model of comparison. According to Bereday (1964), it is possible to record different cultures and political geography thanks to comparative education, and for this reason it should be essential that, for example, researchers in comparative pedagogy get acquainted with different cultures. Comparative pedagogy aims to understand the different methodologies of education

in different regions at the international level, and the differences found in these regions are based on differences in culture and are essential for understanding the education system in these regions. Therefore, the comparison of the education system helps in shaping better education systems in different countries through learning from the weaknesses and strengths of education systems from other cultures. The scientific dimension of comparative education relates to the construction of theory, whereby comparison is necessary to understand what relationships occur, under what conditions between variables in the education system and society (Torres et al., 2022).

For comparison, the classic Bereday's methodological comparative model from 1964 was used, which is composed of four phases, i.e.:

Phase I: Description: Description of the contexts of CZE and NOR

Phase II: Understanding (Interpretation): Creating topics and data interpretation

Phase III: Juxtaposition: Describing the most important similarities and differences, and an overview of them

Phase IV: Comparison: Comparison of the framework plans of PE CZE and NOR towards the answer to the research questions

Phase I: Description

In the first phase, called description, we describe the current state of FEP PE issues in selected countries. For a more in-depth description, it was necessary to focus on the vision of key educational areas (EAs) of individual curricular documents at the national level. The theoretical part of this thesis looks at the issue of PE in selected countries of general character.

The Current Form of the Czech FEP PE
FEP PE appeals to complement and support family education, aims to provide the child with an environment with enough multifaceted and adequate stimuli for his or her active development and learning. According to FEP PE, NS should be an enrichment of the child's daily program during his or her preschool years. A PE teacher should provide the child with professional care and facilitate the child's further life and educational path, i.e. support the development of the child's personality, physical development and health, satisfaction, well-being, help the child to understand the world around him and motivate him to further cognition and learning, as well as teach the child to live in the company of others and bring him closer to the norms and values recognized by society.

The Current Form of the Norwegian the Framework Plan
The Framework Plan stipulates that the content of the NS must be comprehensive, varied and adapted to each individual child and group of children. In NS, children are supposed to play and explore their creativity, sense of wonder and curiosity. The NS must work purposefully with the development and learning of children, motivate them to communicate, develop their language and social competences. The Framework Plan understands childhood as a phase of life with intrinsic value, i.e. the NS must be an inclusive community with space for every child.

Phase II: Interpretation

The second part, called interpretation, is focused on data collection, respectively. The aim of the interpretation is to understand the issue of PE formulated in the state curricular

documents of CZE and NOR, to find out what are the specifics in EAs in both documents, how approaches to digital technologies are defined. Bereday (1964) appeals at this stage to pay attention to factors such as historical, political, economic or social, but our attention is focused on curricular documents, and for this reason we have conceived the interpretation and analysis in terms of appearance and have chosen a qualitative approach by means of which it has been possible to penetrate the phenomenon under investigation and understand existing relationships or differences. During the interpretation and subsequent analysis, we used the content analysis of written documents as a basic research method, which we carried out in a non-quantitative way.

Specifically, we were interested in two topics:
1. Topic: EAs in PE
2. Topic: Anchoring digital technologies in PE

The content dimension of the documents was assessed through the above-mentioned topics and was monitored based on the structure of the documents.

Features of the current form of the Czech FEP PE – Main principles, EAs and digital technologies:
- Acceptance of natural developmental specifics of preschool children.
- Enabling the development and education of each individual child to the extent of their individual possibilities and needs.
- Creating space for the development of various programs and concepts as well as for the individual profiling of each NS. Enabling the NS to use various forms and methods of education and to provide framework criteria that can be used for internal and external evaluation of the NS.
- Each EA includes interconnected categories:
  1. Partial goals: what the teacher should observe and support in the child during the PE course.
  2. Educational offer: A set of practical and intellectual activities suitable for the fulfilment of objectives and for the achievement of outputs. Offering a variety of activities tailored to the specific possibilities and needs of children.
  3. Expected outcomes: Outcomes are formulated for the time when the child is completing PE, with the understanding that their achievement is not mandatory for the child. During his/her work, the teacher monitors the process of acquiring these competencies both within the children's class and in individual children.
- The FEP PE includes five EAs, i.e.:
  1. Child and body.
  2. Child and psychics: 2.1. Language and speech. 2.2. Cognitive abilities and functions. 2.3. Imagination and fantasy. 2.4. Intellectual operations. 2.5. Self-concept, feelings, will.
  3. Child and the other.
  4. Child and society.
  5. Child and the world.
- The current FEP PE from 2021 lacks a link to digital technologies, which are part of the 2020 S2030+ document. The Strategy states that *"We will adapt the education system so that it is able to adequately adapt to the dynamic environment and progress associated with the development of new technologies, digitization and internationalization."* (Strategy 2030+, 2020) Furthermore, the S2030+ appeals,

firstly, to the appropriate and age-appropriate use of digital technologies, which should be a matter of course in all areas of education, and secondly, to technologies, which should be a tool for the development of new methods and forms of education and assessment. Subsequently, in the PE Support, the justification for the need to adjust the content of the FEP PE and to update the content of education in schools is mentioned to consider *"support for the acquisition of key competences, support motor development, physical activities and fitness of children, initiative, independence, problem solving, creativity, teamwork or the use of age-appropriate technologies."* (Strategy 2030+, 2020) It is to be hoped that digital technologies will be included in the ongoing process of adapting the FEP PE, or that the development of initial digital literacy will be mentioned.

Features of the current form of the Norwegian the Framework Plan – Main principles, EAs and digital technologies:

- The content of the NS must be versatile, varied and adapted to the individual child and the group of children.
- Work with care, upbringing, play, learning, social competence, and communication must be seen in context and jointly contribute to the all-round development of children.
- The Sámi NS should be based on the Sami language, culture, and traditional knowledge.
- NS is intended to be a cultural arena where children are co-creators of their own culture in an atmosphere characterized by humor and joy.
- The NS environment must be safe and provide children with a versatile physical experience (Udir.no, 2017).
- The Norwegian the Framework plan contains seven EAs, i.e.:
    1. Communication, language and text.
    2. Body, movement, food and health.
    3. Art, culture and creativity.
    4. Nature, environment and technology.
    5. Quantities, space and shape.
    6. Ethics, religion and philosophy.
    7. Local community and society.
- Digital technologies are highlighted in the following chapters, i.e.:
1. NS Digital Practice:
    NS is intended to contribute to children's play, creativity, and learning, and during the use of digital tools in educational work, this should support children's learning processes and contribute to the implementation of the guidelines of the Framework Plan for a rich and versatile learning environment. During the use of digital tools, staff must be active with children and the tools should be used with caution. NS is intended to help children develop their initial ethical understanding related to digital media. Staff must:
    - Exercise digital judgment and protect children's privacy.
    - Enable children to discover, play, learn and independently create digital content of expression.
    - Assess the appropriateness of children participating in media use.
    - Explore creative uses of digital tools together with children.

2. EA – Art, culture and creativity:
   Through working with art and creativity, NS is to ensure the use of a variety of techniques, materials, tools, and technologies so that the child can express themselves aesthetically.
3. EA – Nature, environment and technology:
   NS must allow children to have a variety of experiences of nature and must allow them to remain curious about scientific phenomena, experience belonging to nature and gain experience in the use of technology, e.g.: making constructions in different materials and exploring the possibilities that lie in tools and technologies. The staff must also explore and experiment with technology and natural phenomena together with the children.
4. EA – Quantities, space and shape:
   In this section, it is mentioned that NS must enable children to discover mathematics in everyday life, in technology, also in nature, art and culture. A preschool child should playfully experiment with numbers and counting. The child should explore the properties of shapes and experience the joy of mathematics. Books, games, music, toys, natural materials, and digital tools should be offered to encourage children to think mathematically.

Phase III: Juxtaposition

The third step is juxtaposition, which aims to create a framework for comparison. In this step, the similarities and differences that can be read from the curricular documents for the PE of the selected countries are described. These similarities and differences form the basis for the fourth and final step, i.e. the actual comparison.

The Main Principles of EAs in the Czech FEP PE
EA Child and body is aimed at promoting the growth and neuromuscular development of the child, his physical well-being, improving his physical fitness and improving his health culture, learning self-care skills, and guiding children towards healthy lifestyle habits. EA Child and psychics aims to support the child's mental well-being and mental fitness, resilience; development of intellect, speech and language, cognitive processes and functions, his feelings and will, self-concept, creativity, and self-expression; Encouragement to further development, cognition, and learning. The third EA called Child and the Other, supports in shaping the relationships of a child with another child and adult; strengthening, cultivating, and enriching their mutual communication and ensuring the well-being of these relationships. There is also a focus on board games, social games, and other playful activities in this section. EA Child and society accompanies the child into the community of other people and introduces the child to the rules of coexistence with others, as well as to the world of material and spiritual values, the world of culture and art. EA Child and world introduces the child to the surrounding world and its happenings, it also teaches the child about the impact of humans on the environment, learning about other cultures. In this EA, the child gains an awareness of animate and inanimate nature, of people and society, and of planet Earth.

The Main Principles of EAs in the Norwegian Framework Plan
EA called Communication, language and text, aims to develop children's language understanding and competence through various forms of communication. EA offers the communication of texts, stories as a source of aesthetic experiences, reflection and encounters with language and culture. EA Body, movement, food and health allows space for the joy of movement, the joy of eating. Here, emphasis is placed on psychological and social

well-being, the physical and mental health of the child and learning about the human body, hygiene habits and a varied diet. The third EA Art, culture and creativity supports the child in their own artistic expressions; offers encounters with a diversity of artistic and cultural forms and exploration of art and cultural experiences; It also allows for joy and pride in one's own cultural belonging. It also offers opportunities for children to learn about diverse traditions and artistic expressions from the past and present. The fourth EA Nature, environment and technology allows children to have a variety of experiences in nature, and NS must allow children to remain curious about scientific discoveries, experience belonging to nature, and gain experience in the use of technology and tools. The fifth EA Quantities, space and shapes is focused on exploring and understanding the connections in nature, society, and the universe. Children are offered both discovering playful mathematics and motivating them to solve problems, as well as playing and experimenting with numbers, exploring the properties of shapes and mathematical problems. EA called Ethics, religion and philosophy, allows the child to learn about traditions, values, holidays in different religions and worldviews. It also offers an exploration of existential, ethical, and philosophical questions; reflecting basic norms and values; Developing respect for oneself and other people. The latest EA Local community and society, appeals to the fact that NS contribute to knowledge and experience with local traditions, social institutions, and professions so that the child feels a sense of belonging to the local environment. Through play, the child is supposed to gain experience in listening, discussing, and knowing about human rights.

Anchoring of digital technologies in the Czech FEP PE and in the Norwegian the Framework Plan:

- There is no anchoring of digital technologies in the Czech FEP PE. Digital technologies are not offered in EAs and PE educators are not encouraged to use them in their educational practice.
- In the Norwegian the Framework plan, digital technologies are anchored both in the offer within the NS Working Methods, i.e. NS Digital Practice, as well as within the three EAs.

Phase IV: Self-Comparison

The last step is focused on the comparison itself and brings a comparison of the identified similarities and differences of the already mentioned issues.

Similarities and Differences of the Issue
The Czech FEP PE has five EAs and each area contains a brief description, partial educational objectives, educational offer, expected outcomes and risks. In the Czech FEP PE, the areas are extensively described, and the text contains a lot of information and instructions, some educational offers are repeated. Compared to the Norwegian Framework Plan, it is more comprehensible and specific, i.e. The text deals with a clear description of the EAs, provides concise points that the child should experience or learn during the educational process, and each area is also focused on targeted activities that the staff must carry out. If we specifically focus on individual EAs in the Czech FEP PE, the area of Child and body focuses on awareness of one's own body, the development of senses and the physical and mental fitness of the child. The educational offer then offers to offer children sufficient physical activities, psychomotor games, self-service activities with personal hygiene, etc. The joy of movement, food and a healthy lifestyle is also brought by the EA of the Norwegian Framework Plan, which also appeals to the child to gain a positive self-perception and confidence in their own body. An interesting stimulus here is cooking, during which the child

should experience joy and discover the taste of food. There are also stimuli for experiencing joy and well-being during versatile movement experiences inside and outside, in any weather.

The EA called The Child and psychics in the Czech FEP PE is divided into other areas, i.e.:

- Language and speech: an area focused on the development of speech skills and language skills; the teacher should offer children joint discussions, storytelling, commenting on experiences, dramatization or singing. A similarity can be found in EA's Norwegian Framework Plan called Communication, language and text, which includes both the development of communication, vocabulary expansion, as well as experimentation with words and an emphasis on storytelling, speaking and singing.
- Cognitive abilities and functions; Imagination and fantasy; Intellectual operations: the EAs focused on the development of creativity, the educational offer concerns e.g. observation of natural, cultural objects and phenomena in the environment, observation of common objects, manipulation with objects and examination of their properties, free play and experiments with objects, familiarization with elementary numerical and mathematical concepts. As far as mathematical skills are concerned, it should be mentioned that the Norwegian the Framework Plan has a more elaborate separate chapter on the development of understanding of basic mathematical concepts.
- Self-concept, feelings, will: in this area, the teacher develops children's self-control, moral and aesthetic perception, feeling and experiencing; the educational offer includes both spontaneous play and aesthetic and creative activities, watching fairy tales and naming emotions). A similarity can be found in the educational area of the Norwegian Framework Plan called Communication, language and text, which includes both the development of communication, the expansion of vocabulary and experimentation with words.

The Czech FEP PE contains EA The Child and the Other, which aims to familiarize the child with the rules of behavior in relation to the other, the child should acquire skills important for developing relationships with other people, and prosocial behavior is strengthened. The educational offer includes an incentive for interactive games, role-playing, cooperative activities in groups and playful model situations in which the child should learn to respect others. In the Czech FEP PE, EA is Child and society, which has the task of teaching children to live in the community of other people and to perceive recognized basic values. Children should learn about interpersonal moral values and have a basic knowledge of the existence of other cultures and nationalities. The educational offer offers, for example, the realization of social entertainments and festivities, as well as encounters with cultural life outside the NS and learning about events interesting for preschool children. The last EA in the Czech FEP PE is The Child and world, in which the teacher is supposed to introduce the child to the local environment in which the child lives. The child should acquire knowledge about a healthy and safe environment. The teacher should develop the child's ability to adapt to the conditions of the external environment and its changes. Similar intentions from the above-mentioned areas of the Czech FEP PE can also be seen in the EA of the Norwegian Framework Plan called Local community and society, which aims to introduce children to the local environment, local traditions, and culture.

The Czech FEP PE does not include an in-depth and detailed EA specifically on art, technology, mathematics, religion, and philosophy, as it is written in the Norwegian Framework Plan. Although creative stimuli, introducing the child to mathematics are mentioned in the Czech FEP PE EAs, these topics seem to be put in the background, as well

as religion and asking children philosophical questions or also the initiation of children into human rights, which are topics that are evident in the Norwegian Framework Plan.

The Norwegian the Framework Plan appeals to the use of digital technologies during education in NS, the Czech FEP PE, although it has it written in the visions of the S2030+ document, lacks a mention of the use of technology in NS.

Conclusion

The aim of the comparative research was to compare and analyse the content of the Czech FEP PE and the Norwegian Framework Plan in terms of the offer of EAs and following the use of digital technologies in PE. The principles of the Czech FEP PE include accepting the natural developmental specifics of children; enabling the development and education of each child within their individual abilities and needs; creating the basics of key competences; creating space for the development of various programmes and concepts and for the individual profiling of each NS; enabling the NSs to use various forms and methods of education and providing framework criteria for internal and external evaluation of the NS. The Norwegian Framework Plan appeals to NS to offer the child varied and individualized activities. The Norwegian Framework Plan also focuses on working with care, upbringing, playing, learning, social competences, and communication, which must be seen in context and contribute to the comprehensive development of children. The Sami NSs should be based on the Sami language, culture, and traditional knowledge. The Norwegian NS should be a cultural arena where children are co-creators of their own culture in an atmosphere characterized by humour, joy and the NS environment must be safe and provide children with a versatile movement experience. The Norwegian Framework Plan is a management document for the Norwegian NSs, and it is based on the Nordic traditions for the NS. This tradition is an example of good practice, a model associated with high standards from an international perspective; it holds a social pedagogical approach emphasizing the intrinsic value of childhood. We see a general agreement in both documents in, for example, familiarizing children with the local environment, nature, and culture and in developing children's language communication, healthy lifestyle, physical and mental fitness, teaching children to understand themselves or the feelings of other people, teaching children self-care, hygiene, and moral habits. We also see several differences in these two documents, for example in the issue of digital technologies, which is clearly described in the Norwegian Framework Plan. Digital technologies are not described in the Czech FEP PE and are missing in the text, although the Czech FEP PE, amended in 2021, should follow on from S2030+ published in 2020. The two documents also differ in the offer of topics, for example the Czech FEP PE does not include topics that are key for the Norwegian Framework Plan, these topics include: Outlining to children the issues of religion, racism, existence and philosophy, ethics, and initial knowledge of the importance of human rights (the Convention on the Rights of the Child). Compared to the Czech FEP PE, the Norwegian Framework Plan also puts emphasis on the fact that children should experience 'pride in their sense of cultural belonging'. The Norwegian Framework Plan also elaborated the issue of mathematical skills in children into a separate EA. Unlike the Norwegian Framework Plan, the Czech FEP PE has richly detailed educational sub-objectives, educational offer and expected outputs for each educational area, especially the educational area Child and Their Psyche consists of three parts; the Norwegian concept of EAs includes a brief description, child's output, and instructions for the staff. It seems that the Czech FEP PE is more focused on the development of the child's psyche and the Norwegian Framework Plan relates to the child's educational preparation for the value basis of education at primary school and thus builds more on the

areas that are part of the values and principles for primary schools, i.e. human dignity, identity and cultural diversity, ethical awareness, creative joy, respect for nature and democracy.

Acknowledgements

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A Quantitative Study of Middle School Students' Perception of the Impact of Parent Involvement on Academic Intrinsic Motivation

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Abstract

Motivation plays a crucial role in student's academic growth and research shows that students who are intrinsically motivated tend to achieve higher academic growth (Mendoza, 2012). Self determination theory (Gagne & Deci, 2005) proposes a continuum that shows the connection of intrinsic motivation with extrinsic motivation. Studies show that parental involvement is one of the factors that results in academic achievement of the student (Hill & Tyson, 2009; Cheung & Pomerantz, 2012), however, not enough research has been done to establish its connection with academic intrinsic motivation. Proposed research helps to investigate the relationship between perceived parental involvement of middle school students on their academic intrinsic motivation. A convenient sample of approximately 700 middle school students of an urban district in mid-western part of the United States was used. 50 students with both student and parent consent form were allowed to participate in the research. A quantitative study was conducted using a Likert scale survey to measure the impact of students' perceived parental involvement on their academic intrinsic motivation. A linear regression analysis helped to establish a positive significant relationship between parental involvement and academic intrinsic motivation which help to create awareness among parents regarding their impact on children's academic growth.

Keywords: Intrinsic Motivation, Middle School, Parental Involvement

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Introduction

Motivation that helps the individual experiences satisfaction by discovering, exploring, learning concepts and solving problems rather than extrinsic rewards or benefits. The extrinsic motivators are offered in association, but not directly related to a task, such as good grades or acceptance into academic honors societies. Intrinsic motivation is also identified as a goal-oriented motivation (Woolley & Fishbach, 2018). Intrinsic rewards in an academic setting can help students become more motivated to study more, turn in work on time, and do well on assessments and assignments, which may lead to transfer those practices to other settings.

Intrinsic Motivation

Intrinsic motivation can be described as the degree of individual participation since interest and satisfaction are derived from participation (Gagne & Deci, 2005). Other studies discuss high correlation between individual interest and intrinsic motivation (Smith & Darvas, 2017; Jungert et al., 2020). It is important to define intrinsic motivation because oftentimes motivation is discussed as a general term, encompassing qualities of both extrinsic motivation and intrinsic motivation. Extrinsic motivation is usually related with receiving a reward or consequence from participation. These could be tangible or intangible but does not encompass the personal satisfaction of the individual. Without careful consideration, these extrinsic motivators can be harmful. Students can be led to believe school conditions, test scores, etc. determine their self-worth (Ginsberg and Raymond, 2019). Intrinsic motivation has a more positive correlation with academic achievement.

Figure 1 explains the causes of intrinsic motivation (determinants), which includes personality orientations and activities and situational factors. A student's preference for any activity or the experience from a particular situation will result in building an inner drive in the student to be involved (maybe to know something, to accomplish something or to experience stimulation, or to avoid harm). The consequence of the IM results in creating various cognitive and behavioral patterns in the student which can benefit or harm them in future, depending on what they are (Carbonneau et al., 2012).
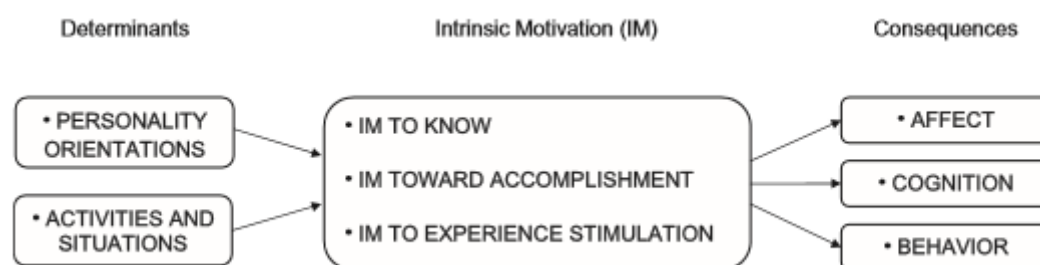
Note: From "Toward a Tripartite Model of Intrinsic Motivation," by N. Carbonneau, R. Vallerand, and M. Lareniere. 2012, *Journal of Personality*, 80 (5), p.1148. Copyright 2011 by Wiley Periodicals, Inc.

Figure 1: Tripartite Model of Intrinsic Motivation
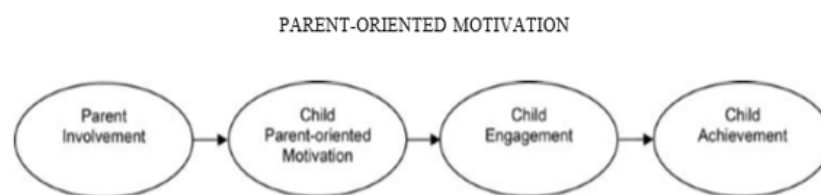
Parental Involvement

Parent involvement in academics has been identified as critical influence on children's education, and has been related to their academic participation and success. Oswald et al. (2017), found that the student's cognition and behavioral development is high when there

was an increase in parental involvement. When parents are involved with a student's academics, there is a positive impact on their social-emotional development including self-esteem, emotional self-regulation, and self-perceptions of academic competence (Wang & Sheikh-Khalil, 2013).

Parental involvement can have a variety of definitions, however, here it is defined as "parents' interaction with schools and with their children to benefit their children's education success" (Hill et al., 2004, p. 1491). This specific definition is simple and allows for multiple ways parents can be involved in their students' educational success. The only change made is that the term adult is substituted for parent. Research by Hill and Tyson (2009) suggests parental involvement is related to academic performance and engagement of students in middle and high school. Pomerantz et al., 2007 categorized parental involvement into home-based and school-based involvement. In school-based practices, the parents are directly involved with the school which includes attending parent-teacher conferences, participating in school activities and talking to teachers while home-based involvement includes practices that take place outside of school, often in the home which include assisting their student with school- related tasks, such as homework (e.g., creating an appropriate environment to study or helping students complete their homework), responding to a student's academic endeavors (e.g., performance on a test), and having discussions about academic challenges (e.g., what happened in school or the importance of academic participation for their future development) (Pomerantz et al., 2007).

There are few studies that shows that negative impact of parent involvement on student learning, but many have mentioned the positive relationship of motivation with academic success. Self-determination theory (Deci & Ryan, 1985; Ryan & Deci, 2000) mentioned that children experience parent-oriented motivation as more controlled than autonomous (Cheung & Pomerantz, 2012). Cheung and Pomerantz (2012) found that as parent involvement in children's learning increased, the student's motivation to succeed in school also increased with enhanced self-regulated learning and higher grades. Children motivation was driven by parent approval.

Figure 2 elaborates the parent involvement on student achievement and motivation through parent-oriented motivation. However, the model does not establish the influence of parental involvement on a student's own intrinsic motivation.

PARENT-ORIENTED MOTIVATION

Note: From "Why does parents' involvement enhance children's achievement? The role of parent-oriented motivation," by C. Cheung & E. Pomerantz, 2012, *Journal of Educational Psychology,* 104 (3), p.821. Copyright 2012 by American Psychological Association.

Figure 2: Parent-Oriented Motivation

Fan and Chen (2001) connected relationships between parent involvement and student characteristics like, achievement motivation, task persistence, and receptive vocabulary. Another study (Hill and Tyson, 2009) also discusses the use of family-school relationships and parental involvement as a method to close achievement gaps. It has been witnessed that

parent involvement during middle school tends to decrease. There could be many reasons for the reduction in parent involvement which includes unable to help their kids in school-work or extending their child's learning (Dauber & Epstein, 1989). Seginer (2006) supports that there is a negative relationship of effective home involvement and middle school motivation which lowers the student's learning. It can be inferred from various research that parent involvement during elementary education still has an evident impact.

There is a considerable amount of research based on parental involvement with middle school students but does not provide any conclusive evidence about the directionality, or lack of its impact on intrinsic motivation. These research investigations examine the achievement, using academic success and learning in the school environment but none reveals a direct connection between student intrinsic motivation and parent involvement. Therefore, it becomes important to investigate the impact of parent involvement on middle school students' intrinsic motivation.

Statement of Purpose

John Hattie spent more than a decade researching the effects of various influences on student achievement (Arnold, 2011). Each factor had a calculated effect size measuring the level of influence on student success (Visible Learning, n.d.). For reference, the lowest score is -0.90, which is the effect size of attention-deficit/hyperactivity disorder (ADHD), while the highest is collective teacher efficacy at 1.57. According to Visible Learning, motivation has an effect size of 0.42 on student achievement and parental involvement is 0.50, suggesting these two have an independent impact on student achievement. Although many studies have examined the relationship between motivation and student achievement, few consider the factors that relate to the development of student intrinsic motivation. A few studies have found that there is a strong correlation between intrinsic motivation and academic success (Jungert et al., 2020; Lacaille et al., 2007). A meta-analysis emphasized the lack of research on the link between intrinsic motivation and variations in performance based on demographic or environmental conditions (Cerasoli et al., 2014). It is important to identify the factors that contribute to the development of intrinsic motivation in a school setting so that all students can achieve academic success. To ascertain the extent to which there is a link between academia and demographic or environmental conditions, such as parent involvement, the following research question was developed:

Research Question - What is the relationship between student perceived parent involvement and their academic intrinsic motivation?

Null Hypothesis 1: There is no significant relationship between perceived parent involvement and academic intrinsic motivation.

Directed Hypothesis 1: There is a significant relationship between perceived parental involvement and academic intrinsic motivation.

The purpose of the current research is to determine if perceived parental involvement and academic intrinsic motivation influence each other, and to what extent.

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┌─────────────────────────────┐      ┌──────────────────┐              ┌──────────────────────┐
│ Perceived Parental Involvement│═════│ Academic Intrinsic│- - - - - - ->│ Academic Achievement │
│                             │      │ Motivation       │              │                      │
└─────────────────────────────┘      └──────────────────┘              └──────────────────────┘
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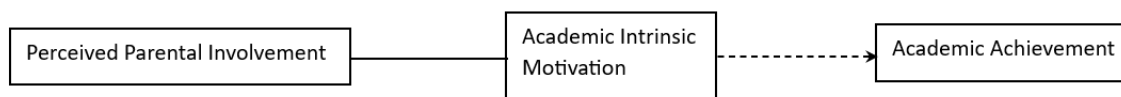
Note: The bold lines represent the variables under investigation and the dotted line represents the possible extension of the current research.

Figure 3: A proposed relationship of possible variables that may connect intrinsic academic motivation with academic achievement.

Theoretical Framework

Self-Determination Theory (Gagne & Deci, 2005), Social Cognitive Theory (Schunk & DiBenedetto, 2020), Achievement Motivation Theory (Elliot & Harackiewicz, 1996), and Ecological Systems Theory of Development (Leonard, 2011) each address the impact of environmental factors like parental involvement on academic intrinsic motivation.

Methods

Research Design

A quantitative study with a survey design was used to understand the relationship between students perceived parental involvement and their intrinsic motivation. According to Creswell (2008), survey design provides a trend, attitudes of the population or the tests for associations of the population by studying a sample of population. A Likert Scale survey was used to measure the quantitative variables of perceived parental involvement and intrinsic academic motivation. The need to understand the relationship between the two variables and the time effectiveness of the survey design becomes some of the reasons for selecting this as a research design method.

To investigate the impact of parent involvement on intrinsic motivation, a linear regression analysis was used. It was challenging to find a statistical method to analyze these two variables, a parallel study was found and used as a model for research methods. Jungert et al. (2020), applied a multiple regression analysis to find the relationship between parent and teacher enthusiasm with intrinsic motivation and academic achievement of students.

Setting and Sample Population

A convenience sample of approximately 700-800 students attending a Midwestern suburban public middle school were asked to serve as the research population. This school serves 7th and 8th grade academic levels of 12-15 age. The student population consisted of 50% male and 50% female students. All students were given an equal opportunity to participate in the survey. Students were given an assent form (Appendix B) to sign if they chose to participate. Before conducting the survey, a consent form (Appendix C) was sent to parents/guardians of those students. Students had one month to get both forms signed and only those students with both parental permission and their own consent participated in the study. The entire class received a snack box if 50% of the students participated in that class. A sample pool of N=50 was targeted from the convenience pool of 700-800. The survey was administered by the advisory teachers of the students. The advisory class did not interrupt instructional hours.

Instrumentation

A 5-point Likert scale survey was used to measure perceived parental involvement and academic intrinsic motivation (Appendix A). One survey with two parts (A and B) was used to measure the impact of perceived parent involvement on student intrinsic motivation and assess the students' own perceived intrinsic motivation. Part A measures parental involvement (Mendoza, 2012). Part B measures motivation with the American Motivation Scale (AMS) first validated by Vallerland et al., 1992. The survey asked students to rank their perspective of various ways their parents/guardians are involved in their schooling using a five-point Likert scale ranging between strongly disagree to strongly agree. To maintain the anonymity of the students /participants, the survey was collected with no student identification.

Data Collection

Before collecting data, students received and then submitted both signed parent's consent and student's assent forms. Advisory teachers were given the log to keep the records of the students submitting both the forms. Once forms were collected with the teacher's log, surveys were given to the advisory teachers for those who submitted both forms.

All 7th and 8th grade students completed the survey at the same time in their advisory class without any interruption. Part A of the survey contains 17 questions and Part B contains 16 questions. The advisory class is 30 minutes long. To maintain the authenticity of the students' perception on parental involvement, no student was allowed to take the survey home, even if they are not finished. The advisory teacher did not paraphrase or help the students while filling out the survey to maintain the reliability and truthfulness. Data was collected once in an academic year from all the students. The survey was reviewed by IRB to protect the rights and the welfare of the students involved in the research.

Results

Descriptive statistics were calculated using the program SAS (SAS on demand for academics). AVGPI (average parental involvement) shows the average score for perceived parental involvement for each involvement. The same calculation was completed for the responses to the AMS survey (Vallerland et al., 1992) and labeled was AVGAIM (average academic intrinsic motivation).

Three participants' surveys were excluded as they were left incomplete. The remaining 47 surveys were used to calculate the mean and standard deviation of AVGPI and AVGAIM. A linear regression analysis was conducted with AVGAIM as a dependent variable and GUARDIAN (the primary guardian who is involved in the student's schoolwork) as a classification variable and AVGPI as continuous variable using the program SAS.

The descriptive statistics for average perceived parental involvement score and academic intrinsic motivation score are shown in Table 1. The mean for AVGPI is 4.34. The mean for AVGAIM is 3.80. Graphs showing the distribution of each variable are shown in Appendix D. Average perceived parental involvement scores are skewed to the right and average academic intrinsic motivation has a normal distribution.

Table 1: Descriptive Statistics

Variable	Mean	Std Dev	Minimum	Maximum	N
AVGPI	4.34	0.51	3.25	5.00	47
AVGAIM	3.80	0.66	2.00	5.00	47

A linear regression analysis was run using AVGAIM as the dependent variable, GUARDIAN as the classification variables, and AVGPI was a continuous variable.

The linear regression model has one intercept ($\beta 0$) and two slopes ($\beta 1$-2):

AVGAIM = $\beta 0$ + $\beta 1$*AVGPI + $\beta 2$*GUARDIAN

The least squares summary and analysis of variance are shown in Appendix E. The p value from the analysis of variance was 0.06 which is greater than 0.05. This means the null hypothesis cannot be rejected. However, since it is close to 0.05, the parameter of estimates, shown in Table 2 was required.

Table 2: Parameter Estimates

Parameter Estimates					
Parameter	DF	Estimate	Standard Error	t value	Pr > |t|
Intercept	1	0.740721	1.033956	0.72	0.4786
Guardian Father	1	0.074793	0.545416	0.14	0.8917
Guardian Mother	1	0.002515	0.515335	0.00	0.9961
Guardian other	0	0	-	-	-
AVGPI	1	0.657512	0.193439	3.40	0.0017

For all tests a Type 1 error rule of 0.05 or 5% was used. If p-value < 0.05 then reject the null hypothesis (Ho). Overall, AVGAIM does not have a significant relationship with GUARDIAN since each p value for guardian higher than 0.05 which means that the academic intrinsic motivation of the students is not related to the relationship type of the guardian. However, AVGPI has a p value of 0.0017, which is less than 0.05 and positive. This suggests there is a positive relationship between perceived parental involvement and academic intrinsic motivation. The tests for the individual variables show the following results:

Test for the Slope of AVGPI:
Ho: $\beta 1 = 0$
Ha: $\beta 1 \neq 0$

Conclusion: Since p = 0.0017 < 0.05, Ho is rejected and conclude the slope is significantly different from zero. The positive parameter estimate = 0.657512 means that AVGAIM increases as AVGPI increases.

The overall result of the research question is there is a positive significant relationship between students perceived parental involvement and their academic intrinsic motivation.
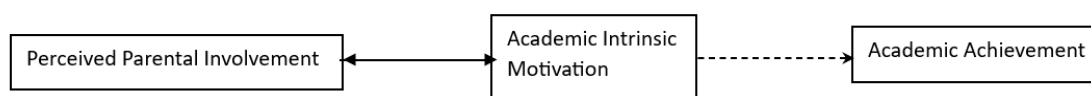
Figure 4: Actual relatedness of the variables.

Conclusion

Limitations and Delimitations

One of the limitations was the convenience sample used as one of the researchers was teaching in that school. Due to this narrow sample, the result of the study cannot be considered generic. Another limitation was a possible self-selection of higher academic intrinsically motivated students since this survey was not a part of a grade assignment and purely voluntary.

Several delimitations are considered. Student perspectives on their parental involvement and academic intrinsic motivation were considered as variables which might change with time. To increase the participation of students, an incentive was given to them.

Implications for Practice

This study can help to strengthen relationships and bring awareness between schools, families, and communities. Communicating the impact of parental involvement in student's academic intrinsic motivation helps to create awareness among them and might encourage them to get involved with the teachers to attain the academic goal of the child. The increase in the levels of academic achievement can increase the state funding to public schools and increase the value of homes in the community.

Appendices

Appendix A

Student Survey

The University of Missouri-St. Louis

STUDENT SUCCESS SURVEY

Part A- Parent Involvement Survey

Think about the person who LIVES WITH YOU IN YOUR HOME and helps you the most with school. Who is this person? PLEASE SELECT ONE.

a. _____Mother   b. _____ Father   c. _____Grandmother

d. _____Grandfather   e. _____Stepfather   f. _____Stepmother

g. _____Aunt   h. _____ Uncle   i. _____Other

Read the following questions carefully. Answer the questions about the person YOU IDENTIFIED ABOVE. Mark the choice that describes your answer the best. PLEASE SELECT ONE NUMBER PER ITEM USING THE KEY BELOW.

	1	2	3	4	5
1. This person tries to get me to do my best on everything I do.					
2. This person thinks that education is a very important part of what I do.					
3. This person goes to parent-teacher conferences.					
4. This person sets high standards for me to meet.					
5. This person looks at my tests and papers from school.					
6. It really matters to this person what grades I get.					
7. This person is involved in school programs for parents.					
8. This person thinks homework is a very important part of school.					
9. When I get poor grades, this person encourages me to try harder.					
11. This person knows the grades I get.					
12. This person thinks I should go to college.					
13. Hard work is very important to this person.					
14. When I get poor grades, this person offers help.					
15. When I ask for help with my homework, this person gives it to me.					
16. This person thinks that getting ahead is very important.					
17. This person thinks I should be concerned about what kind of career I may...					

1 = Never   2 = Very Seldom   3 = Sometimes   4 = Usually   5 = Always

Part B - Academic Motivation Survey: Intrinsic Motivation measurement

WHY DO YOU GO TO SCHOOL? Using the scale below, indicate to what extent each of the following items presently corresponds to one of the reasons why you go to school. PLEASE SELECT ONE NUMBER PER ITEM USING THE KEY BELOW.

1 = Not at all   2 = Not very much   3 = A little   4 = Certainly   5 = Definitely

	1	2	3	4	5
1. I need at least a high school diploma in order to find a high-paying job later on.					
2. I experience satisfaction while learning new things.					
3. I think that a school education will help me better prepare for the career I have chosen.					
4. I really like going to school.					
5. I really feel that I am wasting my time in school.					
6. For the pleasure I experience while performing better than my expectations.					
7. To prove to myself that I am capable of completing my high-school diploma.					
8. Eventually it will allow me to enter the job market in a field that I like.					
9. For me, school is fun.					
10. I once had good reasons for going to school; however, now I wonder whether I should continue.					
11. When I succeed in school I feel important.					
12. For the pleasure that I experience in broadening my knowledge about subjects which appeal to me.					
13. It will help me make a better choice regarding my career orientation.					
14. For the pleasure that I experience when I take part in discussions with my teachers.					
15. For the satisfaction I feel when I am in the process of accomplishing difficult academic activities.					
16. In order to have a better salary later on.					

Appendix B

Assent to Participate in Research Activities (Minors)
The Perception by Middle School Students of the Impact of Parent Involvement and Socioeconomic Status on Their Intrinsic Motivation

1. Hi, our names are Pallavi Aggarwal and Taylor Lawson-Smith. We are college students.

2. We are asking 800 students, including you, to take part in a research study because we are trying to learn more about how the involvement of your parents/guardians and social standing impact your motivation in school work.

3. If you agree to be in this study, you will be asked some questions that affect your motivation in school. The questions include how involved your parent(s) or other adult is in your school work, how much you think your parents make, and the education background of your parent/guardian. It will take about 30 minutes. You will take it one time during the advisory class.

4. Being a part of this study should not harm you in any way. Your schooling and grades will not be impacted by choosing to participate in this study.

5. You will probably not get any direct benefits from being in this study but you might enjoy knowing that your honest answers will help teachers teach class in ways that help you to learn.

6. Please talk this over with your parents before you decide whether to participate. We will also ask your parents to give their permission for you to take part.

7. If you don't want to be in this study, you don't have to. Being in this study is up to you, and no one will be upset if you don't want to participate or if you change your mind later and want to stop. Your schooling and grades will not be affected by choosing to not participate in this study.

8. You can ask any questions that you have about the study. If you have a question later that you didn't think of, you can call us at 636-290-6891(Taylor Lawson-Smith) or (252)-290-0478 (Pallavi Aggarwal).

9. Signing your name at the bottom means that you will be in this study. You will be given a copy of this form after you have signed it.

Participant's Signature   Date   Participant's Printed Name
Participant's Age   Grade in School

Appendix C

Parent Informed Consent Form

Informed Consent for Participation in Research Activities
The Perception by Middle School Students of the Impact of Parent Involvement and Socioeconomic Status on Their Academic Intrinsic Motivation

Participant _____ HSC Approval Number _____ Principal Investigator: Pallavi Aggarwal / Taylor Lawson-Smith PI's Phone Number:(252)-290-0478) / (636)-290-6891

Summary of the Study
The general purpose of this study is to identify the factors that lead to the development of the academic intrinsic motivation in middle school students.

Neither the statistical analyses of anonymous survey rankings by the researchers nor the completion of an open-ended questionnaire by participants poses a significant risk to the physical, psychological, social, economic, or legal well-being of the participants.

We will take multiple precautionary measures to protect the privacy of participants. As part of this effort, the identity of participants will not be revealed in any publication or presentation that may result from this study. No identifying information will be collected

by the survey and questionnaire so that at no time will the researchers be able to identify a particular student, their responses, or their participation in this study.

1. Your child is invited to participate in a voluntary research study conducted by Pallavi Aggarwal and Taylor Lawson-Smith, and it is under the supervision of Dr. Charles Granger.

2. a) Your child's participation will involve completing a survey that asks students to respond to the impact of their perceived parental involvement and socioeconomic status on their intrinsic motivation. This is a Likert Scale survey with open-ended questions after the rankings. The survey will be administered during one advisory period to limit the disruption of the school day. There will be no incentive to those who choose to participate, but this information could be used in the future to help educators build classroom environments that will be more equitable in advancing student academic intrinsic motivation. There is no foreseeable risk. Approximately 800 students may be involved in this research at the University of Missouri-St. Louis.

Rev 012419
b) The amount of time involved in your student's participation will be 30 minutes during one advisory period.

3. There is a loss of confidentiality risk in that names of students who have both sign parent consent forms and their own student assent forms will be collected. No names or other identifying information will be collected on surveys. Student names are only collected so researchers can distribute surveys to students who have permission.

4. There are no direct benefits for your child participating in this study, however their participation may lead to benefits to education. The results of this study may reveal information that educators can use to improve behavioral, social and academic interventions for all students.

5. Your child's participation is voluntary and you may choose for them not to participate in this research study or withdraw your consent at any time. Your child will NOT be penalized in any way should you choose not to allow them to participate or withdraw.

6. We will do everything we can to protect your child's privacy. As part of this effort, your child's identity will not be revealed in any publication that may result from this study. In rare instances, a researcher's study must undergo an audit or program evaluation by an oversight agency (such as the Office for Human Research Protection) that would lead to disclosure of your data as well as any other information collected by the researcher.

7. If you have any questions or concerns regarding this study, or if any problems arise, you may call the Investigator, Pallavi Aggarwal at (252-290-0478), Taylor Lawson-Smith at (636-290-6891) or the Faculty Advisor, (Dr. Charles Granger at (314-516-6220). You may also ask questions or state concerns regarding your rights as a research participant to the Office of Research, at 314-516-5897.

I have read this consent form and have been given the opportunity to ask questions. I will also be given a copy of this consent form for my records. I hereby consent to my participation in the research described above.
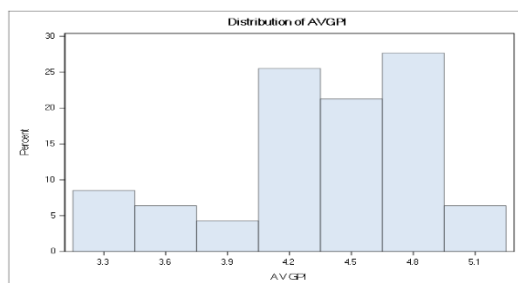
Participant's Signature_____ Date _____

Signature of Investigator or Designee_____ Date _____
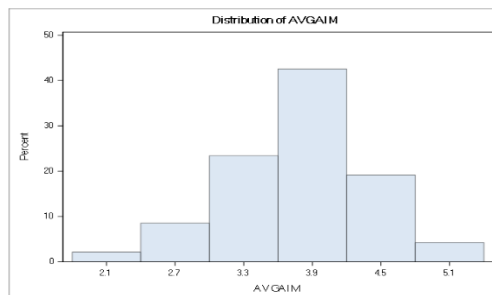
Appendix D

Distribution of Variables

Graph 1

Distribution of Average Perceived Parental Involvement

Graph 2

Distribution of Average Academic Intrinsic Motivation

Appendix E

Table 3
Least Squares Summary

LEAST SQUARES SUMMARY			
STEP	Effect Entered In	Number Parms In	SBC
0	Intercept	1	-36.8617*
1	Guardian	3	-29.8282
2	AVGPI	13	15.3394

*Optimal Value of Criterion

Table 4
Analysis of Variance

Analysis of Variance					
Source	DF	Sum of Squares	*Mean Square*	F value	Pr>F
Model	12	8.07423	0.67285	1.96	0.06
Error	34	11.69128	0.34386		
Corrected Total	46	19.76551			

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Pre-service Teachers' Perception, Interpretation, and Decision-Making in Mathematics at the Primary Level – Using Video-Vignettes for Research

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Abstract
Teachers' perception, interpretation, and decision-making skills are considered a prerequisite for appropriate teacher behavior in complex teaching situations. For researching these skills, video-vignettes are recommended as a context-sensitive stimulus. The article presents a study about these skills of pre-service teachers using video-vignettes showing learners dealing with context-related problems. When watching these video-vignettes, the pre-service teachers perceive various aspects relevant to teaching and learning about learners' processing of context-related problems and draw on existing subject-specific didactic knowledge. Concerning further work with the learners, they mention various possibilities but rarely specify them. So, it seems that the conclusion is difficult for them. Therefore, it would be advisable to integrate videos into university teaching to create more learning opportunities to acquire these skills and help pre-service teachers conclude.

Keywords: Situation-Specific Skills, Video-Cued Testing, Video-Vignettes, Context-Related Problems

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1. Introduction

Learners' actions and utterances often occur in parallel in the classroom, and teachers decide in the respective situation where to focus their attention and how to act on this basis (e.g. Geisen, 2021). Teachers´ underlying perception, interpretation, and decision-making skills are linked to pupils' learning success (cf. Kersting et al., 2012). They are, therefore, of particular relevance in the everyday school life of teachers. They relate to the professional vision of teachers, a construct of teacher profession research (e. g. Berliner, 2004; Sherin & van Es, 2009; Kersting et al., 2012). This construct is considered an essential prerequisite for appropriate teacher behavior in complex teaching settings and an indicator of teachers' professional competences and beliefs (cf. Seidel & Stürmer, 2014). As the competences and beliefs of teachers are of central importance in connection with successfully coping with professional demands in the context of school and teaching (cf. Kunter et al., 2011), the construct of professional vision has increasingly become a focus of research in recent years (van Es & Sherin, 2010, p. 157). Of particular relevance in this context are videos, which are, among others, used as a context-sensitive stimulus in research (cf. Blömeke, 2013).

This article first provides an insight into the theoretical background of perception, interpretation, and decision-making skills using selected relevant studies. These skills are then neatly integrated into a competence model, which forms the basis for the study presented in the following article. As part of this study, the skills mentioned above were examined in the mathematical content of context-related problems with the help of video-vignettes. The research questions are laid out about the study, and a methodological categorisation and detailed insight into exemplary results are provided. These results are discussed, and conclusions are drawn.

2. Theoretical Background

2.1 Wide Range of Conceptualisations and Survey Options Regarding Teacher's Perception, Interpretation, and Decision-Making

Teacher´s skills of perception, interpretation, and decision-making refer back to the concept of professional vision to Goodwin (1994), who defines "professional vision" as "socially organized ways of seeing and understanding events that are answerable to distinctive interests of a particular group" (p. 606). Concerning the teaching context, teachers, therefore, have particular patterns of perception. The contributions of Sherin and Van Es (e. g. 2006, 2009) based on Goodwin's approach to professional vision are especially pertinent. Drawing on Goodwin's framework, Van Es and Sherin (2006) differentiate two sub-facets: selective attention and knowledge-based reasoning. Selective attention focuses on what is essential in a particular situation, making the connection to perception evident (ibid.). The process of thinking about perceived events in an understandable way is known as knowledge-based reasoning; in this case, interpretation is obvious (Sherin & van Es, 2009, p. 22; van Es & Sherin, 2006, p. 125 f.). These two sub-facets were investigated by examining recorded discussions held in video clubs. Usually, with the help of a research assistant, some practicing teachers with varying degrees of experience viewed and discussed their instructional videos in these video clubs. The methodology extended to conducting interviews with the participants before and after these video club sessions, offering insights into teachers' reflections on authentic teaching videos (Sherin & Van Es, 2009, p. 23; Van Es & Sherin, 2006, p.126).

While acknowledging the significance of interpretation, Star and Strickland (2008) and Star, Lynch, and Perova (2011) primarily focus on attention, aligning only with the first sub-facet of the van Es and Sherin (e. g. 2006, 2009) definition. Their research centers on understanding the elements that capture or elude the attention of pre-service teachers during their observation of classroom lessons, positing that interpretation is inherently contingent upon the initial act of perception (Star & Strickland, 2008, p. 111; Star et al., 2011, p. 119f.). They used videos of real-world mathematics lessons, which included the entire 45-50-minute lesson instead of selective excerpts. After viewing the videos, pre-service teachers responded to a series of questions - spanning true/false, multiple choice, and open-ended formats - designed to assess various dimensions, including the classroom environment, management strategies, mathematical content, tasks, and communication strategies. This methodology offers insights into pre-service teachers' focal points and potential oversights when confronted with the complexities of real-world classroom settings.

Jacobs et al. (2010, 2011) expand on Sherin and Van Es' conceptualisation to create a tripartite model encompassing perception, interpretation, and decision-making. The latter only refers to decisions made in the heat of the moment and leaves out teachers' long-term choices before or after a lesson (Jacobs et al., 2010, p. 173; 2011, p. 98 f.). Jacobs et al. (2010, 2011) utilized a mixed-method approach involving both video- and text-vignettes to investigate these sub-facets. These vignettes depicted scenarios from elementary school lessons or presented problems solved by elementary students. Participating teachers, both practicing and prospective, were then asked to engage with these vignettes by completing written tasks that addressed the three identified sub-facets.

The research group of Seidel and Stürmer is more in line with Sherin and van Es's approach (e.g. 2006, 2009). They segment professional classroom perception into two sub-facets: noticing and knowledge-based reasoning (Seidel et al., 2010, p. 297). Noticing is the identification of relevant situations and events in the classroom (ibid.). Knowledge-based reasoning is the analytical processing of these identified elements through the lens of theoretical knowledge (ibid.). The latter sub-facet is further elaborated into three dimensions, which are determined by Seidel et al. (2010) as describing "components of a learning-effective lesson based on theoretical knowledge," explaining "teaching situations based on scientific theories and findings", and predicting "effects of teaching situations on further teaching-learning processes" (p. 297). This conceptualisation contains the perceiving and interpreting sub-facets but not the deciding sub-facet. To operationalize this framework, the "Observer" instrument was developed by Seidel and Stürmer's research group using twelve authentic video-vignettes from five subjects and matching rating items based on the presumptive dimensions of describe, explain, and predict. This instrument emphasizes general teaching aspects such as goal orientation, support for learning, and classroom environment while excluding content-specific considerations (Seidel et al., 2010, p. 299). This approach underscores the importance of general pedagogical skills over domain-specific knowledge in assessing teaching effectiveness.

This section provided an overview of the diverse conceptualisations and survey methods used by research groups that have carried out fundamental work in this area (cf. Orschulik, 2021). To illustrate the spectrum of existing survey options, this review presents three conceptual frameworks originating from the United States and an additional framework from Germany. For a concise summary of the varied methodologies and frameworks presented, see Table 1.

Who?	What?	How?
Sherin and van Es (e. g. 2009)	Noticing as selective attention and knowledge-based reasoning	Video-clubs and interviews
Star and Strickland (2008) and Star, Lynch, and Perova (2011)	Noticing is restricted to attention	Videos of complete authentic mathematics lessons and multiple choice or open questions
Jacobs et al. (2010, 2011)	Perceiving, interpreting and deciding	Video-vignettes and text vignettes
Seidel and colleagues (e. g. 2014)	Noticing and knowledge-based reasoning	Video-vignettes and rating-items

Table 1: Diverse conceptualisations and survey methods.

The relevance of perceiving, interpreting, and decision-making in complex teaching situations is also demonstrated by the fact that these skills are an integral part of competence models, such as the model by Blömeke et al. (2015), in which these skills are explicitly identified as sub-processes of the teacher´s situation-specific skills.
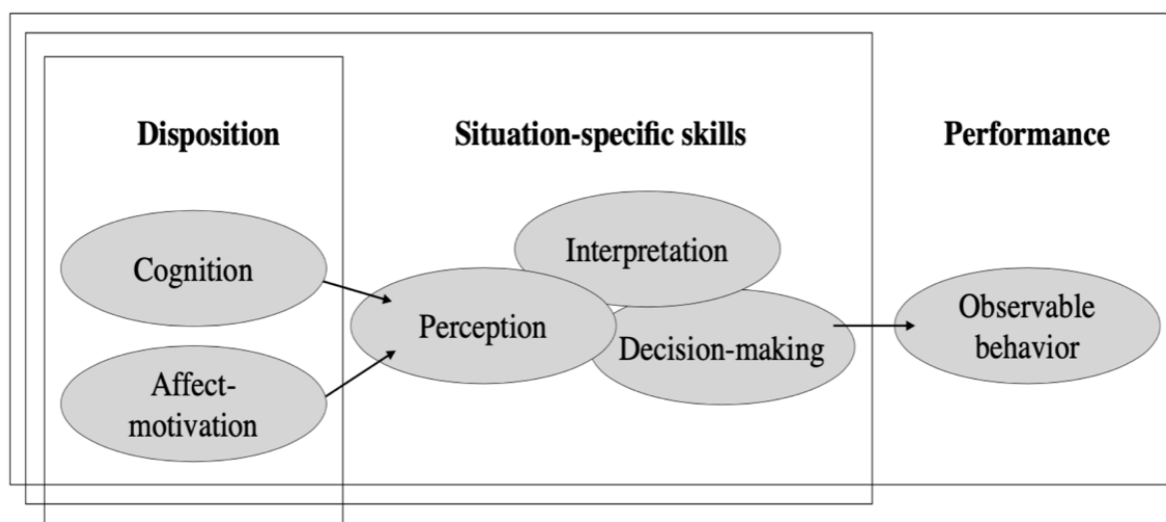
Figure 1: Competence as a continuum' based on Blömeke et al. (2015, p. 7).

In the actual execution, the processes of perception, interpretation, and decision-making merge into one another (König et al., 2014, p. 78f.) and are more likely to be conceived as a continuum (cf. Blömeke et al., 2015).

2.2 Video-Vignettes in Research

Videos in empirical research and educational contexts are becoming increasingly popular (e.g. Seifried & Wuttke, 2017; Sherin, 2007). Growing digitalization and advancing technological advances are likely responsible for this development (cf. Geisen, 2021). However, the use of videos in empirical research has existed since the 1970s and is a familiar approach (cf. Sherin, 2007). This is also evident when analyzing the survey methods regarding the skills of perception, interpretation, and decision-making in the section before. In addition, the categorisation in the previous section showed that videos could depict both natural lesson recordings and fictitious but realistic scenes (cf. Geisen, 2021; Blömeke, 2013). According to Blömeke (2013), a distinction can also be made between three forms of video use in research:

- Videographed lessons can be used as a data pool to analyse context-sensitive questions.
- Videos can be used to describe, classify, or illustrate examples of best practices.
- Videographed lessons can also be used as a context-sensitive stimulus for data collection, whereby various methodological approaches are possible.

Regarding the latter, a further differentiation is made. On the one hand, videos can be used as a conversation starter in the context of interviews, called video-cued interviews (cf. Blömeke, 2013). This corresponds to the video-stimulated recall interview approach introduced in the 1980s (see Calderhead 1981; see also e. g. Wyss 2013). On the other hand, there is the approach of video-cued testing, in which videos are integrated into a test instrument (cf. Blömeke, 2013). Compared to written procedures, the use of video-vignettes as a test instrument is said to have the potential to achieve a higher validity, which is particularly true for the assessment of competence and perception constructs (cf. Bruns & Eichen, 2015; Lindmeier, 2013). In contrast to paper-based methods, video-vignettes enable a better replication of teaching settings' complexity, spontaneity, and immediacy (cf. Bruns & Eichen, 2015).

2.3 State of Art on Context-Related Problems in Mathematics Education

Since the study is in mathematics didactic research, a content-related reference must be established by dealing with context-related problems in primary school mathematics lessons in the following.

Because mathematics is used in science, technology, and daily life, it is crucial to solve context-related problems successfully (cf. Kaiser et al., 2011). Therefore, there is a long history of using context-related problems in mathematics education (e. g. Geisen, submitted). Context-related problems are defined as "the process of translating between the real world and mathematics in both directions" (Blum & Borromeo Ferri, 2009, p. 45) rather than merely calculus-like arithmetic. Working with context-related problems is a crucial component of curricula all over the world (e.g. National Council of Teachers of Mathematics (NCTM) 2000; Kultusministerkonferenz (KMK), 2022), and according to the German standards it is interwoven with all contents of mathematics and at the same time with all the process-related skills (cf. KMK, 2022). This means a context-related problem can relate to the contents of sizes, measurements, or functional relationships, and when the problem includes, for example, a request for reason, the skill of mathematical arguing is addressed (cf. Geisen, 2021).

Solving context-related problems is summarized under modelling, and the whole process is described as a cycle (cf. Blum & Borromeo Ferri, 2009). Although there are many different cycles (cf. Blum, 2015), the following steps are more or less familiar to all cycles: Firstly, the modelling cycle begins with a problem situation referring to nature, society, or other scientific fields that are not explicitly related to mathematics (Blum & Borromeo Ferri, 2009, p. 45; cf. Pollak, 1979). This real-world problem must be modified if necessary by simplifying, structuring, generalizing, or making it more precise. Secondly, the problem situation has to be translated into mathematics to create a mathematical model as a solution approach (mathematising). Subsequently, internal mathematical processes such as calculating and solving equations can be applied, after which mathematical consequences result. These consequences are converted into real-world mathematical results (interpretation), and these actual results need to be verified. The validation process may result in the discovery of a workable solution or in the need to "round the loop a second time, for instance, in order to take into account more factors [...]" (Blum & Borromeo Ferri, 2009, p. 47).

The modelling cycle shows the complex process of working on context-related problems so that this is often challenging for pupils (cf. Galbraith & Stillman, 2006; Blum & Borromeo Ferri, 2009; Houston & Neill, 2003; Frejd & Ärlebäck, 2011). The complexity refers to technical, factual, and linguistic requirements (cf. Geisen, 2021). Nevertheless, the reasons for these challenges are very heterogeneous (ibid.), and every stage of the modelling process may challenge pupils (cf. Goos, 2002; Galbraith & Stillman, 2006; Blum, 2015). However, teachers also struggle with context-related problems due to their real-world knowledge and the unpredictability of teaching (e.g. Freudenthal, 1973; Pollak, 1979; Blum et al., 2007; Blum & Borromeo Ferri, 2009). As a result, teachers worldwide consider context-related problems less in mathematics education (cf. Blum & Borromeo Ferri, 2009). Therefore, it is crucial to consider teachers' dispositions and their situation-specific skills in this context (cf. Blömeke et al., 2015, see Figure 1).

3. Video-Cued Testing About Pre-service Teachers' Situation-Specific Skills Regarding Context-Related Problems

3.1 Research Questions and Methods

About the relationship between the mathematical expertise and mathematics didactic knowledge of teachers on context-related problems and their behavior in mathematics lessons concerning the use of context-related problems that stimulate a modelling process and the learning processes of learners, the international mathematics didactics literature points to a research desideratum (cf. Verschaffel et al., 1997; Verschaffel et al., 2000). This desideratum is of particular relevance, as, on the one hand, many learners have difficulties when working on context-related problems and need support from teachers in this regard (e.g. Blum, 1985; Geisen, 2021). On the other hand, however, dealing with context-related problems is difficult for learners and teachers (ibid.). The question, therefore, arises as to what (pre-service) teachers perceive about learners' processing of context-related problems and what conclusions they draw from this. This question is investigated by analyzing pre-service teachers' situation-specific skills regarding context-related problems. As the concept of professional vision can be regarded as a promising indicator of professional knowledge (cf. Seidel & Stürmer, 2014), this is an attempt to address the research gap described at the beginning. So the study focuses on their perception, interpretation, and decision-making skills (cf. Blömeke et al., 2015). Based on these skills, the study was guided by three research questions:

- What mathematics didactic aspects do pre-service teachers perceive regarding pupils dealing with context-related problems?
- How do they interpret the watched situation?
- What situational and long-term decisions would they make?

Perception, Interpretation, and Decision-making are seen as a linear process but also as never-ending and starting from the beginning again and again.

A web-based video tool was developed and implemented in the university's learning management system to answer the research questions. The tool was developed based on the qualitative interviews from the author's Ph.D. project (cf. Geisen, 2021). The video tool comprises four parts:
- Part 1: Query of relevant personal data of the pre-service teachers,
- Part 2: Processing of a context-related problem by the pre-service teachers and uploading of the processing,
- Part 3: Viewing of a video-vignette by the pre-service teachers and answering open-ended items,
- Part 4: Inquiry of the professional beliefs and self-efficacy expectations of the pre-service teachers regarding context-related problems.

Part 2 allows the pre-service teachers to familiarize themselves with the context-related problems (introduction). They should work on a context-related problem and upload their work. On the one hand, the pre-service teachers already deal with the relevant context-related problem of the following part 3 by working on it. This forms an essential basis for the analyses in part 3. Secondly, the student's work can be analysed as part of the study and, if necessary, linked to the analyses in part 3. Subsequently, the pre-service teachers watched a video-vignette in part 3 and answered open items regarding the perceived teaching and learning-relevant aspects and the further work with the learners. The open items allow the pre-service teachers to freely analyse and reflect on the video-vignettes without predetermined, guiding answer options.

The video-vignettes show an excerpt of two learners working on a context-related problem (for example, see Figure 2). Part 3 is variable regarding the video-vignette used so that different scenes can be used in the instruction. The instrument described, particularly part 3, corresponds to the video-cued testing method, according to Blömeke (2013). Part 4 refers to a developed questionnaire on professional beliefs and self-efficacy perceptions about context-related problems. Since perception, interpretations, and decision-making skills are not only influenced by professional knowledge but also by professional beliefs (cf. Blömeke et al., 2015), this questionnaire is supplemented to be able to establish a connection between the beliefs of pre-service teachers and their professional vision about context-related problems. For the questionnaire, the results of previously conducted studies on the beliefs of primary and secondary school teachers regarding context-related problems are incorporated (cf. Kaiser & Maaß, 2007; Verschaffel et al., 1997).

This paper focuses on the third part, when pre-service teachers analyse and interpret a video-vignette. Used were two video-vignettes. The video-vignettes show short, authentic scenes of two third graders working on context-related problems and having difficulties outside the classroom. The group composition in terms of pupil performance levels was heterogeneous. The video-vignettes can be considered for various mathematics didactic questions.

A context-related problem with the title pocket money, where Cem and Lena talk about the amount of their pocket money (cf. Geisen, 2021, p. 120; see Figure 2) and an excerpt from the corresponding video-vignette are presented below as examples (see Table 2).
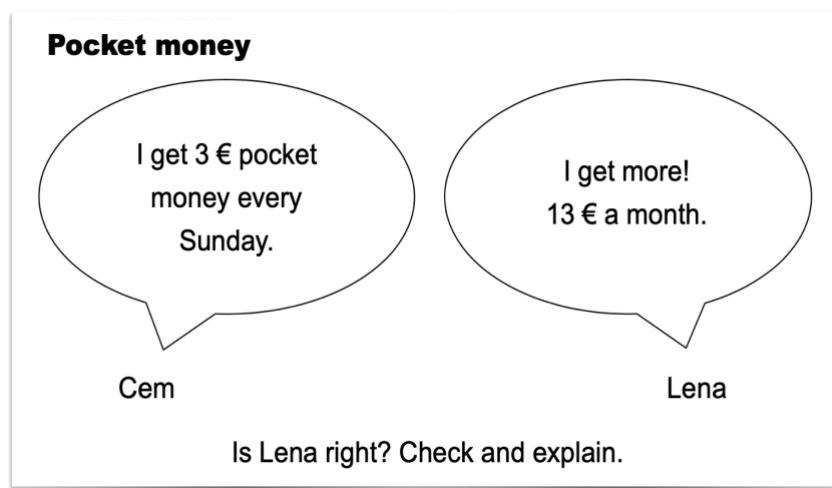

Figure 2: Pocket money problem (cf. Geisen, 2021, p. 120).

Line	Pupil	Transcription
1	P1	So Cem gets 3 € pocket money every Monday.
2	P2	And Lena gets.
3	P1	More.
4	P2	13 per month.
5	P1	Yes.
6	P2	So Lena gets 13 €, per month.
7	P1	Yes. (Laughs) (10 sec.) Now we need to know how many weeks in a month.
8	P2	(Nods) How many weeks?
9	P1	I have no idea. (laughs)
10	P2	So how many, um, days are there in a month?
11	P1	I don't know that either.

Table 2: Transcript excerpt of third grader's solving process (cf. Geisen, 2021).

Pupil 1 (P1) and Pupil 2 (P2) try to find out who gets more pocket money. So, P1 and P2 first read the context-related problem (lines 1-6) and then consider what information they need to complete it. P1 notes that it is necessary to know how many weeks a month has (line 7) but cannot draw on this knowledge (line 9). P2 responds to this and asks how many days there are in a month (line 10). In this section, the lack of knowledge of the dimension of time means that learners are initially unable to carry out any mathematisation (e. g. Klieme, Neubrand & Lübke, 2001).

3.2 Data Collection, Sample, and Analysis

16 Masters students participated in the study, 13 female and three male, aged between 20 and 43. Three students are studying mathematics as a subject, and 13 students only study mathematics as part of a basic education. They only complete one didactic and one scientific module. Five students are working as substitute teachers in primary schools and six as private tutors and, therefore, already have initial teaching experience.

At the time of the survey, the students participated in a mathematics didactics lecture in the master's program. In this lecture, subject-specific didactic principles of context-related problems were taught following participation in the study. Complete data from 16 students is available for analysis.

The data material was analysed as a content-structuring qualitative content analysis (cf. Kuckartz, 2014), which combines structuring and summarizing qualitative content analysis according to Mayring (e. g. 2015) and made an inductive and deductive approach possible. The content-structuring qualitative content analysis, according to Kuckartz (2014), is divided into seven phases:

1. Text work (highlighting noteworthy passages, writing initial memos)
2. Development of main thematic categories (inductive and deductive categorisation)
3. Coding the material (assigning the main thematic categories to the material)
4. Compiling the text passages with the same main category
5. Inductive determination of subcategories in the material
6. Coding the entire material
7. Simple and complex analyses and visualizations

Main thematic categories were developed inductively and deductively, and the sub-categories were determined inductively. The following main categories, in particular, can be identified as the perceived and interpreted aspects relevant to teaching and learning about the processing of context-related problems by learners (research questions 1 and 2):

- Learners' partial skills and abilities,
- Editing process,
- Learner's difficulties.

Perceived and interpreted aspects could not be meaningfully separated based on the data material and were, therefore, summarized. The main categories can be further differentiated into various sub-categories. The main category of partial skills and abilities of the learners can be concretised concerning the aspects of prior knowledge (experiential and factual knowledge; cf. Franke & Ruwisch, 2010), content-related competence in quantities and measurement (e. g. understanding of measurement systems and numbers; cf. KMK, 2022), content-related competence in numbers and operations (ibid.) and reading and writing skills. About the editing process, a distinction can be made between the sub-processes of the modelling cycle of understanding the situation, mathematising, and processing (cf. Klieme et al., 2001). In this regard, the learners' approaches were also considered. The main category of learner´s difficulties includes the sub-categories of factual context, unclear task, learner´s approaches, content-related competences of quantities and measurement (support point concepts and understanding of measurement systems and numbers; cf. KMK, 2022), and numbers and operations (operation concepts; cf. KMK 2022), orientation towards surface features as well as reading and language skills. Difficulties are also expressed in the modelling cycle (understanding the situation, mathematising, and processing; cf. Klieme et

al., 2001). Figure 3 shows the main and sub-categories identified for research questions 1 and 2.

Perceived and interpreted aspects		
Learners' partial skills and abilities	Editing process	Learners' difficulties
• Prior knowledge (cf. Franke & Ruwisch, 2010) • Quantities and measurement (cf. KMK, 2022) • Numbers and operations (cf. KMK, 2022) • Reading and writing skills	• Understanding the situation • Mathematising • Working mathematically (cf. Klieme et al., 2001) Modeling cycle ⟶	• Context • Unclear task • Learners' approaches • Quantities and measurement (cf. KMK, 2022) • Numbers and operations (cf. KMK, 2022) • Reading and language skills • Understanding the situation • Mathematising • Working mathematically (cf. Klieme et al., 2001)

Figure 3: Category system referring to perceived and interpreted aspects.

Concerning further work with the learners and the pre-service teachers' arguments in this regard (research question 2), three main categories can be identified:
- Learner's partial sub-skills and abilities,
- Editing process,
- Variation possibilities.

Regarding the main category of relevant sub-skills and abilities, the sub-categories are the content-related competences of quantities and measurement (e. g. understanding of the measurement system and numbers), numbers and operations (cf. KMK, 2022), and reading and language skills. The sub-processes of the modelling cycle are identified as sub-categories in the main category of the editing process. The structuring aids and support services form a further sub-category. A variation of the task is considered concerning an opening and the degree of difficulty. Figure 4 shows the main and sub-categories identified for research question 3.

Options for actions		
Learners' partial skills and abilities	Editing process	Variation possibilities
• Quantities and measurement (cf. KMK, 2022) • Numbers and operations (cf. KMK, 2022) • Reading and language skills	• Structuring aids and support services • Sub-processes of the modeling cycle (cf. Klieme et al., 2001)	• Opening • Level of difficulty

Figure 4: Category system referring to options for actions.

As a consideration of all sub-categories in detail is not possible in this paper, the focus in the following is exclusively on the dimension quantities and measurement of the sub-category learner´s partial skills and abilities of the main categories perceived and interpreted aspects and options for actions.

3.3 Exemplary Results

This section provides an exemplary detailed insight into the analyses and, thus, the results. In doing so, the focus is on the dimension quantities and measurement, an everyday relevant and, therefore, significant mathematical content (e. g. KMK, 2022). The pocket money problem (Geisen, 2021, p. 120), a task used in the study, relates to the quantities of money and time (see Figure 2). The accompanying video-vignette, which the pre-service teachers analysed and interpreted, shows two pupils trying to determine whether Cem or Lena receives more pocket money (see Table 2).

Concerning the focus placed here, the pre-service teachers perceived the missing units of measurement by one pupil when pupil 2 says, for example "13 per month" (see Table 2 and line 4):

The corresponding units of measurement are not considered in some of the statements of P2.

The pre-service teachers thus classify this as a difficulty for the learners. It was to be expected that difficulties in connection with the handling of money and time would be addressed (cf. Geisen, 2021). In particular, learners must establish a connection between days, weeks, and months and, if necessary, refer to a year, whereby the units are not decadal and are subject to fluctuations (e.g. leap year - typical year; cf. Franke & Ruwisch 2010).

In addition to the difficulties, the pre-service teachers also recognised learners' partial skills and abilities. They interpreted that Pupil 1 understands the difference between month and week by asking the question how many weeks are in a month (see Table 2 and line 7):

P1 already understands the difference between a month and a week.

Concerning options for actions, the pre-service teachers decided, for example, to repeat the non-decadal alliance structures of periods with pupils 1 and 2:

In addition, the non-decadal alliance structures of periods should be repeated.

They justify this based on the lines 4 and 7 to 11 in the transcript excerpt (see Table 2). However, how exactly the pre-service teachers would implement this in lessons with the learners is not explained in detail.

4. Summary and Conclusion

In this paper, the construct of professional vision, which is essential for teaching, was first concretised, and the potential of videos in the relevant research context was highlighted using selected exemplary studies (e.g. Sherin and van Es, 2009) and a competence model (cf. Blömeke et al., 2015). This model conceptualizes perception, interpretation, and decision-making skills as situation-specific skills related to performance and cognitive and affective-motivational dispositions (ibid.).

A research desideratum can be identified in dealing with context-related problems in mathematics lessons, which is about the relationship between the mathematical expertise and mathematics didactic knowledge of teachers, on the one hand, and their behavior in mathematics lessons concerning the use of context-related problems on the other hand (cf.

Verschaffel et al., 1997; Verschaffel et al., 2000). The situation-specific skills of teachers could be of interest in analyzing this relationship and offer a way of approaching it. This was attempted in the study presented here by developing a video instrument with open-ended items. The survey was conducted with 16 pre-service teachers, after which the data matrix was analysed qualitatively.

The pre-service teachers who participated in the survey perceive various aspects relevant to teaching and learning about learners' processing of context-related problems and draw on existing subject-specific didactic knowledge. They perceive partial abilities and skills necessary for the processing and sometimes document these with concrete statements from the learners. They identify sub-steps of the modelling process and recognize various difficulties of the learners, e.g. content-related skills (cf. KMK, 2022). Concerning further work with the learners, various possibilities are mentioned but rarely specified.

The pre-service teachers certainly use their subject-specific and didactic knowledge to identify aspects of the video-vignette relevant to teaching and learning and focus their attention on them (cf. Sherin, 2007; Sherin & van Es, 2009). However, pre-service teachers seem to find concluding difficult (ibid.). According to Seidel and Stürmer (2014), this would suggest that pre-service teachers' knowledge is less coherent and structured and, therefore, cannot yet be applied flexibly. The results can be supported by the study by Seidel et al. (2010), according to which novices tend to merely describe teaching situations due to their lack of knowledge. In contrast, experts tend to explain and predict these situations.

Integrating video-vignettes in university teaching could create more learning opportunities to acquire these skills and help pre-service teachers conclude. It would also be interesting to compare the pre-service teachers' assessments with those of practicing teachers. Further research activities are being planned to make a long-term contribution to research into teacher situation-specific skills about context-related problems.

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Self-Actualization Through Personality Psychology and Goal Setting

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Abstract

Higher education is a mechanism through which academic success, worldly knowledge, and career preparation are prioritized. However, there is a significant void in the area of personal discovery and fulfillment, or, self-actualization. It could be argued that the primary purpose of a college or university should be to help students realize their unique capabilities. In this paper, a course titled Self-Actualization Through Personality Psychology and Goal Setting will be introduced. This seminar course, intended for upperclassmen with advanced English language proficiency, has been taught with favorable results at Kansai Gaidai University in Osaka, Japan. Students of the course learn the content through the medium of English discussions, lectures, group activities, and journal writing. Notable benefits of learning about self-actualization include the ability to fulfill one's potential, become self-confident, authentic, autonomous, compassionate, appreciative, and capable of forming meaningful relationships. In addition, studying personality psychology aids in the appreciation for the uniqueness of individuals, and participating in goal setting can provide students with a precise path toward reaching their chosen objectives. Additionally, this paper will reveal student survey results that highlight the positive outcomes of the course and areas that may need improvement. In sum, students effectively learn language through meaningful communication. Furthermore, students should also be empowered humans who are equipped to become the well-rounded people they truly want to be.

Keywords: Self-Actualization, Personality Psychology, Goal Setting, Purpose, Meaning, Self-Efficacy, English-Language Learners, Higher Education

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Introduction

Universities generally do not focus on the development of authentic well-rounded humans. Instead of concentrating exclusively on academics, scholarly research, assessments with objective measurements, and job preparation, perhaps greater emphasis should be placed on the cultivation of the individual, holistic well-being, and self-actualization. In the spring and fall semesters of 2023 at Kansai Gaidai University in Hirakata, Osaka, Japan, six separate classes of a seminar course titled Self-Actualization through Personality Psychology and Goal Setting were held. Over 100 Upperclassman students chose and completed this elective course. Although the medium of learning was in the students' second language of English, the majority had a high level of English language proficiency and experience studying abroad; therefore, the course remained content-focused rather than language-focused. Course activities included lectures, student presentations, reflective journals, creative writing, and consistent meaningful discussions. Students provided voluntary detailed qualitative survey responses based on their experience of the course. One student reflected, "There are not many opportunities to learn about self-understanding, but I think there are many people who need it." Comments like this illustrate the lack of personal development classes on one hand, and the desire to have them more available on the other.

Self-Actualization

The primary goal of the Self-Actualization course was to give students the awareness of and building blocks toward becoming self-actualized. Abraham Maslow's (1965) definition of self-actualization is to become what one is capable of becoming, become what one is, or reach one's potential. This course's explanation of the concept is to be the best version of one's unique self. The characteristics of self-actualized people include honesty, responsibility, and selflessness. In addition, these individuals tend to choose growth, be intrinsically motivated, listen to their own voices, experience life vividly, and have a precious life mission (Maslow, 1965).

Personality Psychology

The first of 3 main units of the course covered self-discovery. An accessible way for students to understand who they are and how they are different from others is through learning about personality psychology. Students were introduced to MBTI (Myers-Briggs Type Indicator), a personality questionnaire resulting in one of 16 possible 4-letter results indicating a particular personality type. Students were able to learn about their strengths and weaknesses, increase emotional intelligence, develop empathy, create more cohesive relationships, and understand suitable career paths. One student remarked, "MBTI helped me to understand myself and others and now it's kind of my favorite topic in my life… studying MBTI helped me to live more freely."

Within the broad self-discovery topic, the next content studied was the Enneagram. This is another type of personality indicator with 9 possible test results. The Enneagram reveals aspects of a person's fears, desires, and motivations in contrast with MBTI's description of a person's behavior, perception, and decision-making. One student noted, "I made up my mind to follow the Enneagram personal growth recommendation. I decided to remind myself to not expect others to change immediately. What is obvious to you may not be as obvious to them." Personality psychology is not only a tool for self-understanding, but also for having more empathy for those who are different.

These Personality psychology frameworks allowed students to more readily understand and express their unique selves and empathize with the individuality of others, become more creative, and freely choose a more enriching and exciting life (Rogers, 1995). This self-awareness set the foundational stage for the remainder of the course.

Meaning and Purpose

The second unit of the course explored aspects of existentialism. The famous Holocaust survivor and psychiatrist Viktor Frankl lays out varying avenues for individuals to recognize and create profound meaning. In his book, *Man's Search for Meaning,* Frankl (1985) discusses finding meaning in 3 primary forms: a unique life task, selfless love, and courageous suffering. Ultimately, the book argues that individuals have powerful agency in almost any situation. Individuals have the responsibility to give their own unique meanings to their lives.

In addition to a Western perspective of existentialism, the Eastern concept of Japanese Ikigai was reviewed next. Ikigai roughly translates to a reason for being. The Westernized version of this concept provides a framework of combining an individual's passion, mission, vocation, and profession. In other words, one's Ikigai could be revealed by answering what you love, what the world needs, what you can be paid for, and what you are good at (García & Miralles, 2020).

By synthesizing multiple existential philosophies, students were exposed to various methods to discover and live a purposeful life. The culminating activity for the unit was having students create their own personal motto with inspiration from personality psychology, Viktor Frankl, and Ikigai.

Goal Setting

The third and final unit of the course centered around practical strategies for students to achieve their desired outcomes. For long-term goals, the S.M.A.R.T. (Specific, Measurable, Attainable, Relevant, Timely) framework provides a step-by-step structure of important aspects to consider for personal, academic, and career-related goals. By looking at goals with clarity, marking progress, analyzing realistically, questioning motivation, and choosing an optimal deadline, students could experience a thorough process of establishing well-planned objectives.

In contrast to long-term goals, James Clear's book, *Atomic Habits*, detailed frequent, short-term, practical strategies that make a significant impact over time. According to Clear (2018), individuals can make habits obvious, attractive, easy, and satisfying in order to increase the likelihood of sustainable behavior change. Furthermore, students also learned how to reduce or eliminate bad habits.

Through contemplating both goals in the distant future and the smaller actions individuals take each day, students were exposed to a comprehensive approach to how one's habits and decisions of today impact the outcome of one's tomorrow in a very real way. Therefore, students were further empowered to take intentional actions to actually do what they want to do, and be the person they want to be.

Limitations and Future

Despite the initial success of the course, there are several limitations and future considerations. First, minimal data has been collected from the course - only qualitative survey responses from two semesters. Therefore, more detailed and objective data is necessary to form more substantial conclusions. In addition, more research on current higher education required courses as well as the evaluation of the effectiveness of similar self-actualization courses will be useful for a comprehensive future literature review. Furthermore, present in this paper is a clear bias supporting the importance of self-actualization. Therefore, more balanced and objective data with scientific analysis rather than a one-sided examination would increase validity. Finally, there is the question of course replication in different settings. Factors such as appropriacy, relevance in different cultures, and types of universities need to be considered if this course content could be successful within different contexts.

Conclusion

Students in this course learned about personality psychology through MBTI and the Enneagram, meaning and purpose through *Man's Search for Meaning* and Ikigai, and goal setting through S.M.A.R.T. goals and *Atomic Habits* as a way to pursue self-actualization. One student reflected, "I love this course because every lecture was like a therapy session. This class gave me a chance to look back on myself so that I think I could understand myself more than before." Many students gained a deeper and more nuanced self-understanding which is a fundamental aspect of self-actualization and what should be a priority in higher education. Although the topic of personal growth is abstract and irregular, especially for students in Japan using English as a foreign language, the course was embraced. To conclude, university students should be empowered with the knowledge and tools to have agency and autonomy over their lives in pursuit of greater self-efficacy. To that end, higher education should be a place for personal inquiry, holistic development, and an introduction to self-actualization.

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Japanese as a Lingua Franca:
Exploring Communication Dynamics and Pedagogical Insights for L1 Speakers

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Abstract

Lingua franca (LF) communication research is critical to addressing the challenges and opportunities posed by our increasingly interconnected and linguistically diverse world. English is at the forefront of LF scenarios owing to its global prevalence and international significance. In contrast, Japanese as a lingua franca (JLF) has a different dynamic, unfolding primarily within specific communities and contexts. For example, internationalization efforts in Japan's higher education institutions have given rise to intercultural collaborative learning courses and virtual exchanges. These endeavors foster JLF communication between local students (first language speakers; L1 speakers) and Japanese language learners (non-L1 speakers) from overseas partner universities to enrich their communication skills and intercultural competence, thereby bridging the linguistic divide through a common medium of choice. However, research on L1 speakers in the LF paradigm is limited. This study examined the dynamics experienced by Japanese L1 speakers as they adapt, communicate, and perceive their roles and behaviors in a JLF context. Drawing upon online JLF interactions and subsequent interviews, empirical data are presented to highlight the distinctive behaviors and perceptions of Japanese L1 speakers in these situations compared with other L1-speaker contexts. These findings provide valuable insights into their attitudes and strategies for effective communication. Furthermore, this study explores the pedagogical implications of these findings, providing educators with practical insights into preparing L1 students for meaningful engagement in JLF scenarios, thereby promoting intercultural understanding and effective communication.

Keywords: Japanese as a Lingua Franca, First Language Speakers, Intercultural Competence

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Introduction

In an era characterized by globalization and linguistic diversity, it is imperative to understand lingua franca (LF) communication that serves as a bridge allowing people who speak different first languages to communicate effectively. English as a lingua franca (ELF) has been studied extensively in linguistics and language-education fields (Konakahara & Tsuchiya, 2020). This study addresses a unique aspect of this field by examining Japanese as a lingua franca (JLF) (Akiyama, Akashi, & Li, 2020). In contrast to the ubiquitous role of English as a global lingua franca, Japanese has carved out a niche role by becoming prevalent in specific communities and contexts such as academic, business, and community settings. For example, internationalization efforts in the Japanese higher education sector have led to the emergence of intercultural collaborative learning courses (Suematsu, Akiba & Yonezawa, 2019) and virtual exchanges (O'Dowd, 2021). These educational initiatives create a dynamic environment for JLF communication, connecting domestic students (first language speakers; L1 speakers) with Japanese language learners (non-L1 speakers) from international partner universities.

The primary focus of this research is on the underexplored perspective of L1 speakers within the LF paradigm, specifically Japanese L1 speakers. LF communication typically involves both L1 and non-L1 speakers, serving as a bridge across linguistic divisions. However, the roles and experiences of L1 speakers in such settings have not been studied extensively, especially in the JLF context. Mori, Hasegawa, & Mori (2021) provide a comprehensive review of a variety of empirical research interests in the 2010s in Japanese language and the pedagogical challenges and experiences of non-L1 (or as it is referred to, L2) speakers of Japanese. In contrast, research focusing on L1 interlocutors is limited (e.g., Yamada, 2021). This study aims to fill this gap by examining how L1 speakers of Japanese adapt their communication strategies and perceive their roles and behaviors in the LF context.

This study analyzed online JLF interactions and follow-up interviews to provide empirical evidence of the distinctive behaviors and perceptions of Japanese L1 speakers. By comparing these findings with typical L1-speaker scenarios, this research sheds light on the unique strategies and attitudes that L1 speakers employ to communicate effectively in JLF settings. Furthermore, this study extends beyond the theoretical insights into practical applications. It explores the pedagogical implications of these findings and offers educators valuable guidance for preparing L1 students to meaningfully participate in JLF scenarios. This approach enhances intercultural understanding and equips students with the skills necessary for effective meaning negotiations in a linguistically diverse world. This study contributes to the broader discourse on LF communication by providing a nuanced understanding of the role of L1 speakers, specifically in the JLF context.

Study Context

As defined by Knight (2004, 2008), Internationalization of Higher Education (IoHE) is the incorporation of an international, intercultural, or global dimension into the nature and delivery of post-secondary education. It rests on two main pillars: internationalization abroad, commonly known as studying abroad, and internationalization at home (IaH). The concept of the IaH is broad. Beelen and Jones (2015) defined it as "the purposeful integration of international and intercultural dimensions into the formal and informal curriculum for all students within domestic learning environments (p. 69)." The push for IaH has become prominent in Japanese universities. A key aspect of this movement is the integration of

International Collaborative Learning (ICL) courses into academic curricula, which has received considerable attention. In addition, the adoption of virtual exchange (VE) activities has increased rapidly, especially owing to the global pandemic. Within the ICL and VE, communication facilitated by ELF and JLF can occur in the context of Japanese higher education. Our study examines the latter, focusing on the JLF as a medium for ICL courses and VE initiatives within an educational and intercultural framework.

For clarity, this study uses the term "L1 speakers" to refer to what is referred to elsewhere as native speakers, who are typically domestic Japanese students enrolled in Japanese universities. Conversely, "non-L1 speakers" refers to learners of Japanese at various levels of proficiency, be they second, third, or even fourth language learners, who generally come to Japan on a temporary basis, whether physically or virtually, either admitted as regular international students or as international students from our partner institutions around the world. Both L1 and non-L1 speakers are potential participants in JLF-mediated ICL courses and VE activities. ICL includes an educational environment in which domestic and international students benefit by taking advantage of learning opportunities to complete assigned tasks and overcoming potential linguistic and cultural barriers during authentic communication and meaningful interactions (Sakamoto, Horie, & Yonezawa, 2017). A VE is often designed with a similar objective.

Drawing on Seidlhofer's (2011) and Jenkins' (2009) definitions of ELF, we adopt the viewpoint that LF refers to the use of a common language for communication between individuals who do not share the same first language. In this light, L1 speakers are part of the dialogue in LF communication. It is important to emphasize that JLF communication is not limited to non-L1 Japanese speakers as it actively includes L1 speakers. In the domain of JLF, we encounter two different scenarios: those involving only non-L1 speakers, which we refer to as "non-L1 situations," and those involving both L1 and non-L1 speakers, which we refer to as "L1/non-L1 mixed situations." These are contrasted with "L1 situations," in which communication occurs exclusively between L1 speakers. By recognizing, analyzing, and comparing these different scenarios, we can better understand the dynamics and nuances of the JLF.

Research Objectives and Setting

As the importance of LF communication continues to grow, it has become apparent that there is a significant research gap, particularly regarding L1 speakers' experiences and roles in these settings. Predominant research has focused on how non-L1 speakers adapt to LF use. However, L1 speakers' narratives and experiences in this context have not been thoroughly investigated. Our research aims to fill this gap by investigating how Japanese L1 speakers maneuver through interactions using their L1 in an LF context. We are particularly interested in understanding how L1 speakers modify their language use to accommodate interlocutors from different linguistic backgrounds and how they perceive their own roles during LF exchanges.

The setting for our research was the Japan-US Online Conversation Project, an initiative that spanned two years between 2020 and 2021, a global transitional period that necessitated new approaches to intercultural communication and education. Participants were recruited voluntarily from one Japanese university and two US universities. This study adhered to the ethical guidelines for research involving human subjects. The participants were informed of the purpose of the study and their rights, including the right to withdraw at any time. Consent

was obtained to record and transcribe the interactions and interviews. The rationale and design of this project are described in detail in Takei, Fujiwara, & Shimojo (2021).

As part of this project, we implemented a virtual version of the JLF-mediated ICL courses and a pseudo-ICL experimental venue to collect data on intercultural interactions. Tables 1 and 2 below show the number of participating students(39) and groups (25) organized into three types of interactional situations for comparison during the two-year project. The groups were structured as follows: an L1-only group consisting solely of L1 Japanese speakers at a Japanese university, a non-L1-only group consisting entirely of non-L1 speakers from two US universities, and an L1/non-L1 mixed group including both L1 and non-L1 speakers. These configurations allowed a rich analysis of the communication dynamics in different LF scenarios.

	2020	2021	Total
JP (L1)	10	6	16
US (non-L1)	15	8	23
Total	25	14	**39**

Table 1: Number of project participants

	2020	2021	Total
L1 situation	2	2	4
Non-L1 situation	5	3	8
L1/non-L1 mixed situation	8	5	13
Total	15	10	**25**

Table 2: Number of groups organized in the project

Methodology

This study used a mixed-methods approach to investigate the dynamics of JLF, focusing on the behavior and perceptions of Japanese L1 speakers in LF contexts. First, we analyzed real-time online interactions in a JLF setting, and then conducted follow-up interviews with Japanese L1 speakers as well as non-L1 speakers to collect and analyze quantitative and qualitative data, respectively. Using discourse analysis, we examined online interactions to understand the communicative flow and nuances of the JLF. We then analyzed the interviews, which provided insights into the participants' personal experiences and strategies used during the interactions. This mixed-methods approach was instrumental in capturing a multifaceted view of experiences and communicative tactics within the JLF context, providing a deep understanding of the intricacies involved in such interactions.

1. Discourse Analysis of Interactions

The primary data source is the recorded online interactions with Japanese L1 speakers and non-L1 Japanese language learners in a pseudo-ICL setting. The task given to a group of three participants was to generate three ideas for possible online intercultural exchange activities during the pandemic-induced period of immobility. Each session began with a brief introduction by a practitioner researcher, followed by a 10-minute discussion and brief presentation. The session concluded with a brief wrap-up and questions and comments from the practitioner researcher to create a quasi-project-based learning setting. The use of Japanese as the contact language was encouraged, but the use of other languages (i.e., English) was not explicitly prohibited and was left to participants' choice. The session was

audiovisually recorded using Zoom. The interactions were transcribed verbatim for subsequent discourse analysis.

There are many facets of the spoken discourse study, as it consists of a sequence of utterances of different types and is characterized by turn-taking between speakers. This study focuses on the syntactic types of utterances interwoven throughout discourse. By examining how different syntactic structures are used and distributed across speakers' turns, we gain insights into the mechanics of communication in the JLF context. This analysis of utterance types can reveal the patterns, preferences, and adjustments made by speakers during LF interactions.

Following Usami (2019), our analysis defined an utterance as roughly equivalent to a sentence. This delineation allows us to systematically categorize and analyze the structure of spoken language as it naturally occurs in conversation, providing a clear framework for analyzing and understanding the components of discourse in a JLF setting.

According to Usami's (2019) Basic Transcription System for Japanese (BTSJ) guidelines, five main utterance types with syntactic categories were found in discourse analysis.

I.   *Complete sentence utterance*: This type has the traditional structure of subject, object, and predicate with the occasional omission of an element that can be inferred from the context.

II. *Inverted sentence utterance*: In this type of utterance, the elements of the sentence are arranged in a nonstandard order, triggered by emphasis or addition.

III. *Incomplete sentence utterance*: The sentence is left incomplete. In Japanese, it is common for the speaker to skip the implied main clause, especially after a subordinate clause, leaving the listener to infer the conclusion.

IV. *Reactive response utterance*: A brief and immediate response that may indicate agreement, convey emotional reactions, or signal active listening and encouragement to the speaker to continue.

V.   *One-word utterance*: As the name suggests, this type consists of a single word, often reflecting the repetition or mirroring of a word or phrase from the speaker's previous utterance.

These categorizations of utterances may help researchers analyze and understand the finer details of how speakers interact, construct their thoughts, and respond to each other within a conversation.

2. Content Analysis of Interviews

Following these interactions, post-interaction interviews were conducted using Zoom with both the L1 and non-L1 participants. These semi-structured interviews aimed to gain insight into their perceptions, attitudes, and experiences while communicating in the JLF context. The interviews were recorded, transcribed, and translated, where necessary, to ensure the accuracy of the participants' perspectives.

Analysis Results

We descriptively analyzed our data and compiled the frequencies of the different types of utterances observed in our discourse. The results show that "reactive response" utterances is the most frequently used syntactic utterance type, followed by "complete sentence," "incomplete sentence," and "one-word" utterances. The utterance, "inverted sentence," is the least used by participants. It is particularly noteworthy that this frequency pattern holds true for all three groups that we studied: the L1, non-L1, and L1/non-L1 mixed groups.

We observed some clear differences when we examined the specific proportions of utterance types within each group, as shown in Figure 1. The pie chart for the L1-only group shows a higher proportion of the non-standard types of "incomplete sentences," "one-word," and "inverted sentences" compared to the other groups. This striking pattern requires further investigation.
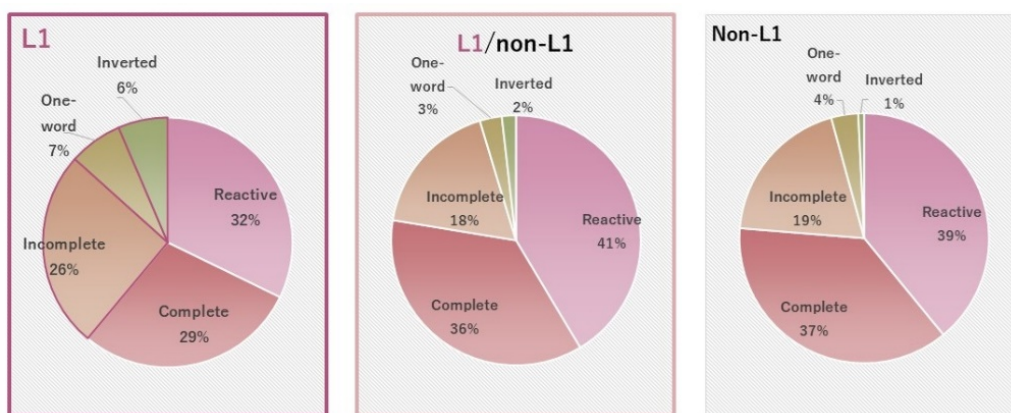
Figure 1: Utterance type proportion in three situations

As our research focused on the behavior and perspectives of L1 speakers, it was essential to examine their behavior in different settings. We chose to compare the frequency of "complete sentences" used by L1 speakers when they are among their L1 peers with its frequency when they are in a mixed group with non-L1 speakers. This provides valuable insights into how L1 speakers adjust their speech in the presence of non-L1 speakers in an LF context.
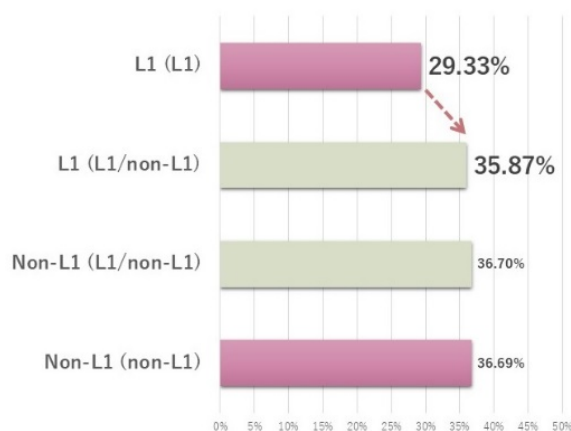
Figure 2: Comparative proportion of complete sentence utterances by L1 and non-L1

The bar chart in Figure 2 shows the comparative proportions of "complete sentence" utterances produced by 11 L1 speakers versus 21 non-L1 speakers who participated in the

two group settings. It is clear from the visual data that the 11 L1 speakers used "complete sentence" utterances more frequently when they are in a mixed group with non-L1 speakers. This suggests that L1 speakers consciously or unconsciously modify their speech in linguistically diverse environments to facilitate clearer communication. However, the proportion of "complete sentence" utterances by non-L1 speakers remained relatively stable, regardless of group composition. The bar chart represents group averages and provides a broad overview. Table 3 allows a granular analysis by indicating the individual data for each of the 11 L1 speakers and highlights the variability and personal strategies within the L1 speaker group.

Participant ID	L1		L1/non-L1 mixed		difference
	ratio	frequency	ratio	frequency	
JP12	25.00%	7/28	59.26%	16/27	34.26%
JP11	9.52%	4/42	36.36%	24/66	26.84%
JP02	22.95%	14/61	39.22%	20/51	16.27%
JP01	39.08%	34/87	52.70%	39/74	13.62%
JP05	21.92%	16/73	29.09%	16/55	7.17%
JP04	28.36%	19/67	34.78%	40/115	6.42%
JP03a	33.33%	5/15	33.33%	16/48	0.00%
JP03b	27.50%	11/40	24.59%	15/61	-2.91%
JP15	25.00%	4/16	18.52%	5/27	-6.48%
JP14	40.00%	22/55	29.58%	21/71	-10.42%
JP13	50.00%	9/18	37.18%	29/78	-12.82%
Average	**29.33%**		**35.87%**		**6.54%**

Table 3: Changes of "complete sentence" utterance proportion by 11 L1 participants

This chart provides a detailed look at the behavior of 11 Japanese L1 speakers and how they adapt their use of "complete sentence" utterances in different group settings: with L1-only speakers and with a mix of L1 and non-L1 speakers. The data indicate that "complete sentence" utterances, which are syntactically the most standard and complete form of the five utterance types, are used differently by L1 participants in mixed-group situations compared to L1-only situations. This variability is illustrated by the participants' unique IDs, with the order reflecting an increase or decrease in the use of "complete sentences" in mixed-group situations, ranging from 34.26% to -12.82%. With an average increase of 6.54% in the use of "complete sentences," considerable variation was observed among L1 speakers. The top four participants (pink) showed an increase of more than 13% in their use of "complete sentences." They were characterized by their previous experiences with intercultural exchange. By contrast, the bottom three participants (indicated in green) showed a decrease and were inexperienced in such exchanges.

This distinction between experienced and inexperienced participants demonstrates how intercultural experiences influence language adaptation in LF settings. A further analysis of utterance type distribution between the two situations, focused on the four experienced students, provides more nuanced insights into the adaptive strategies of L1 speakers.

The four bar graphs in Figure 3 illustrate the changes in the distribution of utterance types of the four experienced participants (JP12, JP11, JP02, and JP01) as they moved from the L1-only to the L1/non-L1 mixed situations. For JP12 and JP11, the proportion of complete sentences increased dramatically, indicating a clear shift in their communication style when non-L1 speakers were part of the conversation. This shift also resulted in a corresponding decrease in the frequency of other utterance types, suggesting that a more elaborate or formal mode of communication may be used in a mixed setting. Conversely, JP02 and JP01 demonstrate a more balanced approach. While there was an increase in the frequency of "complete sentences," they maintained or even increased their use of "reactive response" utterances. This may indicate a strategy for maintaining engagement, providing support to non-L1 speakers, ensuring comprehension, and encouraging continued dialogue. These variations in linguistic adjustment among experienced L1 speakers underscore their adaptability and responsiveness to the communicative needs of their interlocutors in LF environments. These findings contribute to our understanding of the complexities and dynamics of intercultural communication.
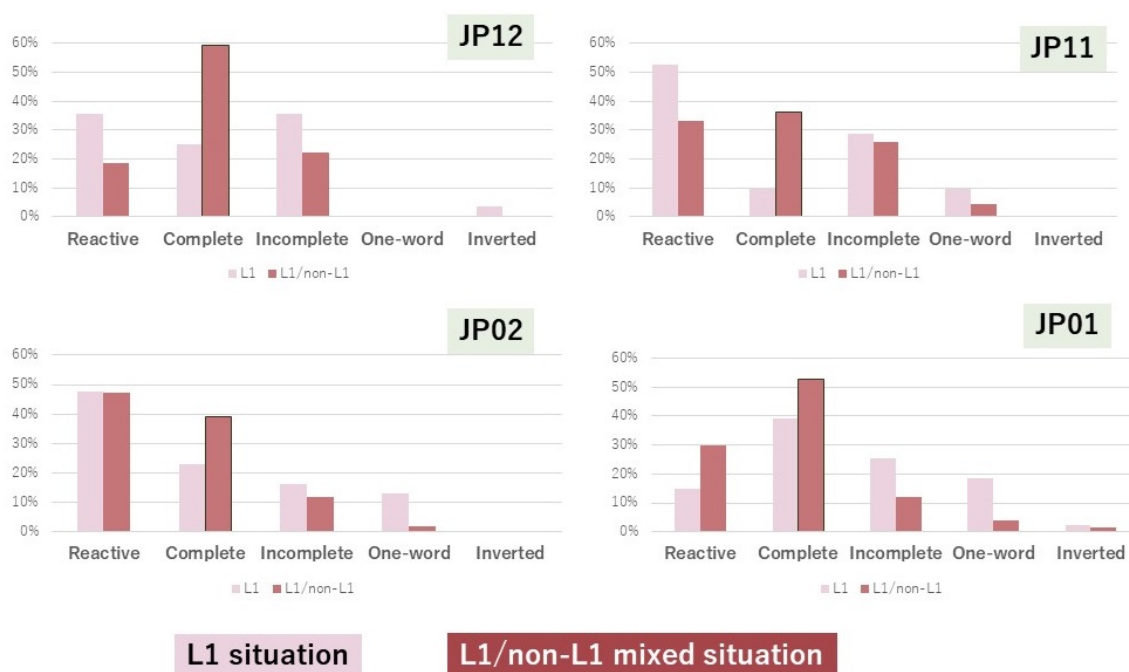
Figure 3: Changes in utterance type distribution of 4 participants

A mixed-methods approach was used to enrich the research by bridging quantitative data from discourse analysis with qualitative insights from interviews. They help uncover participants' attitudes, level of awareness or lack thereof, and self-perceived behaviors in the context of JLF interactions. This combination allowed for a more comprehensive examination of the relationship between the observed linguistic behaviors and participants' internal cognitive and affective processes.

Both JP12 and JP11 noticeably increased their use of "complete sentence" utterances when interacting with non-L1 speakers. This behavior is consistent with the conscious efforts described in the interviews to increase clarity and comprehensibility in communication. JP12 referred to her adherence to the principles of "Plain Japanese," a set of guidelines she was introduced to in her Japanese as a Foreign Language class that aims to make language clearer and more straightforward for non-L1 speakers living in Japan (Iori, 2016). This method

involves expressing oneself in a "clear, concise, and complete" manner (Yoshikai, 2020), which influenced her communication style. On the contrary, JP11 showed a heightened awareness of her role in conversations. She made conscious efforts to lead and contribute to the dialogue while simultaneously monitoring comprehension, particularly with her non-L1 partners. This suggests a level of metacommunication in which JP11 was engaged in conversation and thought about how her speech was being received and understood. The self-awareness and strategies reported by JP12 and JP11 during the interviews were reflected in the linguistic patterns observed in discourse analysis. Their efforts to adapt their language use to facilitate effective communication with non-L1 speakers reflect the skills and awareness that can be fostered through intercultural experience and language education.

JP02's approach during the interaction reflects a conscious effort to maintain a standard form of Japanese, which she refers to as "avoiding broken Japanese." This indicates the desire to use a more formally structured language, possibly to ensure clarity and ease of understanding for non-L1 speakers. Her strategy also includes actively engaging her non-L1 partner by asking questions, thereby assuming the role of a listener and speaker. This reflects a dynamic and interactive communication style that encourages participation by all parties. JP01's strategy during the interaction was to use polite Japanese forms, which inherently resulted in complete sentences. Her awareness of her speech style is interesting because it suggests a conscious decision to communicate in a way that may be more accessible to non-L1 speakers. In addition, she demonstrated patience by allowing her partners to complete their utterances without interruption and then providing reactive responses. This is particularly revealing, as it may differ from the norm in L1 Japanese interactions, where inter-utterance reactive responses are common. As revealed in the interviews, the perceived behaviors of JP02 and JP01 were consistent with the linguistic patterns observed in the discourse analysis. Their frequent use of complete sentences and reactive responses suggests conscious adaptation of their communicative styles to facilitate more effective LF interactions.

Findings and Pedagogical Implications

This study sheds light on the intricate dynamics of communication that occur when L1 Japanese speakers engage in dialogue in a JLF environment, highlighting how the types of utterances change depending on the context of their interaction. The study of four students with backgrounds in intercultural exchanges was particularly interesting. These students made deliberate adjustments to their language, as evidenced by their increased use of "complete sentence" utterances. This linguistic strategy aims to facilitate better understanding among non-L1 speakers, thereby improving the clarity of communication. Semi-structured follow-up interviews provided further evidence of these deliberate adaptations in language use and shed light on the strategic approaches these L1 speakers used to fulfill their perceived responsibilities in the conversation. These responsibilities included moving the interaction forward and ensuring that it was accessible to their non-L1 partners, and that their comprehension was constantly assessed and accommodated. Such findings underscore the role of L1 speakers in JLF contexts, not only as participants but also as active facilitators of communication, attuned to the needs of their interlocutors and the demands of a smooth and intelligible exchange.

The results of this study provide valuable insights into educational practices, particularly intercultural education. This evidence suggests a significant role for L1 speakers in successful JLF interactions. Recognizing this, there is a clear opportunity to develop new pedagogical strategies that prepare L1 speakers for their unique roles in JLF scenarios. The goal is to

equip L1 speakers with the linguistic skills, cultural sensitivity, and awareness required to participate effectively and empathetically in conversations with non-L1 speakers. This approach advocates a more proactive role for L1 speakers in intercultural settings, encouraging them to adopt behaviors and strategies that promote mutual understanding and engagement.

The practical application of the study's findings to classroom activities aimed to improve students' readiness for LF interactions. Understanding the natural flow of L1speakers' language interactions is critical for effective linguistic adjustment. L1 communication often occurs unconsciously, without active thoughts about the structure or completeness of utterances. The pie chart below, reflecting L1 interactions from conversations collected in a 2023 course at the author's university, shows that complete sentence utterances comprise only one-third (34%) of utterances, which is consistent with the L1 data in this study. Other types of utterances, whether fragmented or non-standard, also play a significant role in the fluid negotiation of meaning in Japanese, and they do so without causing serious communication problems. These data points, collected from L1 speakers in class and objectively analyzed, indicated increased awareness of students' own language and cultural norms. Such awareness is crucial not only for understanding one's own linguistic behavior, but also for appreciating and adapting to the communication styles of speakers from different linguistic and cultural backgrounds.
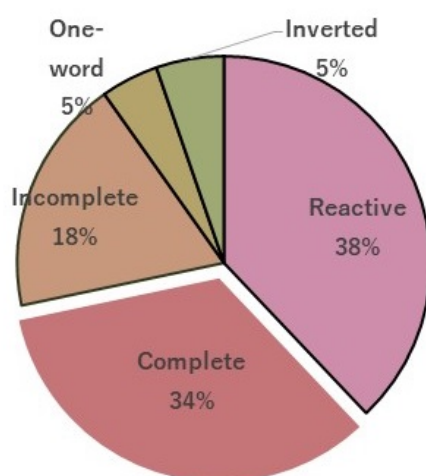
Figure 4: L1 utterance type distribution from a 2023 class

Knowledge of the intrinsic patterns of Japanese L1 communication enables students to interpret the behaviors they encounter more accurately and refine their attitudes toward linguistic and cultural differences. It also equips them with the skills to sensitively decide when to make linguistic modifications or maintain their natural communication style, ultimately leading to more effective and adaptive intercultural interactions, as pointed out by Byram (1997). For L1 speakers, JLF interactions typically involve minimal exposure to the target language, often English. However, as Takei (2023) notes, JLF-mediated exchange is inherently reciprocal. They offer non-L1 speakers the opportunity to engage with L1 Japanese, while L1 speakers gain the opportunity to increase their language awareness and experience the dynamic cycle of "knowledge-attitude-skill."

Conclusion and Future Directions

This study highlights the significant, yet often underestimated role of L1 speakers in LF settings. By examining the distribution of utterance types in Japanese L1 communication, this study elucidates the intricate dynamics that L1 speakers navigate during such interactions. Understanding these dynamics is critical for fostering effective intercultural communication and collaboration in our globalized world, where LF interactions are becoming the norm. To improve the effectiveness of these communications, this study suggests that an L1 interaction analysis be incorporated into intercultural education programs. This inclusion aims to raise L1 speakers' awareness of their communication styles and how non-L1 speakers perceive and understand them.

While this study provides valuable insights, it also acknowledges the limitations of its scope, which focused solely on the distribution of utterance types. Future research could extend these findings by exploring other aspects of linguistic phenomena in order to provide a more comprehensive understanding. Indeed, there are several intriguing directions for future research informed by insights gained from L1 speakers' experiences during interviews. One promising area of study is the broader application of discourse analysis, particularly the study of phenomena such as "aizuchi." These short reactive utterances, which are a staple of Japanese L1 communication, seem to pose a challenge in LF interactions, where non-L1 speakers may not use them often, causing discomfort or anxiety for L1 speakers. Some L1 speakers adapt by adjusting their use of aizuchi to better match the communicative styles of non-L1 speakers. The challenges L1 speakers face in adapting their language, such as simplifying or rephrasing to a more accessible vocabulary and determining the appropriate timing and audience for such adaptations, are also crucial areas for further research. These accommodations require a delicate balance between linguistic skills and cultural sensitivity, and understanding the decision-making process behind them can inform language teaching practices.

Finally, maintaining the authenticity and fluidity of L1 communication, while facilitating smooth and effective LF interactions, is crucial. This balance is essential for authentic and effective intercultural dialogue, and embodies a sophisticated blend of linguistic proficiency, cultural insight, and flexibility. Several L1 participants expressed pressure and discomfort when adapting to non-L1 norms. In relation to this issue of balance, investigating how non-L1 speakers of various proficiency levels perceive adapted LF norms deliberately employed by L1 speakers represents a challenging but fascinating area for future research.

Acknowledgements

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Age Limit for Teachers' Recruitment in Moroccan Public Schools: Investigation of Teachers and Student Teachers' Perspectives About the Policy

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Abstract

In November 2021, the Moroccan government launched a new educational policy restricting the age for teachers' recruitment in Moroccan public schools, bringing the age down to 30, which caused a lot of controversy and disagreements among Moroccan student teachers. The aim of this study was to investigate teachers from Moroccan public primary and secondary schools, as well as student teachers' perspectives regarding this policy, including their understanding of and their support for the policy, their opinions about the aims of the policy, and finally their viewpoints regarding the influence of the policy on teaching job opportunities. The study used a mixed methods research design, through an online descriptive survey questionnaire containing closed-ended questions and one open-ended question, which was distributed through social network. 90 responses from student teachers and 63 responses from teachers were received. Answers showed that both student teachers and teachers want to see a better education system and a better teaching quality all over the country, no matter the difference in their opinions and ideas. The majority of student teachers, regardless of their age, as well as teachers, do not really support the policy and do not believe in its aims as highlighted by the government. However, even if minor, there are also some positive viewpoints regarding the policy. More particularly, teachers' responses are slightly more positive compared to student teachers' opinions.

Keywords: Age Limit, Teacher Recruitment, Student Teachers, Teachers, Public Schools, Morocco

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Introduction

Education and training has known significant setbacks in Morocco, therefore, the Supreme Council for Education, Training, and Scientific Research was established, calling for a number of immediate and practical reforms to the country's educational and training systems. Recent initiatives by the Ministry of Education and Training, to address short- and long-term inequalities in the educational system, have been summarized in a strategic report called Vision 2030, which is spanned over 15 years, from 2015 to 2030. This strategic plan determines the priorities for raising the quality of education, vocational training, and scientific research, and targets issues concerning students' poor academic performance and the disconnection between their education and the demands of the labor market. Additionally, it advocates equity and equality in education (Dardary et al., 2021; Smirkou, 2018).

The Moroccan educational system was found to have severe deficiencies that need correction. The strategic vision was developed to sustain significant changes in the country's education system over the course of a multi-level reform process (Morchid, 2020). A number of decisions taken by the Ministry of Education followed the implementation of this strategic vision. Among them are the changes of conditions to recruit teachers in public schools of Morocco. The Ministry of Education had a total recruiting target of 15,000 teachers and 2,000 administrative staff under the 2022 government budget (Toutate, 2021).

The Minister of Education stated that Morocco would implement a new system to control the teaching profession starting from September 2022 (El Attaq, 2021). The pre-selection requirements for the Regional Academy of Education and Training exam are designed to improve teaching by fostering new careers and developing the teaching staff competency. The goal of such initiatives is to improve the educational system and give students needed skills to support national development. In addition to raising teaching standards, the goal is to promote public education (Jaouadi, 2021).

On November 19, 2021, the Minister of National Education, Preschool, and Sports announced the policy. The new age restriction was reduced from 40–45 years in prior recruitment to 30 years of age. The Minister clarifies that the new hiring process is more concerned with the interests of the Moroccan student. The primary objective of the new limits, according to the ministry, is to ensure that new candidates have the necessary training, energy, and passion to offer their students high-quality education (Toutate, 2021).

Many applicants for teaching positions considered the new age limit as discriminatory. Because there will be exclusion of a significant number of diploma holders from the employment market; many have firmly rejected the new recruitment conditions (Toutate, 2021). Moroccans strongly opposed the ministry's most recent reforms, with many objecting to the new age restriction that prevents those over 30 from pursuing a job in public schools. However, the Minister insisted that the reform is a tough but important step forward for Morocco's educational system (El Attaq, 2021). Age restrictions sparked considerable outrage, and many protested in the streets within different cities, to voice their opposition to the ministry's new recruitment regulations (Jaouadi, 2021).

Literature Review

Age Limit Criterion

Breda and Schoenmaekers (2006) emphasized that age criteria are popular among policymakers because they offer a clear and ostensibly objective standard. The authors go on to say that, age restrictions are not as innocent as they seem; the age thresholds tend to be arbitrary, and age distinctions are sometimes meaningless. The authors' study concluded that policymakers should take into consideration gradually replacing age limitations with other criteria. Age can lead to unreasonable forms of discrimination. The potential of unfair treatment towards people who fall into a different age group exists when using age criteria for entitlements. Age can be a helpful tool for allocating scarce resources. Age restrictions also evade the need for costly and administratively onerous procedures. Due to the difficulty in defining a suitable age threshold, legislators frequently rely on a reference or conventional age. Imposing a criterion could result in significant treatment variations between two individuals with slightly different ages, even by one day only. Lastly, age limitations are also strict; many do not adapt to the social context (Breda & Schoenmaekers, 2006).

Age Limit for Teachers' Recruitment Around the World

While several countries do not adopt any age limit policy for teachers, others consider dissimilar numbers for implementing age limit policies. For instance, Rajaeenia et al. (2018) emphasized that their country Iran considers an age limit for hiring pre-service teachers, unlike several countries including Germany, Japan, Singapore, and the US.

Another research conducted by Jo (2008) highlighted that in South Korea, a 40-year-old age restriction is occasionally being applied for teachers' recruitment. Azizah et al. (2022) stated that in Indonesia, the age restriction to be appointed as a civil servant teacher is 35 years old. In Pakistan, the age limit for hiring female teachers was waived (Behlol et al., 2014). Another study carried out in India emphasized the need for a modification of the upper age limit for female candidates aspiring to become schoolteachers, to a minimum of 45 years old (Nuna, 2016).

A research conducted by Rathee and Jathol (2013) regarding the Teacher Eligibility Test in India, found that 40% of student teachers supported setting an age restriction for taking the test, while the majority of them (60%) opposed limiting the access to a specific age. Yadav (2019) also conducted a research regarding the Teacher Eligibility Test in India. Findings showed that a total percentage of 53% of respondents support the adoption of an age limit while 40% oppose it. As a conclusion, the author pointed out the importance of setting an age restriction, and suggested that the government of India needs to revise its policy on the Teaching Eligibility Test criteria and standards, because not anyone who failed in other professions can be employed as a teacher (Yadav, 2019).

Regarding English speakers teaching in East Asian language programs, the English Program in Korea and the Japan Exchange and Teaching Program have no age restrictions on applicants, although Hong Kong's Native English Teachers Scheme does. Japan Exchange and Teaching Program tries to draw in as many young participants as it can (Jeon, 2020). However, the answer to some issues in schools may occasionally be to hire older teachers. The study conducted by Madhuwanthi (2016) highlighted several factors for employing elderly teachers in private sector schools, such as the dearth of qualified English-medium

teachers, the non-availability of teachers with adequate pedagogical knowledge, the high rate of job turnover among young teachers, the competence of elderly teachers, and their unique expertise as administrators, mentors, and keepers of school culture.

Finally, one study conducted in Canada showed that teachers' motivation varies throughout time. By age group, entry motivation and teacher motivation differ greatly. Regarding entry motivations, the research revealed that teachers of 35 years and older valued "searching for a career change" substantially more than teachers of ages between 22 and 24. As for practice motivations, the survey showed that teachers of 35 years and older gave "the quality of professional life", a substantially higher priority than teachers aged between 22 and 24 years (Hellsten & Prytula, 2011). This shows that age might play an important role in determining teachers' motivation, which could be a reason for policy makers to adopt age limit policies for teachers' recruitment.

Problem Statement and Significance of the Study

Age limit policies are generally problematic all over the world. In addition, concerned people themselves have opposing views on whether to support such policies. Literature regarding this matter is not abundant, specifically in Morocco. Most studies found around the world, either write about age limit for teachers' recruitment theoretically, or investigate empirically about age restriction policies as part of the whole process and conditions for teachers' recruitment.

Thus, conducting a study focused on the perspectives regarding the age limit policy only, would add a new perspective to previous literature. More particularly, the current study investigates about a new educational policy and presents new insights in the Moroccan context.

Operational Definitions of Terms Used

Student teachers: in this paper, they refer to students studying in bachelor degree or holding their bachelor degree from public faculties as well as from public institutes of education in Morocco, and intending to become teachers in Moroccan schools. They represent both eligible and non-eligible applicants to pass the national examination for teachers' recruitment in Moroccan public schools.

Teachers: teachers in primary, secondary junior high and secondary senior high public schools of Morocco.

Objectives of the Study and Research Questions

The objective is to study teachers and student teachers' perspectives regarding age limit policy in Morocco. The central question can be presented as follows: What are the perspectives of teachers and student teachers in the public sector, regarding the age limit policy?

The overarching question can be framed into the following sub-questions:
1. To what extent do teachers and student teachers understand the policy?
2. To what extent do teachers and student teachers support the policy?
3. To what extent do teachers and student teachers agree with the aims of the policy?

4. What are the teachers and student teachers' opinions regarding the influence of the policy on teaching job opportunities?

Research Methodology

Research design and method: The study represents a mixed methods research design. The descriptive research method was used. Quantitative data and qualitative responses were collected.

Population: Students studying in bachelor degree or holding their bachelor degree from public faculties and public institutes of education in Morocco, aiming to become teachers in Moroccan schools, as well as teachers in primary, secondary junior high and secondary senior high public schools of Morocco.

Sample: The participants were contacted online following purposive sampling. The sample is composed of bachelor degree students or holders, from Moroccan public faculties and public education institutes, and who are willing to become teachers in Moroccan schools. The sample also includes teachers from Moroccan public primary and secondary schools. 153 questionnaires were received in total, including 90 responses from student teachers and 63 responses from teachers.

Tool used: An online mixed questionnaire was used. Two slightly different questionnaires were developed; one intended for teachers and one for student teachers, where questions were adapted to each category of the participants. Each questionnaire includes four parts, starting with demographic information, and the three remaining parts are about student teachers and teachers' perspectives regarding the policy, including first, the understanding of and support for the policy, second, opinions regarding the aims of the policy, and third, viewpoints regarding the influence of the policy on teaching job opportunities. In each section of these three parts, there are close-ended questions for quantitative data collection. At the end of each questionnaire, there is one optional open-ended question to give voice to participants to express their ideas and opinions freely. Data was gathered online through social network. The questionnaire was translated into French and Arabic to better fit the Moroccan context. The responses were collected using Google Forms and downloaded in Excel format. Information was retranslated from Arabic and French into English. The table was exported to SPSS for data analysis and presentation of graphs.

Findings and Discussion

There are two kinds of questionnaires, one intended for student teachers and one for teachers. In each questionnaire, there are two components, one for the quantitative part and the other one for the qualitative question.

1. Student Teachers' Questionnaire: Quantitative Data

The questionnaire was divided into four parts. First, demographic questions, including gender, level of study, and age. Second, the understanding of and support for the policy, including four items. Third, opinions about the aim of the policy; including four items, presented by a 5-point Likert scale, ranging from "strongly agree" to "strongly disagree". Finally, opinions about the influence of the policy on future teaching job opportunities, using three items.

1.1. Demographic Information
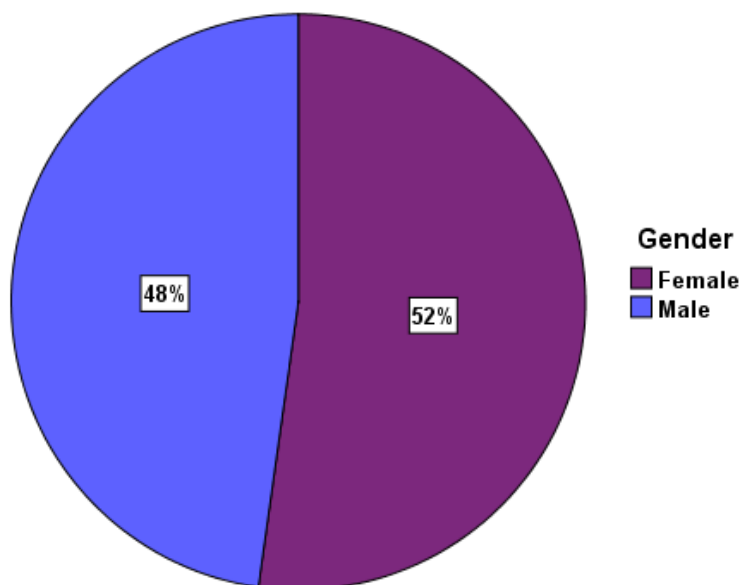
Figure 1: Student teachers' gender

The percentages show balanced propotions for male and female student teachers. Females represent a slightly higher propotion of 52% compared to 48% of male student teachers.
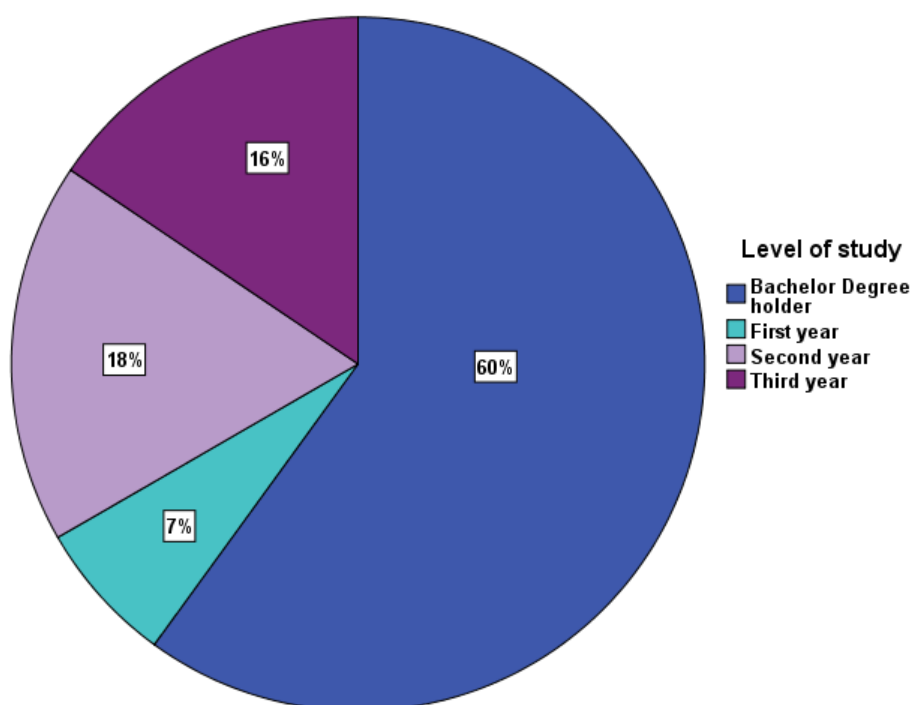
Figure 2: Student teachers' level of study

The pie chart shows that most respodents are bachelor degree holders (60%), followed by students in their second year of bachelor studies (18%). 16% of students are in their third year of bachelor and only 7% are in their first year of bachelor studies.
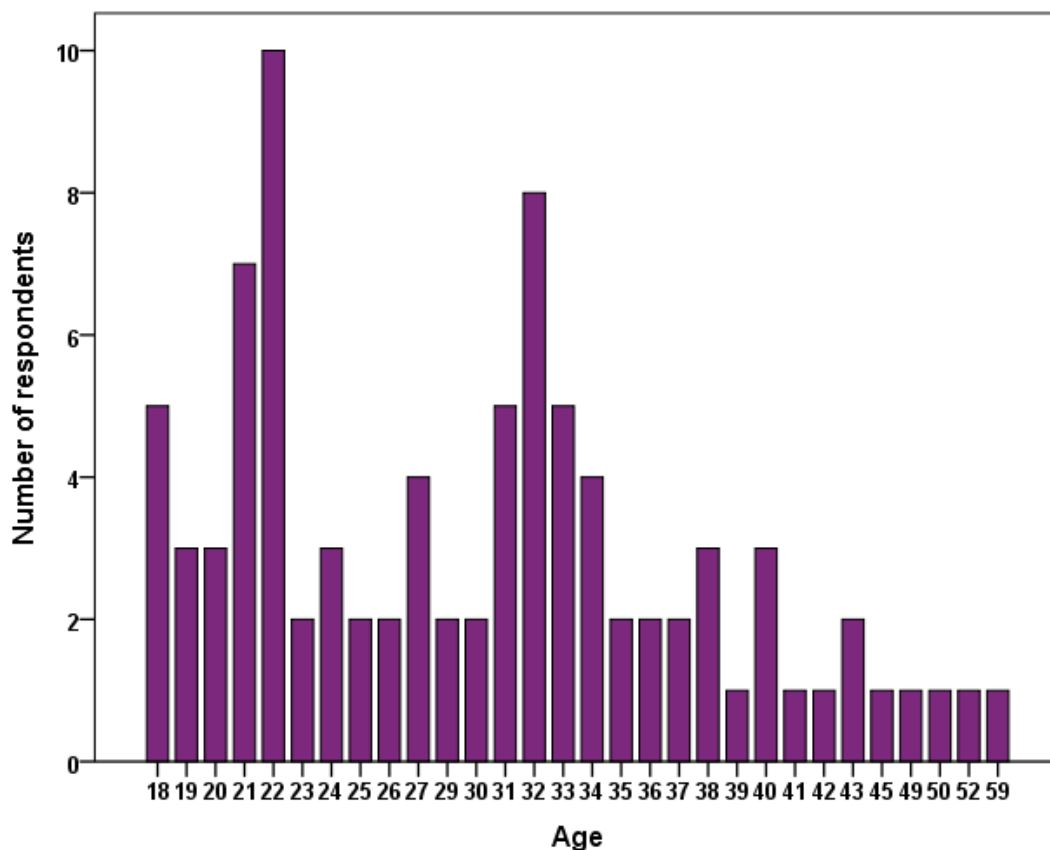
Figure 3: Student teachers' age

The mean of age variable is 29.72. Ages of respondents vary from 18 to 59 years old. The majority of the participants are 22 years old, followed by student teachers' age of 32 and 21 years old, respectively.

1.2. Knowledge About, Understanding of, and Support for Policy
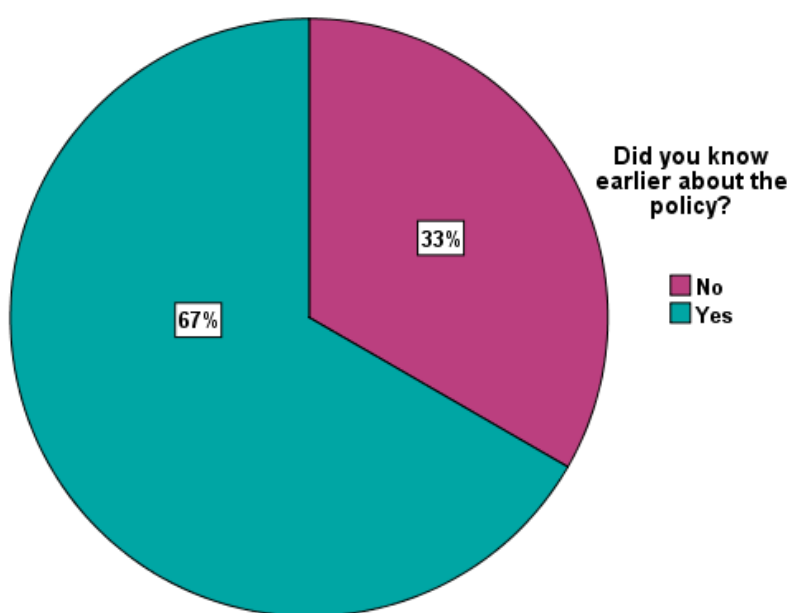
Figure 4: Student teachers' prior knowledge about the policy

The majority of student teachers (67%) were aware of the policy. However, one third of the respondents did not know the policy earlier. This means that the policy is not being widely and properly communicated, even though the target population has access to internet and is targeting teaching job positions.
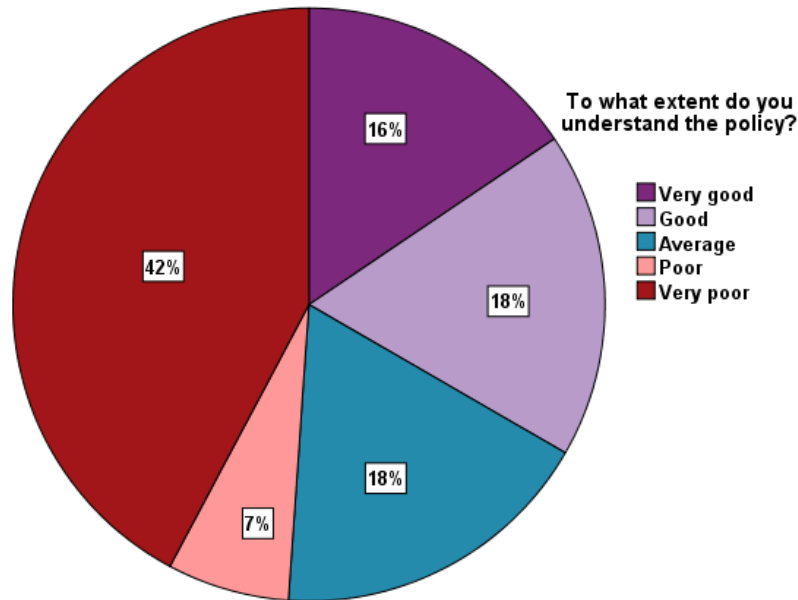
Figure 5: Student teachers' understanding of the policy

Almost half of the respondents (49%) do not understand what the policy has brought as a change. The majority of respondents (42%) have a very poor understanding of the policy, which shows that there is need for a better explanation of educational policies, especially towards the concerned stakeholders.
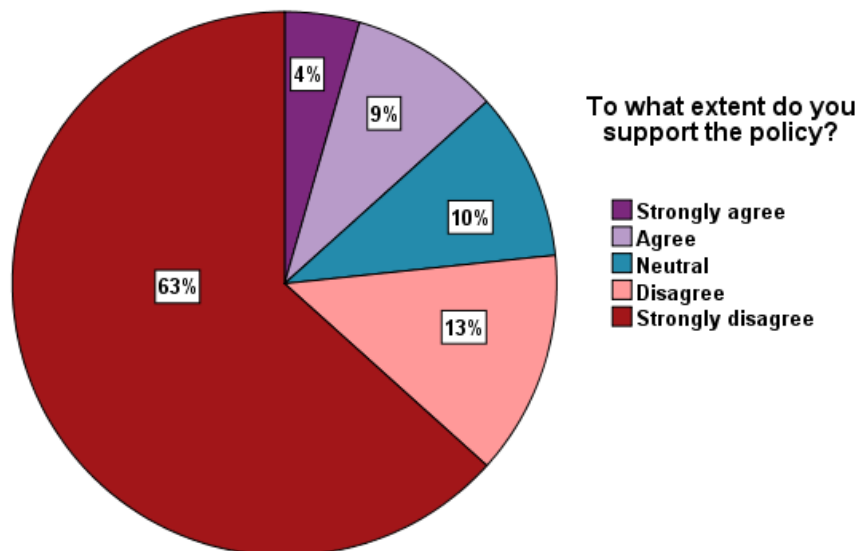
Figure 6: Student teachers' support for the policy

Only 13% of the respondents support the policy, while the vast majority (76%) do not support the age limit restriction, including 63% strongly disapproving. This clearly shows the opinion of student teachers regarding the policy.
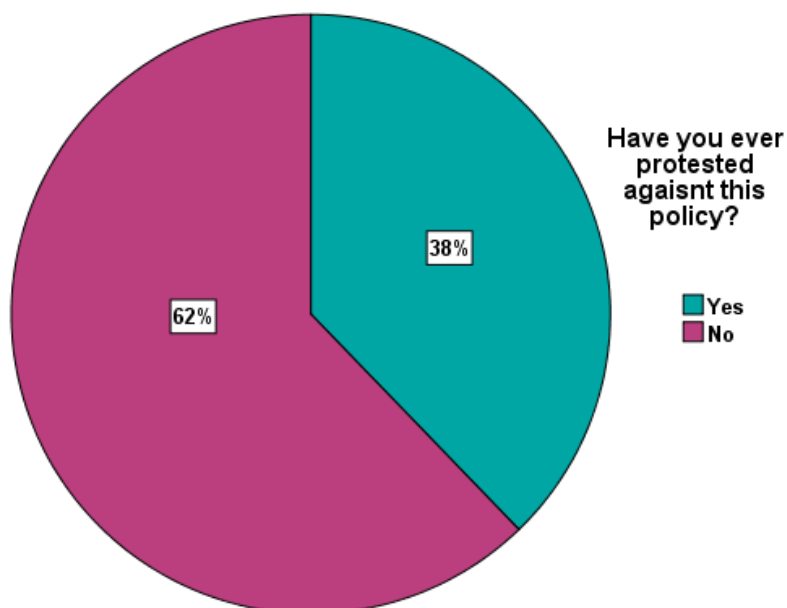
Figure 7: Student teachers' prior protest against the policy

More than a third of the respondants (38%) have protested againt the policy. This category is quite important, since it must include students already knowing and understanding the policy. This percentage shows that there is an important number of student teachers hoping that age restriction gets revisited.

1.3. Opinions About the Aims of the Policy
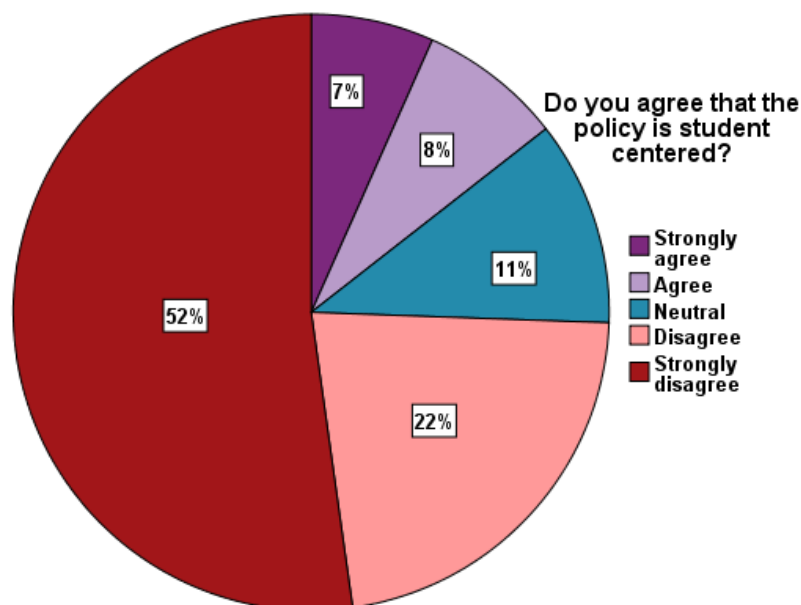
Figure 8: Student teachers' level of agreement with the statement
'the policy is student centered'

The results show that only 15% of the respondents agree that the policy is student centered, whereas the wide majority believe that age restriction policy is not a student-centered (74%). More than half of the respondents strongly disagree with the statement.
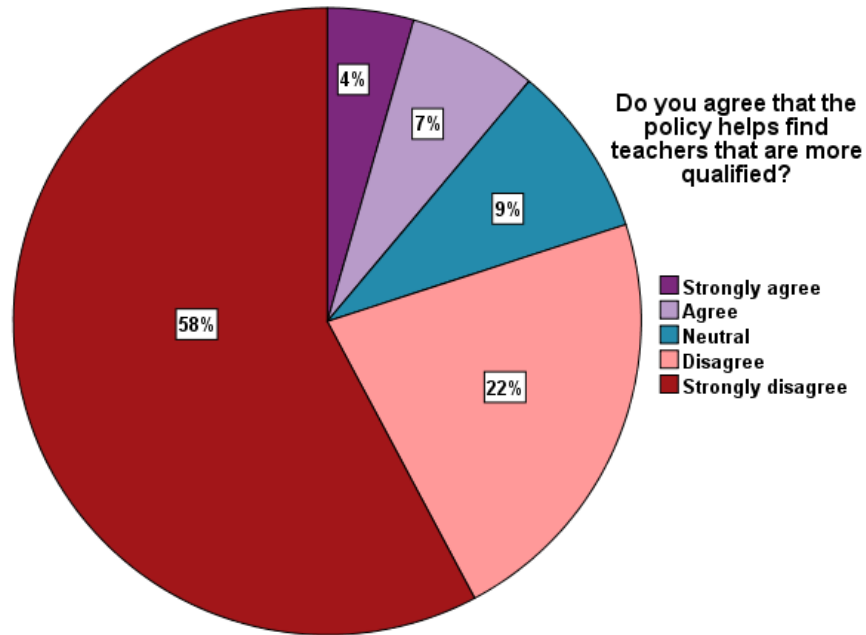
Figure 9: Student teachers' level of agreement with the statement
'the policy helps find teachers that are more qualified'

Findings demonstrate that only 11% of the sample agree that the policy helps find teachers that are more qualified. However, 80% of them disagree with the statement, including 58% strongly disagreeing.
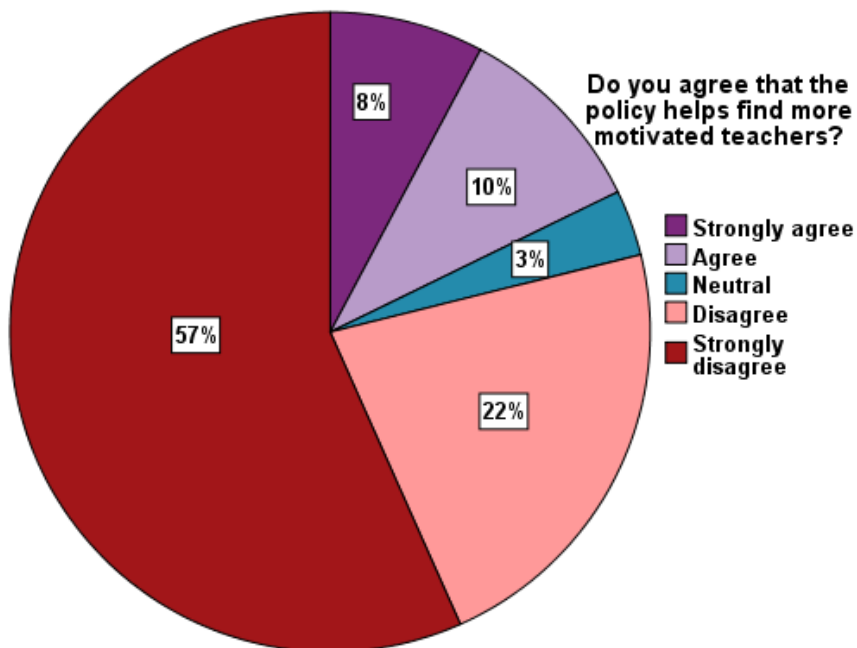
Figure 10: student teachers' level of agreement with the statement
'the policy helps find more motivated teachers'

The graph shows that only 18% of student teachers think that the policy helps find teachers who are more motivated, while most of the respondents do not agree with the statement (79%), including 57% in strong disagreement.
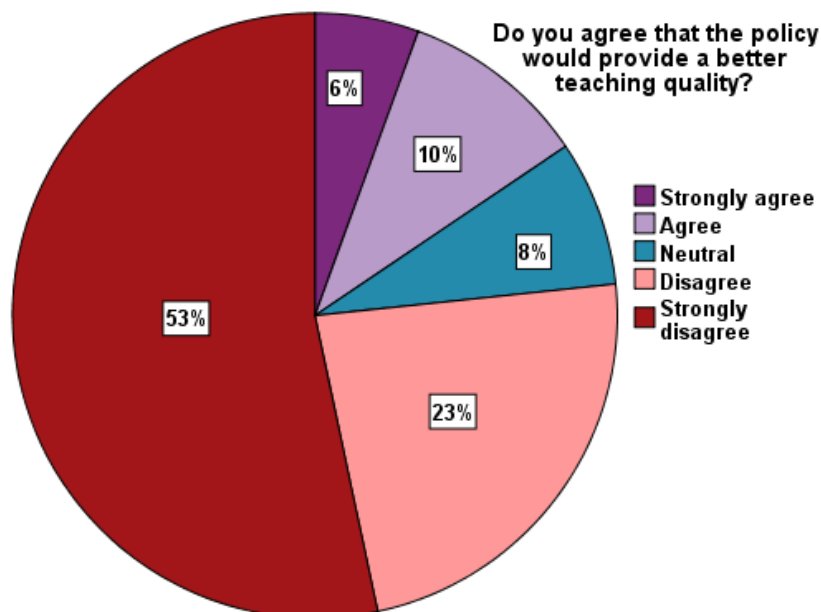
Figure 11: Student teachers' agreement with the statement
'the policy helps provide a better teaching quality'

The pie chart demonstrates that the minority of respondents (16%) agree that the age limit policy can provide a better teaching quality. The majority of the respondents, representing 76% of the sample, disagree with the statement, including 53% expressing a strong disagreement.

1.4. Opinions About Future Teaching Job Opportunities
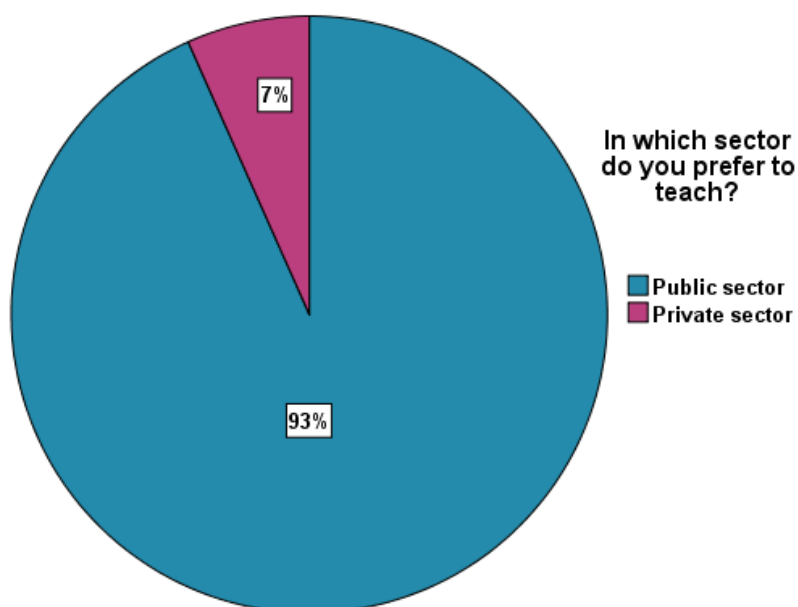
Figure 12: Student teachers' preferred teaching sector

According to the graph, most of the students prefer to teach in the public sector (93%). Thus, most of the student teachers hope to teach in public schools and are directly concerned with this policy.
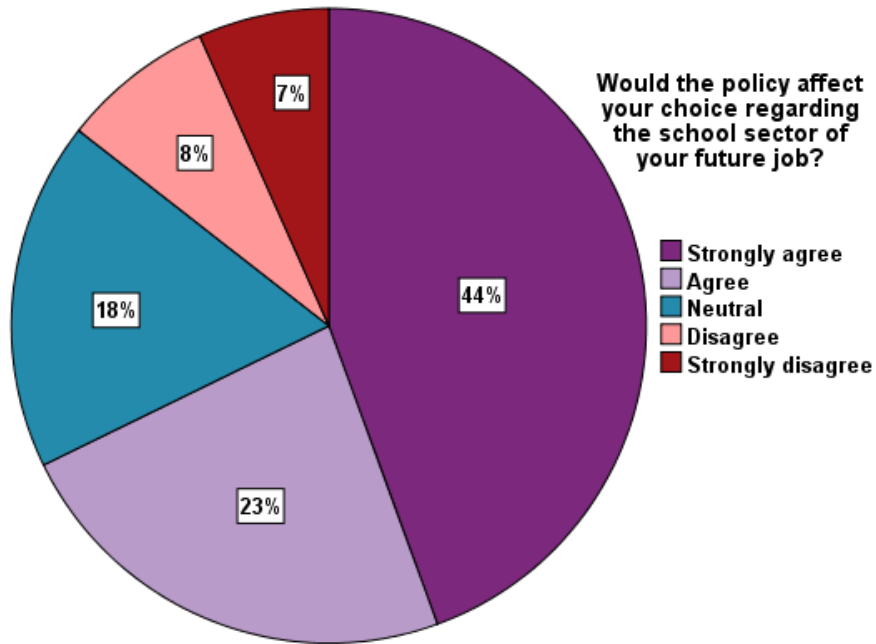
Figure 13: Student teachers' opinions about the influence of the policy
on their choice regarding their future teaching job sector

The majority of respondents think this policy would influence their choice regarding their future job sector (67%), including 44% strongly believing so. Only 15% do not consider the policy as influencing their choices regarding their future school sector.
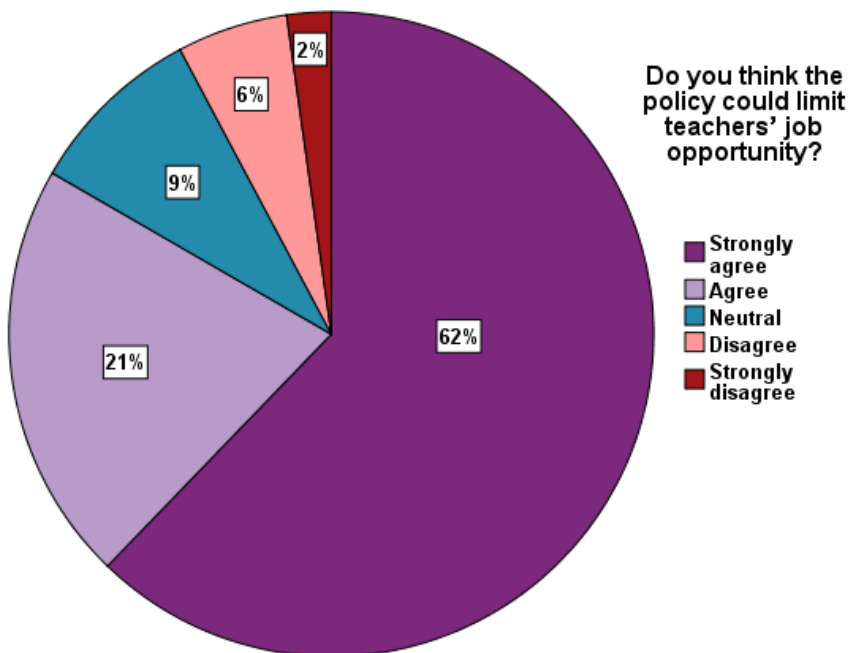
Figure 14: Student teachers' opinions regarding the influence of the policy
on teaching job opportunities

Finally, regarding student teachers' opinions about the possible influence of the policy to limit teachers' job opportunities, 83% of the respondents agree with the statement, including 62% in strong agreement, while only 8% of the respondents do not agree that this policy would hinder teaching job opportunities.

2. Student Teachers' Open-Ended Question

Among 90 student teachers, 61 expressed their opinions, among which 56 disagreed with the policy, while five respondents gave positive feedback about it.

Regarding the few student teachers who support the policy, here are examples of their responses: "this policy would give fruitful results since it can select teachers who really want their jobs. It can help recruit teachers who are closer to students since they are young, which would bring more understanding between students and teachers"; "good policy, providing young competencies"; "this policy is very good because it will provide a better quality in teachers' investments". Finally, "appointing professors at a young age guarantees a greater efficiency, and a successful investment in the human resources. Whoever wants to enter the teaching profession must determine his orientation and specialization during the baccalaureate. Teaching is not the profession of one who does not have any."

The majority of responses reflected opinions against the age restriction. The analysis of 56 comments could highlight some key words repeatedly stated. The terms "unfair" or "unjust" were highlighted 14 times. The terms "nonsense" and "no logic" were used five times. Six participants suggested or hoped for "reconsidering" or "revisiting" the policy. Nine responses highlighted that competence has nothing to do with age. Three respondents expressed that "age is just a number". Seven student teachers mentioned that the policy is against "equality" or "equal opportunities". Five respondents expressed their opinions about the policy as "shattering dreams" or "hindering ambitions". Three answers highlighted the terms "exclusion" or "marginalization" of a category of people. Three respondents emphasized that the decision is "not right" or "not wise."

Furthermore, three opinions mentioned some negative consequences of the policy, including the limitation of job opportunities or the increase of unemployment. Two respondents argued that the policy is arbitrary and improvisational. Three responses mentioned that age is not related to quality or motivation, and that the policy has nothing to do with the educational reform. Finally, within five responses, it was stressed that in teaching, age comes as an advantage as the older one gets; the wiser, more competent, more experienced, and more responsible he becomes.

Among interesting opposing opinions are as follows:
- "The policy does neither aim for the interest of students, teachers, nor the system. Many bachelor holders are competent and don't have the right to pass the teachers' examination";
- "The policy is unfair, contradicts all legal references and pedagogical perceptions, and has nothing to do with quality or education reform";
- "Age has never been and will never be a reason to impede teaching";
- "It is a policy that puts the student's interest as a front only, but its goal is to exclude the largest number of candidates. There is no equality or logic in excluding those over 30 years old. This is not the right way to promote education";
- "Age has never been a criterion for a better selection; the most important thing is to look for people who are competent and who can teach with love."

3. Teachers' Questionnaire: Quantitative Data

The second questionnaire was divided into four parts as well, first demographic questions, including gender, school level, years of teaching experience, and age. The second part reflects the understanding of and support for the policy, including three items. The third part represents opinions about the aim of the policy; including four items, according to a 5-point Likert scale, ranging from "strongly agree" to "strongly disagree". The last part is about opinions regarding the impact of the policy on future teaching job opportunities, using one item.

3.1. Demographic Information
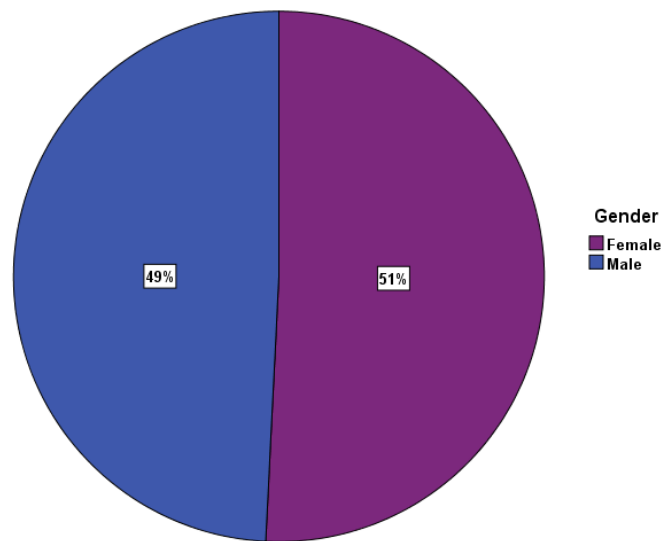
Figure 15: Teachers' gender

The pie chart representing teachers' gender shows balanced propotions of male and female teachers. The percentage of female respondents is slightly higher (51%) than the propotion of male teachers (49%).
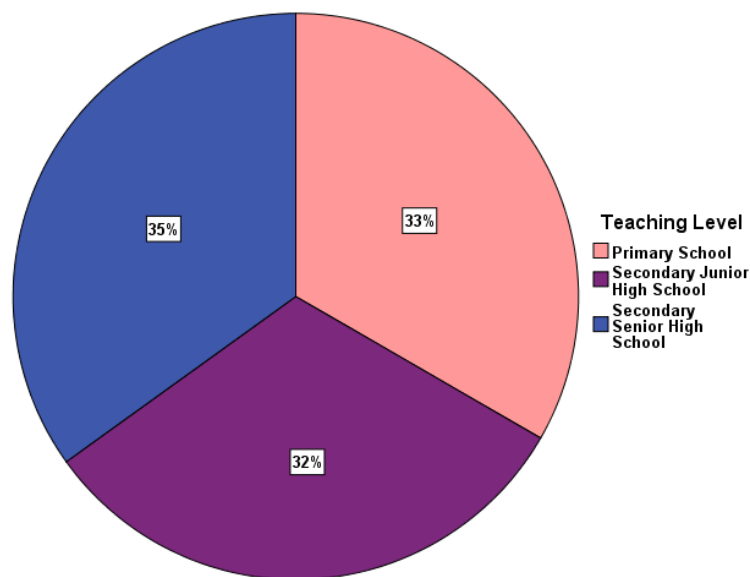
Figure 16: Teachers' teaching level

The propotions of teaching levels are balanced, with the highest percentage reflecting respondents teaching at secondary senior high schools (35%), followed by teachers from primary schools (33%), and finally teachers of secondary junior high schools, with a percentage of 32%.
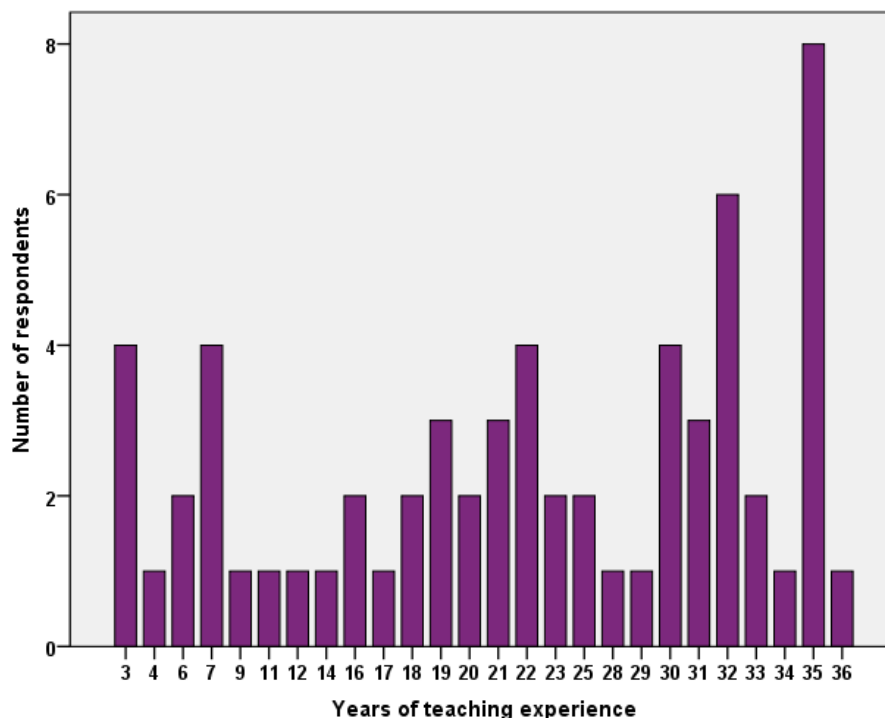
Figure 17: Teachers' years of teaching experience

All teachers who participated in the study are experienced, with a teaching experience ranging from 3 years to 36 years. 8 respondents have 35 years of teaching experience, 6 teachers have 32 years of experience, followed by four teachers in each age caterory of 30, 22, 7, and 3 years of teaching experience.
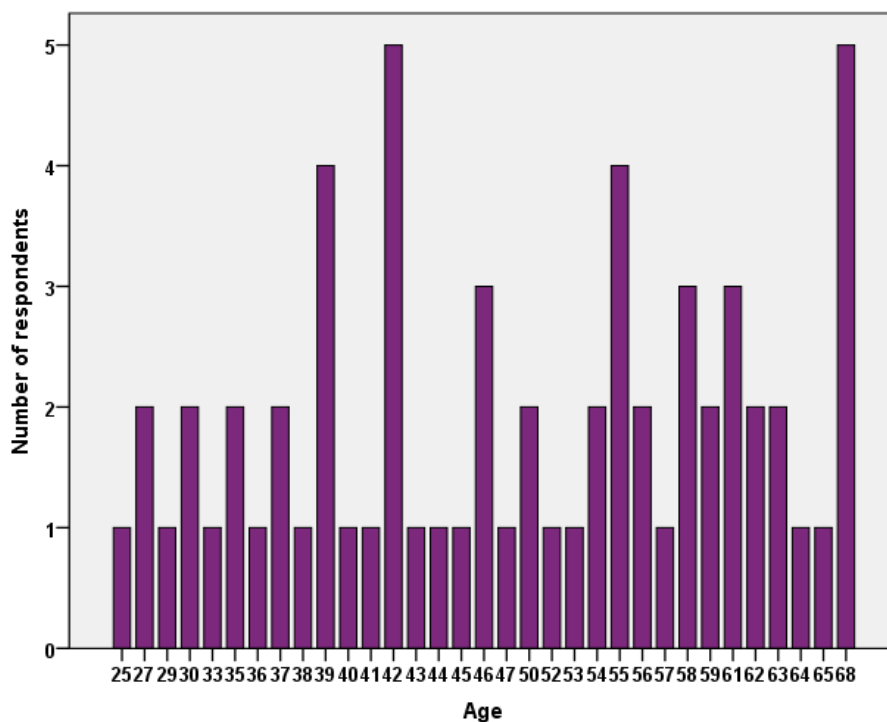
Figure 18: Teachers' age

Teachers who filled the questionnaire are aged between 25 and 68 years old. The highest percentage of participants refers to the ages 42 and 68. Followed by ages 39 and 55.

3.2. Knowledge About, Understanding of, and Support for the Policy
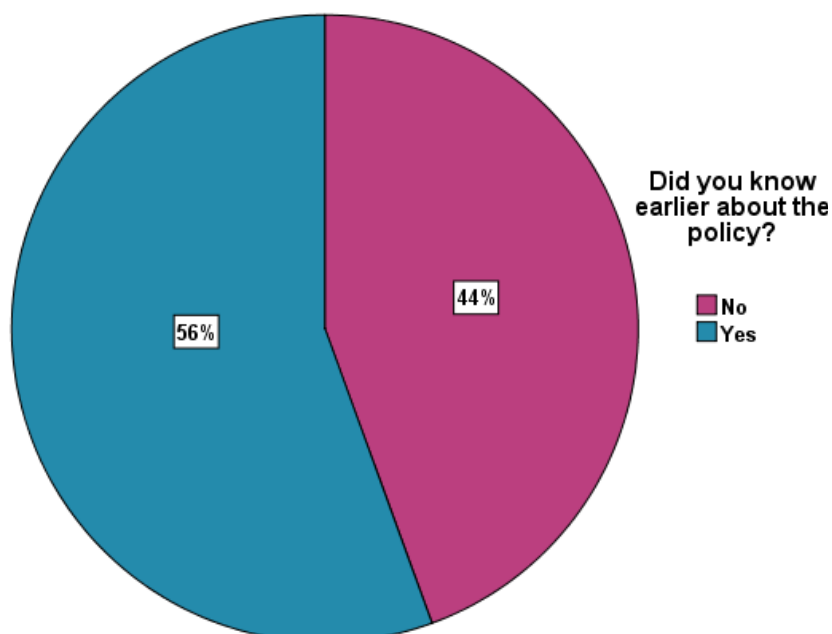
Figure 19: Teachers' prior knowledge about the policy

The majority of teachers knew about the policy (56%). However, there is still an important number of the respondents who were not knowledgeable about it.
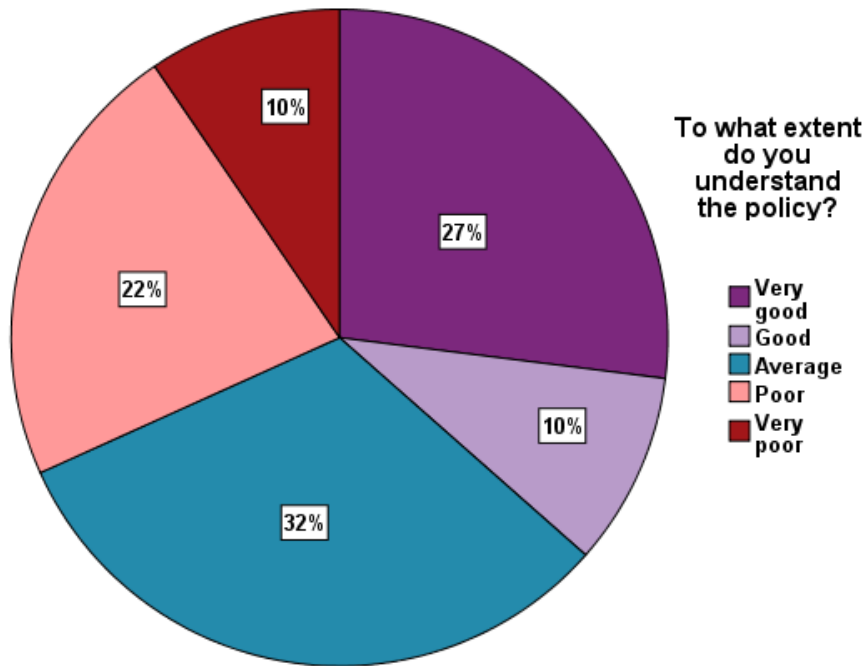
Figure 20: Teachers' understanding of the policy

The majority of teachers have an average understanding of the policy (32%), followed by the propotion of teachers who have a very good understanding of the age limit policy (27%). Still, there is a total percentage of 32% of respondents with only a poor understanding.
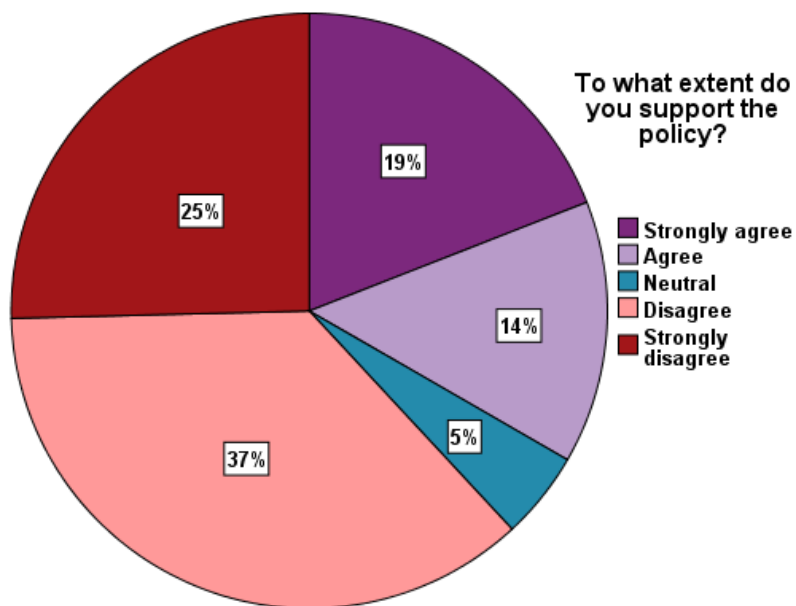
Figure 21: Teachers' support for the policy

The answers of teachers are assumed to be more objective than those of student teachers who face the pressure of passing the national teaching examination. Even though teachers do not have such kind of pressure, they do not seem very supportive of the age restriction policy neither. About the third of the respondents support the policy (a total percentage of 33%), while the majority of the respondents do not support the age limit policy (a total percentage of 62% disagreeing), including the quarter of teachers strongly disagreeing.

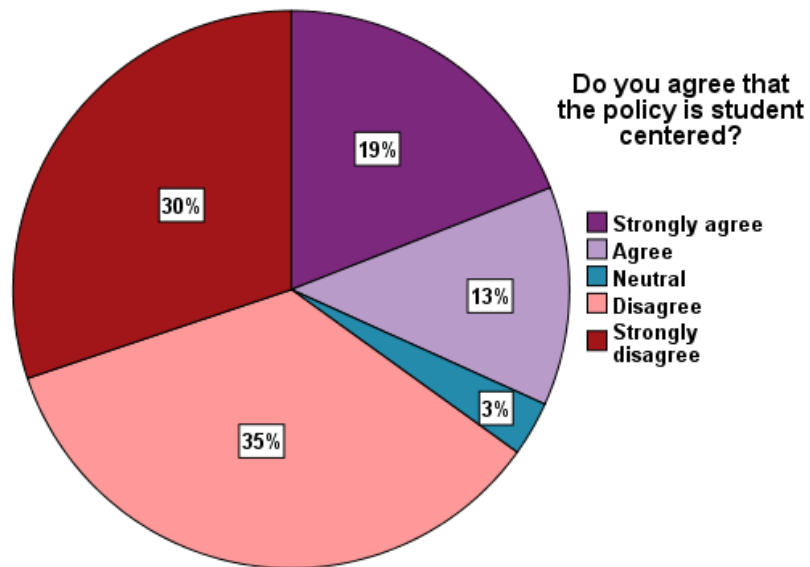### 3.3. Opinions About the Aim of the Policy

Figure 22: Teachers' agreement with the statement 'the policy is student-centered'

According to the graph, alsmost third of the teachers agree that the policy is student centered (a total percentage of 32%), whereas the majority and almost two thirds of teachers (a total percentage of 65%) disagree with the statement, including 30% in strong disagreement.
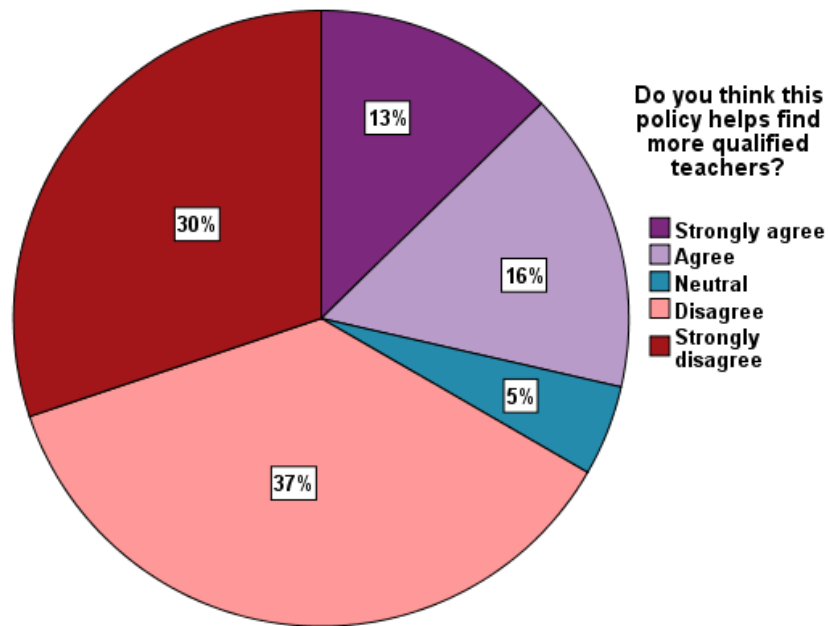

Figure 23: Teachers agreement on the statement 'the policy helps find
teachers who are more qualified'

The pie chart shows that less than a third of respondents believe that the policy helps find teachers that are more qualified (29%). On the other hand, almost two thirds of teachers do not agree with the statement (67%), including 30% in strong disagreement.
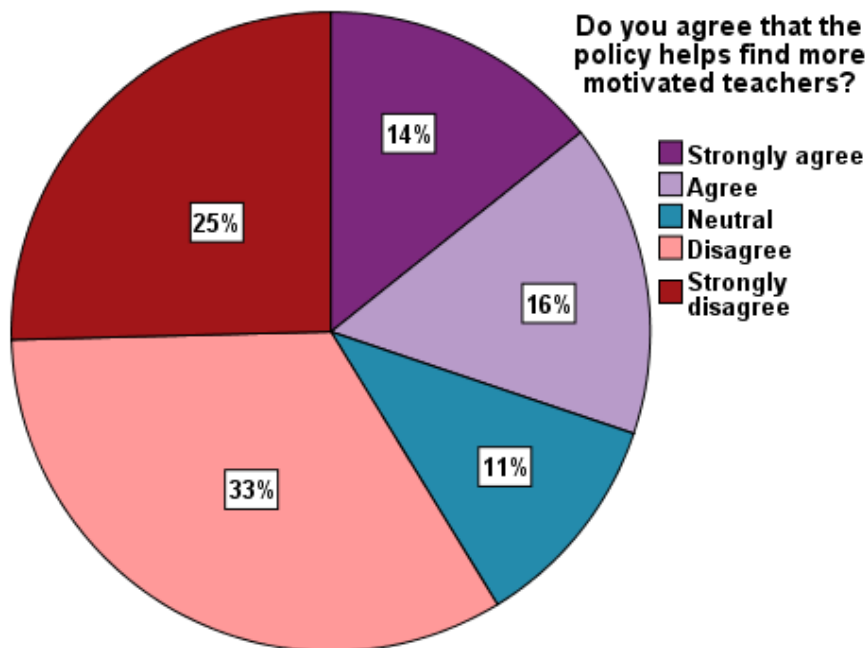

Figure 24: Teachers' agreement with the statement 'the policy helps find
more motivated teachers'

30% of respondents believe that the policy aims to recruit more motivated teachers. However, 58% of them do not agree with the statement, among which 25% are in strong disagreement.
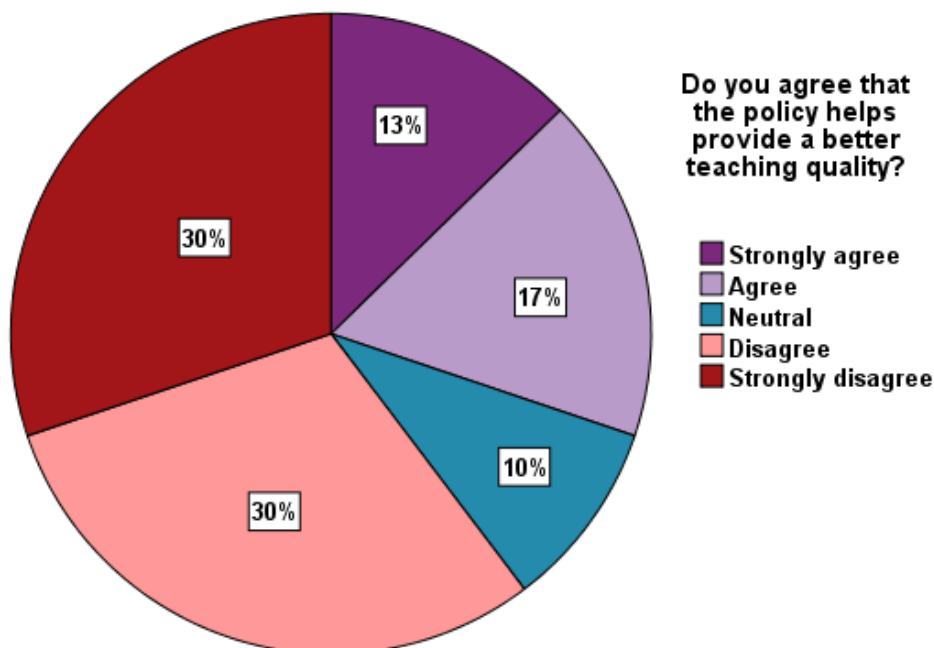

Figure 25: Teachers' agreement with the statement 'the policy helps provide a better teaching quality'

The graph shows that 30% of the teachers agree that the policy aims for a better teaching quality, while 60% believe the opposite, including 30% strongly disagreeing with the statement.

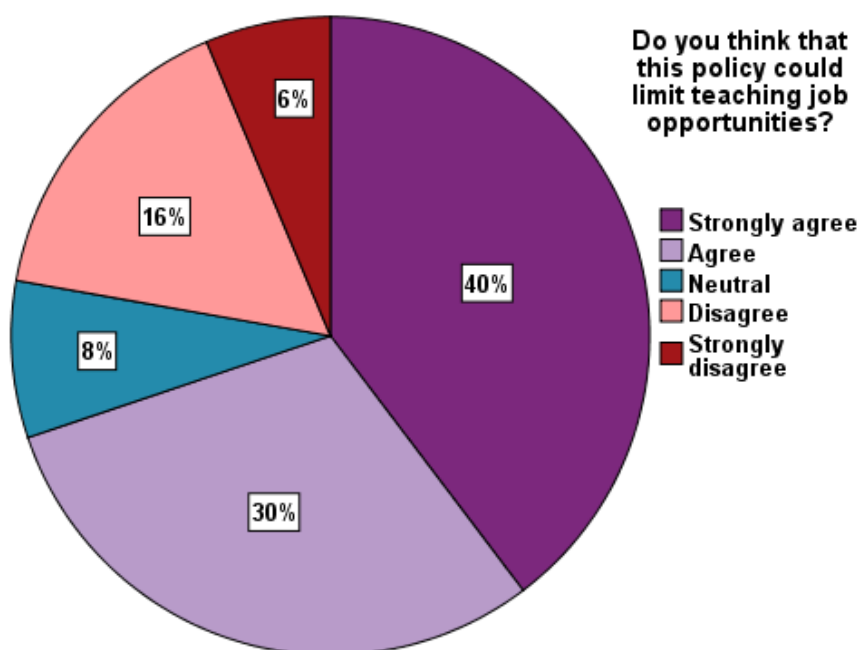### 3.4. Opinions About Future Teaching Job Opportunities

Figure 26: Teachers' opinion about the influence of the policy on teaching job opportunities

Even for teachers, the majority (70%) agree that age restriction would limit teaching job opportunities, including 40% of them in strong agreement. Only 22% of respondents disagree with the statement.

4. Teachers' Open-Ended Question

Within 63 questionnaires, 49 teachers expressed their opinions regarding the policy. Among 49 responses, 31 teachers showed disagreement with the policy, 14 teachers expressed their agreement, and the four remaining teachers revealed their agreement with the policy under certain conditions, such as raising the age limit to a higher number.

Concerning teachers who agree with the policy, one teacher stated that the policy "serves teachers' interest as well as students' interest". Another respondent stated, "The policy aims to give value to the teaching profession…" Among responses were that the policy "enables the recruitment of more motivated teachers", and permits "more renewal, while benefitting the learners."

Among terms that were highlighted are "young energies", which was stated twice; "long" period or effort that teachers can endure was mentioned three times. Finally, one respondent stated, "I think that limiting the age benefits the sector in terms of ability and novelty. Through previous experiences, those who entered the sector at a later age seemed to have weak capabilities in dealing with the students and to lack sufficient experience."

As for teachers who are against the policy, some respondents expressed their opinions regarding the decision as "a fatal mistake"; "having no reasonable or logical foundation"; "an improvisational policy that does not relate to reality"; "non-sense"; and as "a random decision". Two teachers suggested waiving the policy. One teacher stated that the policy is about "messing around instead of solving the real problems". Some respondents do not consider age limit as a condition to reach teaching positions. Among their sayings are "age is not a criterion"; "age is not related to teaching quality"; "age is not related to efficiency"; "competency is not about the age"; and "competence should be considered in terms of the educational level and skills acquisition."

One teacher mentioned that the policy does not help improve teaching, and three other teachers stressed that the policy limits access to teaching positions and increases unemployment among young people. Among interesting comments are the following: "I do not think that restricting the age will contribute to the quality of education, because according to my own experience, there are teachers who entered the education system after the age of thirty and their performance was good. The government should look for the real reasons for the low level of education…" Another respondent stated "The greater the age, the greater the experience…"

Conclusion

The purpose of this paper was to explore the opinions of public sector student teachers as well as teachers about a new policy adopted in Morocco. No similar study was found to express about this issue, though results reflected an important interest from respondents. Among the limitations of the study is the sample size. It is important to consider a larger sample population to be able to generalize the findings to the Moroccan population of student teachers and teachers in the public sector. Another limitation is about conducting the

questionnaires online; results were limited to a certain population who has access to internet and social network. Thus, it is suggested to conduct physical questionnaires and interviews. Among challenges faced was the sensitivity of the topic, which could be a reason for not being able to collect many responses, though participants showed great interest regarding the issue of age restriction. The nature of the topic might discourage concerned people from expressing their opinions freely and openly.

As a conclusion, the study provided interesting insights and viewpoints regarding the age restriction policy. Its aim was to investigate the opinions of Moroccan student teachers as well as teachers, within the public sector, regarding the new age limit policy set by the Ministry of Education in the Moroccan context. Answers show that both student teachers and teachers hope for a better education system and a better teaching quality all over the country, no matter the difference in their opinions and ideas. The majority of student teachers, regardless of their age, as well as teachers, do not really support the policy and do not believe in its aims as highlighted by the government. However, even if minor, there are also some positive viewpoints from students teachers regarding the policy, and teachers' responses and opinions are slightly more positive, compared to those expressed by student teachers. The idea of including teachers' opinions does not only aim to get perspectives of other stakeholders but also to get more objective opinions, assuming that teachers could be less subjective, since they already hold their teaching positions.

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"Mother and Child Yoga" and the Change to Mothers' Stress Levels:
Examinations by Child Care Support at a University Attached Kindergarten

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Abstract

This research is focused on "Mother and Child Yoga". In recent years, the stress of parenting has been increasing due to changes in the environment in which children are raised. Crnic and Greenburg (1990) discuss the potential for this stress to influence microsocial processes within the parent-child relationship and to contribute to dysfunction in children and families. To help mothers reduce their daily stress, we planned a childcare support event called "Mother and Child Yoga". Nine mothers and their ten children (3 to 5-year-olds) participated and enjoyed doing yoga together. The purposes of this study were two-fold: to uncover the effect of the yoga on mothers' stress and to examine the course content for further development. A survey of participating mothers was implemented in written questionnaire format regarding stressors and individual psychological status, and social childcare support. The results indicated that the mothers' stress was significantly reduced after the yoga event, indicating a possible link between stress reduction and the joint yoga session. Additionally, as a Designated Nursery Teacher Training Facility, we were able to identify future directions of investigation by noting what needs the mothers reported. Based on these results, in the program's future, we would like to increase content on educating mothers in mental and physical health maintenance. Additionally, we intend to keep running such events and sharing the research results with future educators so that they can educate both children and their mothers.

Keywords: Yoga, Parenting, Mental Health

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1. Introduction

In recent years, mothers with negative emotions tend to increase due to changes in the environment in which children are raised. In addition, due to the spread of COVID, the surrounding environment have been changing even more. Japan Sports Agency is in Combating communicable diseases concerns about the risk of secondary physical and mental health damages due to lack of exercise. At the same time, it is sounding alarm stating that making efforts for playing sports or working out (Japan Sports Agency, 2021).

Crnic and Greenberg (1990) reports that mothers' stress leads to their children's problematic behavior and decline of social adaption ability. To maintain parents' and their children's health is necessary when raising children.

It is said that some of the factors of changes in the environment in which children are raised are; having fewer chances to play in nature and open air, nuclear families are increasing and siblings are decreasing, for children to play together in their neighborhood is getting difficult, let children play alone outside is not safe security wise. Also, there is an actual situation that only children and their parents play in their homes after coming home from kindergarten or nursery school. Since it is considered that not spending enough time doing physical exercise at home, leads to young children's poor athletic ability (Iwasaki, Yoshida, Boku & Suzuki, 2018, p. 89). We assume that providing opportunity for parents and their children to do physical exercise after school will maintain parents' mental and physical health. Japan Sports Agency (2021) states that physical exercise is effective not only for children's basic physical strength and physical activity development but also fostering mental and physical development such as human relationships and communication ability and introduces exercise movie websites that enable for children and their parents enjoy together at home. It is assumed that spending time with family exerting a favorable influence on children's health and taking action toward health maintenance as a family will be effective on children's self-maintenance and enhancement (Sato et al., 2015, p. 36).

Therefore, in this study we investigate influence on mothers' psychological stress by doing parent and child yoga (we call it "Mother and Child Yoga" here and after since all the parents who participated were mothers) in which children and their mothers can enjoy yoga as communicating each other. Also, Using the result of these studies, we discuss the future direction of development in child care support.

We provide the "Mother and Child Yoga" capable of conducting exercise at home as having physical contact between mother and child, considering enablement requirements cases like; refrain from jumping around in a small space or in an apartment room. The content includes five aspect areas of each child's development: "health" (physical and mental); "human relationships" (the relationship between the child and other people); "environment" (children's surroundings, and relationship to them); "language" (the process of language acquisition); and "expression" (feeling and expression) (Cabinet Office, Ministry of Education, Labour and Welfare, 2015).

2. Methodology

2.1 Target and Method

The target of this research is "Mother and Child Yoga" event at a university attached kindergarten which was hold in the nursing seminar room at the university. Participants were kindergartners (3 to 5-year-olds) and their mothers of the kindergarten. It was held on September 13 and 27, 2021 once for each day. The limit was set for participants up to 15 pairs a lesson. To adjust the number, advanced reservation system was utilized. Most of the mothers participated with one child. Only one mother participated with two children.

A survey of participating mothers was implemented in written questionnaire format before and after the yoga event (See Appendix A). Number of targets for survey was 9, numbers responded was 7. Table 1 shows the number and age of children and their mothers who participated.

Mother's age	30'	40'	Non written			Total
Number	2	6	1			9
Children's age	3	4	5	6	Non written	Total
Number	1	2	5	1	1	10

Table 1: Participants' age and number

Mothers with children at a university attached kindergarten who desired to participate in the research were targeted. Total of seven pairs are targeted. Two of nine pairs were excluded from the analysis due to having loss value in the survey items.

Approval regarding the survey was obtained by the kindergarten principal who was explained purpose of the survey and collection method, participants' privacy protection method by means of a written and oral description. When distributing questionnaires, the participants were explained purpose and method of the research by means of a written description; their cooperation in the questionnaire survey is their own free will, there is no disadvantage depending on their response status, securing the anonymity, personal information is incapable of specify individuals when handling the data, the data will not be used for other than the purpose of the study. By turning in their questionnaires it allows us to obtain their consent. Also, this research is approved by the college research ethics committees (approval number 2100001).

2.2 Research Contents

We thought it is important for mothers and their children to enjoy exercise as communicating each other. "Mother and Child Yoga" was held for the purpose of offering mothers a chance of exercise and play with their children. The Contents are sustainable even for mothers who are tend to lack exercise. There is a convenience merit; no need to leave their children with a day-care center since they are exercising together. We used a program called "Yoga and Art for Kids" by Yoga Alliance as references. The program includes repeating good posture and breathing exercise which leads them to face themselves and increases the powers of concentration. Also, five aspect areas of each child's development: "health" (physical and mental); "human relationships" (the relationship between the child and other people);

"environment" (children's surroundings, and relationship to them); "language" (the process of language acquisition); and "expression" (feeling and expression) are considered.

【 Mother and Child Yoga】 30min.
· Centering （5min.）
· Worm up （5min.）
· Breathing exercise （5min.）
· Asana （10min.）
· Relaxation （Imagination） （5min.）

Table 2: Contents of activities

The contents of activities are set based on these points. Table 2 shows details and time allocation. I led the class and the colleague observed the participants.

2.2.1 Questionnaire Survey

Questionnaires are given to mothers for two purposes; "to verify change in the psychological state before and after exercising" and "to consider future child support". Age of mothers and children, sex, past and present exercise status, impression of "Mother and Child Yoga", and psychological state are asked in a written survey before and after the event. Questions regarding psychological state are excerpted from the brief job stress questionnaire by Ministry of Health, Labour and Welfare (See Appendix A).

The questionnaire is a scale developed for studies to prevent work related stress. It includes three areas of NIOSH (National Institute of Occupational Safety and Heath); (A) work stressor, (B) stress reaction and (C) cushion factor (social support). It is constituted of 57 items; each item is evaluated on a four level scale. Simple score method aims to easily evaluate individual stress level. Excerpts from (B) "stress reaction" are chosen to be used in this research. There are five indexes of psychological stress reaction. Vigor is for positive reaction (3 items). Irritation, fatigue, anxiety and depression are for negative ones (15 items). Higher point total shows feeling stronger stress.

2.2.2 Implementation of "Mother and Child Yoga"

"Mother and Child Yoga" was implemented on the day of the research. Importance of physical contact between mother and child and the method were explained when the participants applied for the event. The content of the lesson includes five aspect areas of each child's development: "health" (physical and mental); "human Relationships" (the relationship between the child and other people); "environment" (children's surroundings, and relationship to them); "language" (the process of language acquisition); and "expression" (feeling and expression) (Cabinet Office, Ministry of Education, Labour and Welfare, 2015). It doesn't require a large space and that they can do it at home. For children's concentration not to be interrupted, lesson went along with a story "Sea Adventure". Living things were familiar to the children. A plurality of movements was demonstrated and each mother and child moved along with it.

3. Results

3.1 and 3.2 are the result of before exercising. 3.3 is the result of before and after exercising. 3.4 and 3.5 are the result of after exercising.

3.1 Mothers' Exercise Experience

6 of them have experienced some kind of exercise during their junior high school days. 5 of them during their high school days. Only 1 of them over the last 5 years (Table 3).

	Experienced	Not experienced	Total
Junior high school	6	1	7
High school	5	2	7
Last 5 years	1	6	7

Table 3: Past regular exercise experience

3.2 Recent Exercising State

All the 7 mothers feel that they have a lack of exercise. 4 of them think it is due to the COVID-19 pandemic. No one has a chance to exercise in everyday life (Table 4).

	Yes	No	Total
Question (4) Do you feel that you have had a lack of exercise for last 6 months?	7	0	7
Question (5) Do you have a chance to exercise in everyday life?	0	7	7
Does the COVID-19 pandemic influence the situation?	4	3	7

Table 4: Recent exercising state

3.3 Mother's Psychological Stress State Before and After "Mother and Child Yoga"

Mothers were asked their psychological stress state in a written survey before and after "Mother and Child Yoga" There are five indexes of psychological stress reaction. Vigor is for positive reaction. Irritation, fatigue, anxiety and depression are for negative ones. Total point of depression is 24. Other indexes are 12 points each. Higher point total indicates feeling stronger stress. Participants psychological stress average points before and after "Mother and Child Yoga" are showed in Table 5 (decimal point is suppressed).

Index	Average (before)		Average (after)
Vigor (out of 12)	8		8
Irritation (out of 12)	8		4
Fatigue (out of 12)	8	→	4
Anxiety (out of 12)	7		3
Depression (out of 24)	10		6

Table 5: Psychological stress state before and after "Mother and Child Yoga"

3.4 Mothers' Physical State After "Mother and Child Yoga"

"Did the exercise gets rid of your lack of fitness?" (Question (2)) in answer to the question, 4 answered "Yes", 3 answered "More than likely yes" and no one answered "No" (Table 6).

	Yes	More than likely yes	No	Total
Question (2) Did the exercise gets rid of your lack of fitness?	4	3	0	7

Table 6: Overcoming the lack of exercise

3.5 Impression of "Mother and Child Yoga"

Did "Mother and Child Yoga" trigger to communicate with your child?" (Question (3)) in answer to the question, 7 answered "Yes", neither of them answered "More than likely yes" nor "No" (Table 7).

	Yes	Neither	No	Total
Question(3) Did "Mother and Child Yoga" trigger to communicate with your child?"	7	0	0	7

Table 7: Trigger to communicate

Followings are answers to the question (4) "How did you invite your child (children) to the event?" (Table 8).

Question (4) How did you invite your child (children) to the event?"
· Do you want to go and do some exercise with me.
· Let's go out to play.
· Let's go and do some exercise.
· I want you to do yoga with me, let's go together.
· There is a yoga lesson at the kindergarten. Let's check it out.
· Let's do some exercise together.

Table 8: How to invite children

Table 9 shows the answer to the question (5) "Which part was the most enjoyable to your child (children)?" a. centering 0, b. warming-up 4, c. breathing exercises 0, d. asana (pose) 2, e. relaxation 0, sharing feelings 1, g. other 0.

question (5) Which part was the most enjoyable to your child (children)?	a	b	c	d	e	f	g	Total
	0	4	0	2	0	1	0	7

Table 9: Most enjoyable part

Table 10 shows the answer to the question (6) "Why did you decided to participate in this event?"

Question (6) Why did you decided to participate in this event?
・I can participate with my child.
・I have not had a chance to exercise we two alone.
・My boy is a youngest child of 4. I'd like to have a time alone with him.
・I like yoga. I thought it would be nice to do yoga with my child.
・I wanted to do some exercise.
・Looks fun.
・I thought it would be a good chance to exercise at home in pandemic.
・I wanted to experience yoga with my child.
・I wanted to learn yoga as an indoor activity because we have been shutting ourselves in all day due to the COVID-19 pandemic.

Table 10: Participation motive

Table 11 shows the answer to the question (7) "Did the event meet your expectations?" and (8) "Would you like to participate again?" In answer to the questions, all of 7 answered "Yes". None of them answered "neither" nor "no". Table 12 shows reasons to the answer for question (8).

	Yes	Neither	No	Total
Question(7) Did the event meet your expectations?	7	0	0	7
Question(8) Would you like to participate again?	7	0	0	7

Table 11: Contents and impression

・It was fun
・Parents can relax as well
・It was a good opportunity to exercise with my child.
・My child was having a good time as well.
・It was good to learn how to stretch one's imagination.
・Parent myself was able to feel the tension leaving my body and relax.
・It's fun to spend time with my child one to one.

Table 12: Reasons for wanting to participate again

4. Discussion

4.1 Desires for Participation in Exercise

5 mothers had an exercise habit in their middle school and high school days. However, only one of them gets regular physical activity for the preceding five years. It is expected that they had been exposed to physical exercise. At the same time, it has not been a familiar event.

4.2 Recent Exercising State

All 7 mothers said "yes" to the question (4) Do you feel that you have had a lack of exercise for last 6 months? 3 mother said "yes" and 4 said "no" to the question Does the COVID-19 pandemic influence the situation? From the above they feel lack of exercise in everyday life.

It is cannot be said the factor is affected by COVID-19 pandemic. All 7 mothers said "no" to the question (5) Do you have a chance to exercise in everyday life? From these results, we can read the following things. All of them are aware of lack of exercise and feel the importance of exercise and have willingness to do it. Although, they have not had a chance to do it in everyday life. That lead them to participated the event.

4.3 Psychological State Before and After the Event

Average values on vigor/activity, anger/hostility, fatigue/inertia, tension/anxiety, depression/dejection before and after the event are compared. Change in value of vigor/activity cannot be seen. Before the event, the mothers' psychological state average value of anger/hostility, fatigue/inertia, and tension/anxiety were more than 6 points out of 12. On the other hand, it has been reduced by half after the event. Depression/dejection was 10 points out of 24 before the event. Even though the point is originally low, it went lower to 6 points after the event. It follows from this that mothers' psychological stress such irritable and fatigue shows a significant change rather than feel energetic by doing "Mother and Child Yoga".

On the other hand, their physical state after the event; in answer to the question "Did the exercise gets rid of your lack of fitness?", 4 answered "Yes", 3 answered "More than likely yes" (Table 6). These thing suggest that "Mother and Child Yoga" solves their psychological stress as well as lack of fitness.

4.4 Through Participation

In answer to the question, "Did 'Mother and Child Yoga' trigger to communicate with your child?", all of them answered "Yes" (Table 7). It is thought that the time for being face to face was secured by participating the event. Also the word "together" was commonly used on inviting their children to the event. The children were not forced to take part in the event. Smooth communication including confirm the will was performed between them at the time on the entry.

In answer to the question "Which part was the most enjoyable to your child (children)?", four of the seven answered warming-up, two asana (pose) and one sharing feelings (Table 9).

It was suggested that the more physical activity children do, the more enjoyable they feel. They moved their bodies sufficiently with great enjoyment while feeling secured that comes from the fact that they are warmly being watched over by their mothers. In such an environment they listened to the story, ponded fantasy world and sharing their feelings with their mothers.

In answer to the question "Why did you decided to participate in this event?" (Table 10), there are following descriptions; "I can participate with my child", "I'd like to have a time alone with him". It is expected that mothers participated the event in the hope of taking part in with their children and/or having time alone to spend with his children. Also, from the description "I wanted to do some exercise" and "I thought it would be a good chance to exercise at home in pandemic", it is evident that mothers considered the event as their chance to exercise and/or learn sustainable indoor yoga activity.

In answer to the question "Did the event meet your expectations?" (Table 11) all seven mothers answered "Yes". It suggests that the evet was highly satisfied. As reasons for wanting to participate again (Table 12), There were following descriptions; "It was a good opportunity to exercise with my child", "It's fun to spend time with my child one to one", "Parent myself was able to feel the tension leaving my body and relax". This appears to be due to the chance of having a time to exercise and communicate with their children as well as relax themselves was given to the mothers by participating the event.

For these reasons, it has found "Mother and Child Yoga" to have a positive effect on their mental condition: "Mother and child yoga" gave an opportunity for mothers to notice children's feelings and meaning of their words or actions by sharing experience and excitement. Understanding their children's changing growth and development which lead to what to expect on parenting. At the same time being able to take delight pleasure in their children's growth. It is presumed that they were able to refresh a mind by communicating with their children and exercising themselves. As a result, their positive emotions has increased which lead to reduction of stress. A study on parenting stress has shown that when a mother exercises with her child, her positive emotions increase and anxiety of child-rearing reduces (Sato et al., 2015). Also, exercise itself seems to improve depressive symptoms in people with a diagnosis of depression (Cooney et al., 2013). It has reported that mother-child engagements (play time with your children) is expected to provide mothers with sense of deepening affection to their children, confidence as a parent (Tachibana et al., 2012). It can be asserted that "Mother and Child Yoga" serves as an exercise outlet for mothers, playing a significant role in alleviating their daily stress and addressing fitness deficiencies.

Conclusion

Our study played a pivotal role in elucidating childcare support dynamics within daycare or kindergarten settings. Yamanishi and Watanabe (2017) have suggested that, in comparison to mothers of daycare children, those with children in kindergarten experience a more substantial burden due to the constraints imposed by the upbringing process. This is particularly pronounced among housewives, who tend to encounter heightened stress levels resulting from prolonged periods of child-rearing and a sense of isolation from societal engagement. Prior research has expounded upon maternal childcare fatigue, revealing that the scarcity of assistance correlates positively with the development of chronic fatigue. Establishing a comprehensive system for child-rearing that incorporates collaborative efforts from immediate family, friends, and the broader community, such as through the involvement of nursery institutions, is imperative (Murakami, Iizuka, & Tsujino, 2005).

It is asserted that in recent years, families engaged in childrearing have become increasingly isolated. This isolation is attributed to parents raising children within secluded nuclear units, devoid of readily available social connections. Consequently, there is a noticeable absence of individuals with whom parents can engage in meaningful conversations, and a lack of designated safe spaces for children to play. The nursery institutions emerge as a pivotal solution, providing a welcoming environment for both parents and children, with a commitment to the secure and trustworthy care of children. Anticipated developments in this area are underscored, with a vision for continued progress in the foreseeable future (Ministry of Health, Labour and Welfare, 2016, p. 20).

They are also actively encouraged to facilitate parental support, as highlighted by the Ministry of Health, Labour and Welfare (2016, p. 179-198). The opportunity for parents to

engage in school events alongside their children fosters a space for the exchange of knowledge and shared experiences, contributing positively to the well-being and developmental aspects of the children. Moreover, this participation encourages parents' voluntary activities. For these reasons, activities such as the "Mother and Child Yoga" conducted on this occasion play a significant role in the support services offered within a nursery center or similar facilities designed to assist guardians in the care of children.

In the capacity of a nursery/kindergarten teacher, the expectation is to orchestrate school events with active parental involvement, viewing it through the lens of guardian support. Meticulous attention is required regarding the content and implementation policies of such events. For instance, these occasions should serve as opportunities to attentively listen to parents' emotions and concerns. Teachers play a crucial role in elucidating the significance of childcare, detailing aspects of the child's daily life, and addressing pertinent issues with the parents. Simultaneously, these events aim to provide parents with a conducive environment for mutual communication and interaction (Ministry of Health, Labour and Welfare, 2016, p. 187).

The relationship between educators and a child's parents constitutes an integral aspect of their role as teachers. By empathizing with the parents' affection for the child and the joy derived from the child's growth, educators can serve as a source of motivation and confidence for effective child-rearing (Ministry of Health, Labour and Welfare, 2016, p. 183). It is desirable to have initiatives and environmental efforts from childcare institutions and caregivers that enable parents to cultivate confidence, find joy in raising their child, and experience the immense pleasure of witnessing their child's growth. Thus, we would like to continue to hold such an event on a regular basis.

"Mother and Child Yoga" incorporates simple body movements, requiring no specialized expertise as one does not need to be a certified yoga instructor to facilitate the session. Given that the intentions and components of this activity overlap with elements of childcare, educators can potentially organize "Mother and Child Yoga" events in the future by drawing on their knowledge about children.

To give the guidance of appropriate life habit improvement to mothers will be one of the roles of educators which no doubt grows increasingly important in the future. Physical disorders and mental health degree are correlated to each other. As eliminating physical disorders brings into an improved mental health condition, to provide physical care for mother in child care is necessary (Yamanishi & Watanabe, 2017). For mothers to understand that in order to relieve their stress and maintain physical health, exercising with children is important, we also would like to be able to program an effective guidance for them in their childcare studies into a plan in the future program.

Appendix

Appendix A

The survey of participating mothers

Date：2021/9/27

Prior Questionnaire

Thank you for your participation. Please cooperate with the questionnaire to enhance the future activities. The gathered information will be used for improving the event and also for a part of research activity. Individual cannot be specified.

Please answer the following questions by circling the answer that best fits your situation.
(1) Participant(child/children)
　　1st: male / female Age: (　　　) year(s) (　　　) month(s) old
　　2nd: male / female Age: (　　　) year(s) (　　　) month(s) old

(2) Participant(mother)
　　Age【10s ・ 20s ・ 30s ・ 40s ・over 50s】

(3) Please tell us your exercise experience. Have you exercised on regular basis?
　　（not on a one-off basis）
　　Middle school　　【 Yes.　・　No. 】
　　High school　　　【 Yes.　・　No. 】
　　Last five years　【 Yes.　・　No. 】

(4) Do you feel that you have had a lack of exercise for last 6 months?
　　【　Yes.　・　No. 】
　　　　　↓
　　If "Yes", Does the COVID-19 pandemic influence the situation?
　　【　Yes.　・　No. 】

(5) Do you have a chance to exercise in everyday life?
　　【　Yes.　・　No. 】　　If no, proceed to question（6）
　　　　　↓
　　a. If "Yes", please tell us the frequency and the content.
　　　Specific content：（　　　　　　　　　　　　　　　　　　　）
　　　Frequency：（＿＿＿＿times a month）　/ （＿＿＿times a week）

　　b. Meanwhile, who takes care of your children?
　　【exercise together ・ family/friends・ day-care center /child care center
　　　other（　　　　　　　　　　　　　　　　　　　）】

(6) Please answer the following questions concerning your health during the past one month by circling the number that best fits your situation.

		Almost Never	Sometimes	Often	Almost always
1	I have been very active	1	2	3	4
2	I have been full of energy	1	2	3	4
3	I have been lively	1	2	3	4
4	I have felt angry	1	2	3	4
5	I have been inwardly annoyed or aggravated	1	2	3	4
6	I have felt irritable	1	2	3	4
7	I have felt extremely tired	1	2	3	4
8	I have felt exhausted	1	2	3	4
9	I have felt weary or listless	1	2	3	4
10	I have felt tense	1	2	3	4
11	I have felt worried or insecure	1	2	3	4
12	I have felt restless	1	2	3	4
13	I have been depressed	1	2	3	4
14	I have thought that doing anything was a hassle	1	2	3	4
15	I have been unable to concentrate	1	2	3	4
16	I have felt gloomy	1	2	3	4
17	I have been unable to handle work	1	2	3	4
18	I have felt sad	1	2	3	4

Note. Adapted from "The Brief Job Stress Questionnaire English version", by Ministry of health, Labour and Welfare, 2016. Stress Check Program. Retrieved February 2, 2024, from https://stresscheck.mhlw.go.jp/material.html

Date：2021/9/27

Posterior Questionnaire

(1) Please answer the following questions concerning your health by circling the number that best fits your situation.

		Agree	Moderately agree	Moderately disagree	Not agree
1	I feel very active	1	2	3	4
2	I feel full of energy	1	2	3	4
3	I feel lively	1	2	3	4
4	I feel angry	1	2	3	4
5	I feel inwardly annoyed or aggravated	1	2	3	4
6	I feel irritable	1	2	3	4
7	I feel extremely tired	1	2	3	4
8	I feel exhausted	1	2	3	4
9	I feel weary or listless	1	2	3	4
10	I feel tense	1	2	3	4
11	I feel worried or insecure	1	2	3	4
12	I feel restless	1	2	3	4
13	I feel depressed	1	2	3	4
14	I think that doing anything was a hassle	1	2	3	4
15	I am unable to concentrate	1	2	3	4
16	I feel gloomy	1	2	3	4
17	I am unable to handle work	1	2	3	4
18	I feel sad	1	2	3	4

Note. Adapted from "The Brief Job Stress Questionnaire English version", by Ministry of health, Labour and Welfare, 2016. Stress Check Program. Retrieved February 2, 2024, from https://stresscheck.mhlw.go.jp/material.html

Please answer the following questions by circling the answer that best fits your situation.

(2) Did the exercise gets rid of your lack of fitness?
【 Yes ・More than likely yes・ No. 】

(3) Did "Mother and Child Yoga" trigger to communicate with your child?"
【 Yes ・Neither・ No 】

(4) How did you invite your child (children) to the event?"

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(5) Which part was the most enjoyable to your child (children)? Please circle the answer.
　a. centering (sitting cross-legged ・observing breathing ・sound of a bell）
　b. warming-up （wave exercise ・ 'teru teru bozu ・palm and crab ・underwater tunnel）
　c. breathing exercises （flower breathing ・bee breathing ・Flying bird breath）
　d. asana (pose) （surfing ・mother child surfing ・boat）
　e. relaxation （story）
　f. sharing feelings （asking questions）
　g. other （   ）

(6) Why did you decided to participate this event?

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(7) Did the event meet your expectations?
【 Yes ・Neither・ No. 】

(8) Would you like to participate again?
【 Yes ・Neither・ No. 】
　Could you tell us why?

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Thank you for your cooperation.

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Equity, Diversity and Inclusion – Challenges in the Integration Process of Young Refugees Within School Settings in Sweden

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Abstract

Cultural and ethnic diversity has become an increasing phenomenon in recent decades in many contemporary societies. That ethnocultural diversity is visible within school contexts in many countries in Europe and North America. One example of this is Sweden, a place that received more than 35,000 unaccompanied children and young refugees in 2015. This article presents reflections and results from a doctoral study developed in a Swedish municipality between 2016 – 2018. Analyzing current integration strategies for newcomer young refugees within school settings was the purpose of the research. Observations and interviews were made to gather the necessary information to answer the research questions of the study. Educational programs for young immigrants as a part of national strategies include Swedish language learning and the active participation of those young individuals in programs that encourage their integration into Swedish society. At the same time, their active involvement in school activities is assumed as a solution to solving challenges in the Swedish labor market. Some of the results found in the investigation were the lack of well-planned local strategies for social inclusion of newcomer unaccompanied young refugees, lack of dialogue between personnel and stakeholders who worked around the young refugees, xenophobic attitudes, and other obstacles which meant a hindrance for sociocultural integration of young refugees into Swedish society.

Keywords: Integration Strategies, School Contexts, Newcomer Unaccompanied Young Refugees, Social Sustainability

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Introduction

Immigration in Sweden has been featured by refugee entry, labor immigration and family reunification. But how have social inclusion policies worked for those refugees who arrived in 2015 and in previous years, specifically children and young people who traveled alone? Are we experiencing a new period of migration and integration policies in Sweden since 2015? If so, what does it mean, and what nuances will it take? These and other questions could provide directions for future research and work concerning the integration of migrants.

After the Second World War, an attitude of solidarity towards refugees was experienced in Sweden. However, during the decades of 1970 - 1980 that position changed due to the national and international situation. According to Banaś (2020), policies regarding migration and integration have moved from a liberal to a more conservative posture. The negative attitude towards migrants has become more palpable in recent years, both at the social level and at the parliamentary level. This notion is demonstrated by the increase in popularity and political support for right-wing organizations and conservative parties.

Support for these political organizations could be justified by the existence of a parallel reality in contemporary Sweden in the last two decades. That reality is observed in the social exclusion of immigrants in many Swedish towns and cities. Increased segregation could be the result of failed integration policies. Monika Banaś highlights that the government demanded since the end of the twentieth century greater involvement both from immigrants and from native society. But social reality showed evidence of inadequate effectiveness of those previous efforts. Some examples of this were prolonged reliance on benefits, delayed entry into the labor market, none or poor Swedish language competence, ghettoization in housing (Banaś, 2022). To this reality, we can add that it is in these exclusion zones where the greatest number of migrants live, and where there has been an increase in crime and violence related to gangs. Many of the members of these gangs are children and young people.

A response to that reality could be the integration proposal for refugee children and young people from the school environment that Bunar suggests. For him, integration needs to be worked on in 4 directions, these aspects are physical integration, social integration, pedagogical integration and experienced subjective integration (Bunar, 2022). However, many challenges have and continue to threaten the process of sociocultural integration of children and young people seeking asylum. One of those obstacles is the perception that many people have towards asylum seekers. According to Ulrika Wernesjö, disbelief and suspicion towards refugees grew with a normalization of immigrant-critical discourses. The perceived identities and culture, especially of unaccompanied boys, were portrayed in terms of a problematic identity (Wernesjö, 2019). That aspect could negatively affect the sociocultural and socioeconomic integration of unaccompanied children and young people forming and reinforcing damaging stereotypes.

Many other obstacles are a brake on the integration of unaccompanied refugee children and young people. These obstacles, both in the school environment and outside of it, show us the complexity of a phenomenon such as integration. Due to this complexity, the work aimed at the inclusion of migrants, especially children and young people who travel alone, entails dialogue, short, medium and long-term integration strategies, as well as an interdisciplinary approach assuming the multiple dimensions that make up the integration work (Gómez Manresa, 2017, 2021).

Encouraging integration from school contexts could have a positive effect on the social inclusion of refugee children and young people in their new country. Wernesjö (2019) stresses the importance of education in the integration process from young refugees' narratives. For them, getting formal education and a job was synonymous with a better life and a future in Sweden. During the study presented in this article, in 2017, one of the interviewed teachers recognized the ambition of young refugees to create a future in Sweden; for them it was like having gained a second chance (Gómez Manresa, 2017). A better life in the new country through education, work or entrepreneurship is the goal of a successful integration of immigrants.

Unaccompanied Minors and Young Refugees in Sweden

In the last 20 years, there has been a gradual increase in the number of unaccompanied minors and young refugees in Sweden. This increase was observed continuously until the 2015 migration crisis, when 35,369 asylum seekers, children, and young people arrived at once (Statistikmyndigheten, 2023). The year 2015 showed, among other aspects, the lack of large-scale local integration strategies encouraging social inclusion of displaced children and young people within school contexts. I state on a large scale because, until that year, the number of refugee children and young people had remained relatively low. Regarding integration, improvisation working with young asylum seekers was observed due to the lack of plans in the inclusion work.

The integration of these unaccompanied children and young people is mainly aimed, according to Bunar (2022), at learning the Swedish language, obtaining the necessary qualifications to access high school as well as feeling part of their social environment. For him, integration from the school setting encompasses four categories. Firstly, physical integration means the mixture between foreign students and ethnic Swedish. The second aspect is social integration which is a result of physical integration. Through this type of integration, it is expected to promote daily interaction between students, allowing the social network of interactions of foreign students to develop and, in turn, improve their language skills. A third element in this process is pedagogical integration. This aspect deals with the adequate organization and development of teaching and support for foreign students so that they can develop their potential and achieve the required school results. The fourth and final element is the experienced subjective integration. According to Bunar, this aspect focuses on the individual and their well-being, their health, how they perceive their relationships with other students and school staff, their ambitions, their motivations, purposes, cultural manifestation, and the formation of their identity (2022).

These four aspects are relevant since they act in synergy. Considering what was observed in my research, teachers and other actors involved in the inclusion work of unaccompanied refugee children and young people must assume the complexity inherent in this integration process. The sociocultural inclusion of refugee children and young people must be assumed and worked on from a systemic and interdisciplinary perspective because social, cultural, religious, political, economic and ideological aspects intervene in it.

The work of integrating refugee children and young people, must be developed in a transversal and holistic way from the different scenarios where this group interacts. However, the school environment plays a primary role in the integration work of refugee children and young people. This group of individuals spends several hours a day at school, so the four features of integration mentioned by Bunar, are essential to be successful in integration work.

In Sweden, children and young people living in the country have the right to attend school, a home and medical care (Banaś, 2020; Skolverket, 2016). Although some of them are not residents and education for them is not mandatory, being in the country gives them the right to education like Swedish residents. This aspect applies to children and young people seeking asylum (Skolverket, 2016). The distribution of asylum seekers is stipulated considering the municipality´s economic possibilities and the principles of proportional distribution (Banaś, 2020).

The number of refugee children and young people arriving alone in Sweden decreased considerably after the migration crisis, in 2015 arrived 35,369, 2,199 in 2016 and 1,336 in 2017 (Statistikmyndigheten, 2023). Most of them were inserted in the Swedish educational system in one way or another when a new asylum law came into force in 2016. This law established that the asylum seeker could be sent back to his or her country if conditions permitted. In the case of children and young people, the new law applied as soon as the individuals turned 18 years old (Banaś, 2020).

In 2017, the Second Level Education Law (Gymnasielagen) came into force. The law established that those young people whose asylum applications had been denied should return to their countries of origin, although they could request a new review of their case. In the case of minors during their studies in Sweden, the law would come into force once they turned 18. The new law received criticism, and in June 2018, new modifications were introduced. These changes gave the possibility of a new review of the case of young refugees, they could continue their education that included vocational training considering the needs of the Swedish labor market. Some extra conditions pointed out that 1) the application for asylum had not been filed later than 24 November 2015, and the young person had, at the same time, been registered with the Migration Agency as an unaccompanied minor; 2) the decision of the Migration Agency giving rise to an appeal had been delivered later than 15 months since the application for asylum; 3) the person concerned was over 18 years old; and 4) they had not committed any crime. The person could stay 13 months in Sweden if progress in their education or vocational training had been observed. The applicant could apply for permanent residence if she/he could maintain herself and had obtained a permanent job within six months after finishing her education (Banaś, 2020).

However, the law received criticism from associations and institutions due to its lack of effectiveness and inappropriateness to current needs. The main criticisms were because at local and regional level, there were insufficient financial resources facilitating the preparation of effective educational programs, the low educational level at many applicants, and challenges related to psychological problems among many applicants (Banaś, 2020). Not solving these problems could increase the gap between people integrated into Swedish society and what Banaś (2020) considers a parallel society on a national scale, forming from those who have not integrated into Swedish society. In other words, the risk of increased social exclusion was and is an unquestionable reality.

Methodology

The reflections and facts presented in the article are the result of a qualitative study carried out in a small rural city in southwestern Sweden between 2016 – 2018. The fieldwork was mainly conducted in the mentioned municipality. However, some of the regional stakeholders related to integration issues were also interviewed to analyze the correlation between what was done in the city and the established guidelines at regional and national level. The

methods used for gathering information were observations and semi-structured interviews, mainly with teachers, housing assistants and stakeholders who worked with immigrants sociocultural inclusion. The theoretical approach of the study was developed through analysis of documents including scientific articles and thesis, governmental reports and statistical sites. The study had two designs as methodological pillars, action research and ethnography. The research purpose was to analyze the existence of integration strategies for unaccompanied young asylum seekers within school settings.

The semi-structured interview was based on a questionnaire. With this method, the interviewer has the possibility of introducing additional questions to clarify definitions related to the study or obtain more information, as happened in this case. The teachers, the staff who worked in the homes with the newcomer young people, and the leaders interviewed did not have a clear idea about the repercussions of sociocultural integration of those who came to the country searching for protection. This required the introduction of extra questions to clarify some concepts and achieve more productive discussions and dialogues. In the study, three rounds of interviews were carried out, the first of an exploratory and open type to achieve familiarization with the context and identify the sample. The interview format was structured as the research progressed.

Many data emerged from the interviews that were not preconceived at the beginning of the research. The participants confirm that there was no municipal, regional or national integration strategy working with newcomer unaccompanied minor and young asylum seekers. Another piece of information was the identification of actions that some actors carried out on their own to encourage integration, but they were done in an uncoordinated manner. The lack of dialogue between key actors working with sociocultural integration of young refugees was evident. The recordings and transcriptions were analyzed in detail, allowing the information gained to be compared with the data obtained in the observations.

Qualitative observation was carried out from the beginning of the study. The auscultations allowed me to analyze the contexts and processes related to the unaccompanied newcomer refugee students achieving an ethnographic characterization. It was possible to explore and describe environments, analyze the community where the study was developed, the culture of the newcomer students in the municipality and some aspects of the social life in the municipality. The observations allowed me to understand the relationships between the immigrant students and their teachers and between themselves, as well as their reactions to situations that occurred in the socio-educational dynamic, such as the establishment of some patterns between the participants that made up the sample. 30 observations were carried out divided into lesson visits, participation in bi-weekly teachers' meetings to analyze the socio-educational development of the students, observations during the breaks and auscultations during the lunches of this group.

The review of the bibliography, permitted to analyze several studies developed in Sweden and other European countries between 2001 and 2018. These investigations mention aspects that agree with those presented in this research, such as: the difficulties of young refugees in their socio-educational development, the need and importance of collaboration and dialogue between key actors in the integration process of young refugees, deficiencies in collaboration and lack of dialogue between key actors in the integration process of young refugees, xenophobic actions and attitudes against children and young refugees, the non-recognition of the complexity in sociocultural, political and demographic development and the lack of strategies in working with refugee children and young people. In these investigations, it is

recognized that Sweden and Germany had been the nations that had received the most refugee children and young people in recent years. Some authors of these studies carried out between 2001 and 2018, hypothesized that the phenomenon of immigration of refugee children and young people would go increasing, as happened until 2015 (Anderson, 2001; Pajares, 2005; Vertovec, 2007; Lacatus, 2008; Berglund & Forsberg, 2013; Bergström & Hedberg, 2014; Ghazinour, et., al. 2014; Celikaksoy & Wadensjö, 2016; Kaunitz & Jakobsson, 2016; Savolainen & Ohlsson, 2016; Alba & Foner, 2017; Börjeson, 2018).

The participants in the study were 49 individuals, seven teachers, 3 managers who were responsible for the municipal residential homes for unaccompanied minor and young refugees, a municipal integration coordinator, a regional coordinator responsible for social services and a regional coordinator responsible for young refugees. In the study, 36 young asylum seekers were observed in different activities such as lessons, lunches and breaks between lessons, they were between 15 – 16 years old. The participants were contacted previously, they were informed orally that their participation would be voluntary, and they could suspend it whenever they wanted. These requirements are established by the Swedish Research Council.

Some Challenges to Consider Working With Young Refugees

The obstacles presented in this section summarize what has been observed in the school environment and outside of it. At the school, at the residential care units for young refugees and by an independent organization, some activities were developed to promote the integration of children and young people seeking asylum in the municipality. However, those activities that were carried out independently did not respond to any integration strategy; what was done was thanks to the good will of those mentioned actors. Improvisation in integration work was a reality that was observed in the research, and the trial-and-error method was the procedure to follow.

As a first obstacle, we can point out the lack of explicit local or regional integration strategies in the locality where the study was developed, specifically for the integration of young refugees. However, Banaś (2022) recognizes that internationally, Sweden is one of the best countries in inclusion work by promoting the socioeconomic integration of immigrants. Sweden's conceptual framework is ambitious and very good regarding adults' integration. But what happens in local contexts when it comes to integrating children and young people? What was observed in the study carried out by the author coincides with what was stated by Bunar (2022) referring to the lack of scientifically supported integration models. This lack of knowledge about integration meant that many schools experimented with various forms of work during 2015 and in subsequent years related to the inclusion of asylum-seeking children and young people.

Another challenge was the perception that immigrants are a homogeneous group. It is necessary to deconstruct the myth that immigrants are a single group. In the case of this research, young refugees made up a heterogeneous group. The group was varied due to their origin, their immigration status, their level of education, their religion, their mother tongue, their Swedish language skills, and their sex, although the majority of those who arrived in Sweden in 2015 were males (Gómez Manresa, 2021a).

One aspect that hindered the integration of young refugees was the lack of dialogue between the state sector, the private sector, civil society and social scientists. Due to the protection of

the integrity of young asylum seekers, the different actors involved in social inclusion work did not share valuable information with each other that could help understand the reality of these young people and thus favor their integration into Swedish society. Key actors in this case were the school, social services, immigration offices and health services. The lack of collaboration between these mentioned entities could be caused by other collateral obstacles such as ignorance, lack of will, mistrust and insecurity of what information to reveal and what not.

As another obstacle observed, the lack of resources and knowledge to carry out the integration work of recently arrived refugee children and young people should be highlighted. The teachers interviewed never received the necessary preparation or information to work with the group of young asylum seekers. Lack of resources is another aspect that Banaś (2020) also highlights as a brake on integration work. In that sense, due to lack of funds, the 36 young asylum seekers in the municipality where the research was carried out, had to continue studies in other locations starting in 2018 due to lack of budget. To continue their education, they traveled by bus to other surrounding towns and cities.

Another observed obstacle that was a brake on the integration of young asylum seekers was the lack of information to the population about what was being done in the locality to promote integration. By not having a clear idea about what is done to promote the integration of immigrants into the receiving society, stereotypes about that group could increase.

Knowledge about social development from systemic perspectives based on interdisciplinary, transdisciplinary or complex thinking was also deficient. The adults who worked with the group of asylum-seeking students lacked training in this regard. This is in order to understand the complexity inherent in the integration process of young refugees in the municipality and thus could work from a systemic approach.

Regarding integration, more than social inclusion strategies or plans are required. Other relevant elements in this process are attitudes and wills. During the research, some of the interviewed teachers who worked with young refugees mentioned their concern since some of their colleagues who did not work with these young people who had recently arrived in the municipality called them their students to refer to immigrants and our students to refer to ethnic Swedes. This attitude and words were a clear ethnocultural marker reinforcing the *us* and *them* dichotomy. During the time the study was carried out, apathy, fear and mistrust towards young newcomers could also be observed. Wernesjö (2019) explains that narratives of the unaccompanied child and young asylum seekers were increasingly challenged by narratives of problematic youth. A culture of distrust around them has been shaped in recent decades. They have been seen as the cultural others and as a burden to the Swedish welfare state.

Exclusion was also identified as a negative aspect during the research. The newcomer immigrant students received their lessons in a building separate from the rest of the students in the municipality. During breaks and even lessons they used to talk to each other in languages other than Swedish, something positive. But, if these students had been located in the same building as the rest of the children and young people residing in the municipality, their Swedish language learning process as well as their socialization with Swedish society would have been faster, an aspect on which the researcher and some of their teachers agreed. Instead of favoring what Bunar describes as physical, social and pedagogical integration, this reality delayed the integration process.

As a result of the interviews, it was also confirmed that the evaluation carried out on the young people when they arrived in Sweden included only pedagogical elements with the aim of placing them at the appropriate school level. This assessment did not include psychosocial aspects, an essential element to develop the socio-educational strategy to follow with this group of young people. Many of them came from contexts with critical situations, so having knowledge of their mental health status upon entering the country, as well as establishing diagnoses as accurate as possible, could have contributed to better work in the integration of this group of young immigrants.

For Banaś (2022), working on the psychological aspect is essential to promote the social, economic and cultural integration of refugees due to the negative effect of traumatic experiences. In interviews carried out in four large Swedish cities Banaś confirmed that psychological elements could be a brake on the proper integration of refugees. This is a fundamental element to reflect on for those who work with children and young people seeking asylum.

A final aspect that was observed during the study and that represented a limitation on the integration of the young asylum seekers, was the anguish caused by the uncertainty based on the lack of knowledge of their future legal status in the new country. These young people had no knowledge of the Swedish immigration system and laws, neither they nor their teachers. On several occasions some of them showed symptoms of depression or distress during the activities observed (lessons or social activities such as recesses or lunches). When the researcher asked their teachers why they felt so, they responded that the night before or that morning, one or more of their fellow refugees had been moved to other locations or their asylum applications had been denied.

This section summarizes some challenges that could hinder the integration work of newcomer refugee children and young people. The presented challenges were mostly observed within the school environment, although these obstacles are a brake on the sociocultural inclusion of this group in a general sense.

Conclusions

The integration of migrants is a challenge for contemporary societies that receive displaced people. In Sweden, many vulnerable areas where social, economic, and housing segregation is a fact, the high representation of immigrants is a characteristic (Statistikmyndigheten, 2018). Schools in these segregated areas are also negatively influenced by unemployment, insecurity, crime, and a high percentage of teachers without teaching qualifications. All of this translates into low student grades, difficulties in passing exams, and a high percentage of young people who leave their studies before completing secondary or high school.

Encouraging the sociocultural inclusion of immigrant children and young people, those who reside in vulnerable areas and those who do not is committed to social sustainability. Identifying in an interdisciplinary way those obstacles that may be a brake on the integration of immigrant children and young people can be the first step in planning and executing strategies in that direction. The planning of programs with short, medium, and long-term goals in which dialogue between those involved in the sociocultural inclusion of migrants is the basis, has a greater chance of being successful than those actions that are developed individually.

No local strategies aimed at promoting integration were observed in the municipality where the study was carried out; it was more about specific and isolated actions and improvisation. In that city, two realities were appreciated regarding integration, firstly, some actions and the positive attitude on the part of some leaders and teachers trying to promote the integration of young asylum seekers. Another reality was also observed in this municipality, negative attitudes were detected that affected the adequate and rapid integration of the group of foreign students.

Regarding what is done at school to promote integration, although there are no exact recipes to follow, there are elements to consider that could characterize this process. Bunar (2022) summarizes very well with his *skolethos* those qualities of a school that promotes the inclusion of all. For him, *skolethos* is that group of norms, principles, and values against all types of harassment and violence, it is also about the relationships between teachers and students, as well as the stability in the teaching staff that must oxygenate the entire school. It is considered that the actions and attitudes that promote integration should not be the sole responsibility of a group of teachers. Integration is a double process that includes immigrants but also the receiving society as a whole.

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Systems Design Education in Industrial Design: A Hybrid Approach of Combining ID Studio and UX Design Courses as a Superblock

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Abstract

Traditional Industrial Design (ID) curricula have successfully trained students in fundamental ID skills. However, the increasing complexity of modern industries and technological advancements call for integrating Systems Design and User Experience (UX) principles. This paper introduces the "ID+UX Superblock," a hybrid educational model combining ID Studio and UX Design to better prepare ID students for contemporary challenges. Systems Design education teaches the methodologies and thought processes required to design not just individual products but complete systems within which those products exist. It encourages students to think about how those elements interact within an extensive system, offering a holistic and sustainable approach to problem-solving. For example, designing a smart home involves creating devices and understanding their intercommunication, management, user interaction, and underlying technologies. The Superblock model aims to widen students' skill sets for designing from both macro and micro perspectives. It involves real-world projects requiring a blend of systems thinking, user research, and UX design, enriching the learning experience and training graduates to be more competitive in diverse design roles. This paper discusses the curriculum, pedagogical strategies, and teaching outcomes through case studies, highlighting how the superblock model improves students' proficiency in systems thinking and capability to deliver system-level solutions. These solutions encompass physical and digital products with intuitive user interfaces, showcasing students' enhanced ability to integrate ID and UX principles. The success of this Superblock signifies the potential of interdisciplinary education to produce versatile designers capable of navigating complex design challenges.

Keywords: Industrial Design Education, UX Design Integration, ID+UX Superblock, Systems Design

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Introduction

Product Design's evolution has been marked by its traditional focus on creating physical products optimized for mass production. However, the landscape of product design is shifting dramatically with the onset of the digital era (Verhoef et al., 2021). The surge in the development of digital products has been persistent and profound, leading to the ubiquitous presence of User Experience (UX) Design in our everyday interactions. This rise underscores the increasing importance of UX Design in the design industry, signifying a paradigm shift from purely physical product design to a more integrated approach encompassing digital experiences.

The necessity for Systems Design in ID education becomes evident in this context (Meyer & Norman, 2020). The digital era has not only brought about a proliferation of digital products but has also introduced a heightened complexity in modern industries and technological advancements. We observe an intricate integration of physical and digital products with various platforms and services, catering to increasingly complex user needs. In such an ecosystem, designers are no longer just creators of isolated products but architects of comprehensive systems that provide coherent and intuitive experiences across multiple touchpoints.

It has become essential to equip ID students with the skills to develop comprehensive systems that include UI/UX design for digital products, grounded in the UX Design process. At the University of Houston's ID program, separate courses in ID and UX are offered, each focusing on distinct project scopes and learning outcomes. However, the core of these courses, which is Product Design, is undergoing a transformation as products are increasingly interconnected and designed to function within larger systems (Figure 1).
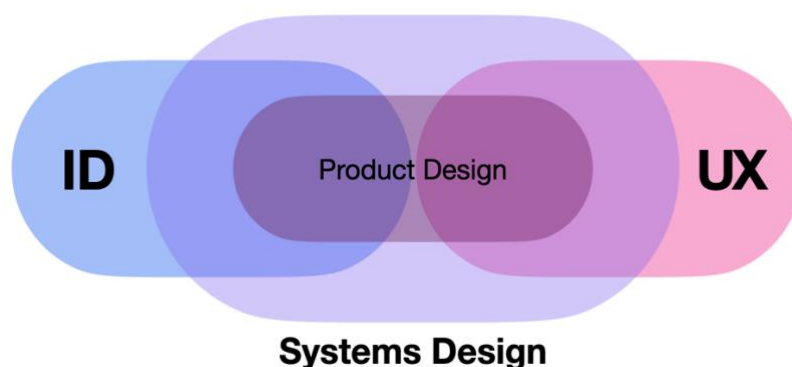
Figure 1. Systems Design in Industrial Design

Integrating ID and UX courses has become a strategic necessity in response to this evolving landscape. The goal is to transcend the traditional boundaries of these disciplines, fostering a comprehensive educational model where students can undertake system-level scale projects. This approach facilitates a deeper understanding of the interconnected nature of modern products and services. It equips students with the diverse skill set required to design and innovate within this complex, system-driven context.

The following sections of this paper will delve into the specifics of this integration, detailing the structure and pedagogical strategies of the ID+UX Superblock model and illustrating its impact through case studies and teaching outcomes.

Key Component of Systems Design

In an era characterized by rapid technological advancements and the increasing complexity of user needs, integrating Systems Design into the ID+UX Superblock model is essential. Systems Design transcends traditional product design by emphasizing the interdependence and interaction of various components within a broader ecosystem (Buchanan, 2019). This approach is crucial for preparing students to tackle the multifaceted challenges of modern industries, where products are no longer standalone items but integral parts of complex, interconnected systems.

Integrating Systems Design principles into the ID+UX Superblock curriculum ensures that students are proficient in designing individual products and capable of envisioning and crafting comprehensive, user-centric systems. It equips them with a holistic understanding of how products interact within these systems and how they impact the user experience. By embedding these principles in the curriculum, the ID+UX Superblock model aims to nurture a new generation of industrial designers adept at navigating the intricacies of the modern design landscape, where the boundaries between physical and digital products are increasingly blurred. These are key components of Systems Design for ID students to see the larger systems for a broader user experience.

Systems Thinking
At the core of the ID+UX Superblock model lies Systems Thinking, an approach that encourages a comprehensive view of design. This perspective is well-articulated by the notion that "A system is a set of elements that are interconnected in a way that achieves its function" (Meadows, 2015). This definition underlines the essence of Systems Thinking - recognizing and understanding the complex network of relationships and interactions that define a system. Eliel Saarinen, the renowned Finnish-American architect, succinctly captures the spirit of Systems Thinking in his famous quote, "Always design a thing by considering it in its next larger context — a chair in a room, a room in a house, a house in an environment, an environment in a city plan." This perspective resonates deeply with the philosophy of the ID+UX Superblock model. It emphasizes the necessity of viewing a product not in isolation but as a part of a larger ecosystem, understanding how it fits and functions within this broader context. Incorporating Systems Thinking into the ID+UX Superblock curriculum empowers students to see beyond the surface of their designs. It encourages them to consider the broader implications of their work, from the immediate user interaction to the societal and environmental impact. By understanding that every design is part of an interconnected system, students learn to create solutions that are not only innovative and user-centric but also harmonious with the larger system in which they exist.

Real-World Problem Solving
The curriculum is heavily focused on tackling real-world problems, encouraging students to apply Systems Thinking and UX principles to develop practical, effective solutions. This involves understanding user needs, market trends, and technological possibilities, ensuring that the solutions are viable, innovative, socially responsible, and user-centric.

Product Design
The ID+UX Superblock model marks a significant shift in ID education by emphasizing the integration of User Experience (UX) principles with traditional Industrial Design. This blend mandates a holistic view of product development, where the design process does not terminate at the aesthetic and functional stages but extends to consider the user's interaction

with the product in a digital context. In doing so, it challenges students to think beyond the tangible aspects of design and to consider how a product communicates, interacts, and integrates with other elements within a system.

User Experience Principles

User Experience (UX) Principles are integral to the Superblock model, ensuring that every design decision is made with the end-user in mind. Students learn to develop empathy for users, conduct thorough user research, and translate user needs and feedback into intuitive and meaningful product interactions, regardless of the medium.

Technology Integration

In the ID+UX Superblock model, Technology Integration is a critical component, reflecting the design industry's current trends and future direction. Students are equipped with the knowledge and skills to incorporate the latest technologies into their design processes, enabling them to create innovative solutions that are technically feasible and forward-thinking.

Interdisciplinary Collaboration

The model fosters Interdisciplinary Collaboration, recognizing that modern design challenges often require expertise from various fields. Students are encouraged to work in diverse teams, communicate effectively across disciplines, and leverage collective knowledge to devise comprehensive solutions that are well-informed and multifaceted.

Sustainable Design

Sustainable Design principles are embedded throughout the curriculum to ensure that students consider the environmental impact of their designs. This approach not only involves the use of eco-friendly materials and processes but also encourages students to think about the lifecycle of products, aiming for solutions that are sustainable in the long term.

ID+UX Superblock Model

At the University of Houston, the Industrial Design program recognizes the evolving landscape of design education and the need for an integrated approach to meet the industry's contemporary demands. A pioneering step in this direction is introducing the ID+UX Superblock model. This innovative educational framework is presented at the pivotal stage of the students' journey—during the first semester of their junior year, where they engage in 'Juniors ID Studio' and 'Introduction to UX Design' (Figure 2). By combining those two courses and creating a building block with the key components of the Systems Design, this Superblock model for our ID curriculum was developed (Figure 3).
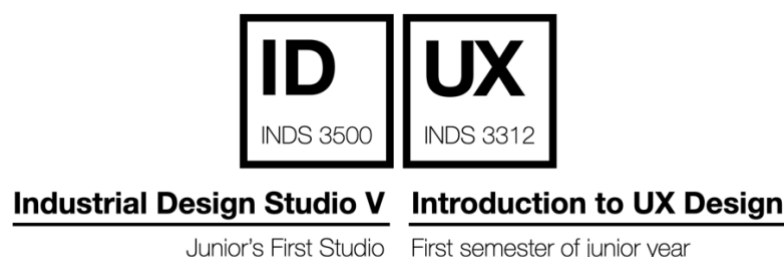
Figure 2. ID Studio and UX Design course in junior year at the University of Houston
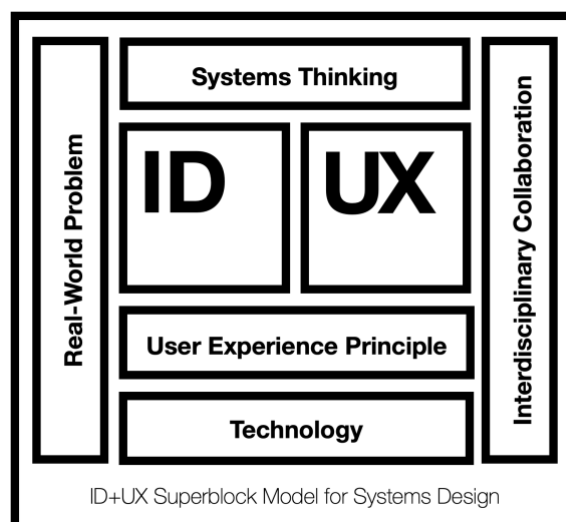
Figure 3. ID+UX Superblock Model for Systems Design

The ID+UX Superblock model is crafted to bridge the gap between traditional Industrial Design and the dynamic field of User Experience Design. It is designed to equip ID students with a comprehensive skill set encompassing product design, UX design, and UI design. This integration facilitates a holistic learning experience with additional building blocks: the key component of Systems Design, enabling students to explore real-world problems with advanced technology through user experience principles.

This combined course immerses students in a learning environment that encourages them to think beyond isolated products. They are trained to envision and design systems that optimize user experiences, leveraging their product and UX/UI knowledge. This approach ensures that their solutions are technologically feasible, relevant to market trends, empathetic to user needs, and environmentally sustainable.

By fostering an understanding of the interconnected nature of products, services, and user experiences, the ID+UX Superblock model aims to cultivate a new generation of designers. These designers are proficient in their craft and visionary in their approach, capable of addressing the complex, system-level challenges of the modern design landscape.

Systems Design Framework

These two courses are combined with a project incorporating product design, including physical and digital products and system solutions focusing on UI/UX design. The UX Design course has one project in this framework, while the ID Studio has two projects. One is for simple product design, while the other is for a system design that overlaps with both ID and UX. As the process of the superblock course shown in Figure 4, in the first half of the semester, the UX Design course focused on conducting research for the system design project, while the students worked on a separate project in the ID Studio, which was designing a chair. In the second half of the semester, the physical and digital product design phases of the system design project occur simultaneously. This combined superblock model course allows junior students to work on a physical product design: Project 1 and a system design project: Project 2.
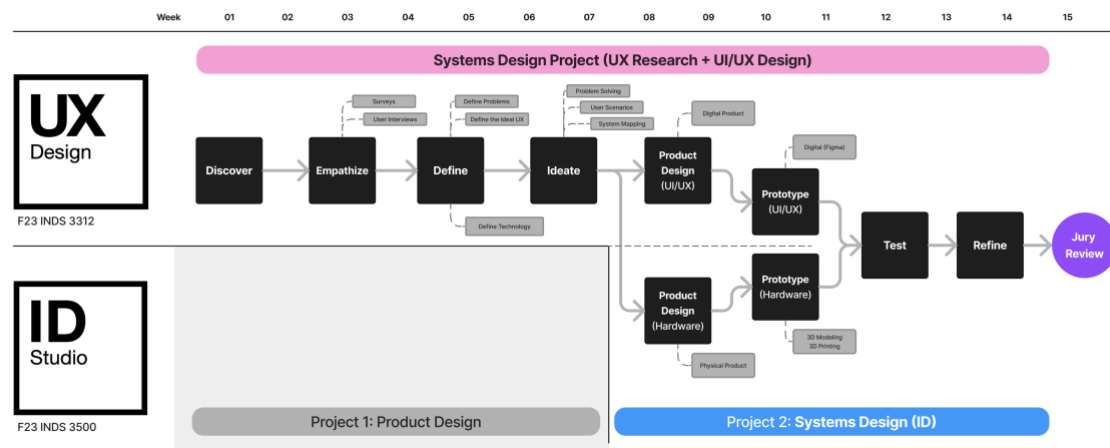
Figure 4. Systems Design Framework and Process

Case Studies

As part of their system design project, the students were given a challenge to create products that solve everyday problems using advanced technology. The project in the ID+UX Superblock course involves both research and design phases for physical and digital products. The students are expected to consider the latest technology integration to enhance the design solution and provide an ideal user experience for the identified issues. This section introduces the design challenge that students are working on, followed by two case studies from the course.

Design Challenge

- Identify a critical issue at home or work based on individual interests and research discoveries.
- Conduct focused research on specific human needs, define the ideal experience, develop concepts, and test the designs.
- Explore design opportunities for products they largely control in size, functionality, and testing.
- Study and apply the latest technology trends to design concepts to enhance the user experience.
- Create a system with physical and digital products to solve daily issues with the ideal user experience and human factors.
- Functionally creative and practical while aesthetically pleasing as an offering to the target user segments.

Case Study 1: ENERA – A System for Healthcare Monitoring

This project aims to improve the connection between patients and healthcare providers, creating a positive snowball effect. In the UX class, insights from the user interviews highlighted critical gaps in healthcare. During an interview, someone shared their experience of facing chronic AFib, which made them nervous about the episodes that come with it. They expressed a strong desire to take control of their condition and better manage it. This highlighted the challenges of managing atrial fibrillation and led to the direction of this project, which aims to bridge UX Design and ID Studio.

To better understand the daily impact of AFib, this research began by improving its management for everyday life. This included gaining insight into the chronic condition, identifying the target user group, and evaluating current solutions. Continuous monitoring of AFib vitals can enable early detection and better symptom management, resulting in improved patient outcomes. A proposed solution integrates telehealth, IoT, and UI/UX on digital interfaces. The ENERA system includes wearable devices and an app for continuous monitoring and feedback. (Figure 5)
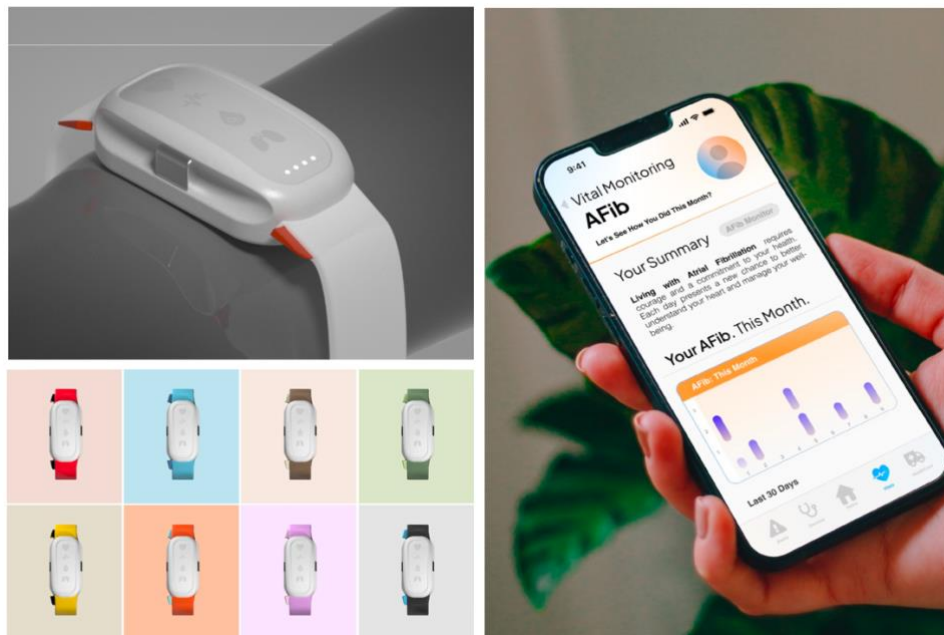
Figure 5. Physical and Digital Product of the ENERA System (Srivats Srinivasan, 2023)

The connection between UX and wearables is crucial in creating a coherent user flow system. The ENERA app employs various sensors to measure vital signs, including ECG, heart rate, respiratory rate, and oxygen saturation. By collecting this data from a wearable device, the app establishes a timeline, identifying when episodes occurred and which ones were abnormal. This provides a better understanding of the user's health status.

Case Study 2: Personal Pick – A System for Online Grocery Shopping Experience

One student found that online grocery shopping can be challenging when it comes to ensuring the quality of produce, and there is often no way to specify individual preferences and ensure the quality of each item. To address these issues, this project aims to enhance the online grocery shopping experience in three key ways:

1. Optimizing the process of picking and packing online orders by employees at the store.
2. Implementing AI learning to continuously improve the online shopping experience based on repeated buying behaviors.
3. Incorporating customer preferences and product conditions at the grocery store to provide customers with more detailed information and options.

Augmented Reality (AR) technology was proposed to be integrated into the hardware product used by employees to enhance their picking experience. AR glasses use a combination of optical technologies such as cameras and spatial mapping, along with non-optical

technologies like GPS tracking and projection, to provide visual guidance to the user, direct them to the correct location, and accurately highlight the object needed for selection. Therefore, the student designed the AR glasses with consideration to weight distribution, adjustability of the glasses, and hygiene issues. (Figure 6)

Figure 6. AR Glasses for Employees at Grocery Stores (Peggy Thai, 2023)

The deliverables are AR glasses for employees, a mobile app for customers to order groceries based on their preferences, and quality assurance. (Figure 7)

Figure 7. Personal Pick: System for Online Grocery Shopping Experience (Peggy Thai, 2023)

In this case study, a simulation was presented to demonstrate how AR glasses work and how users interact with the digital interface. The simulation focused on picking experience for employees with a specific order, where the preference was given to the ripeness of bananas. (Figure 8)
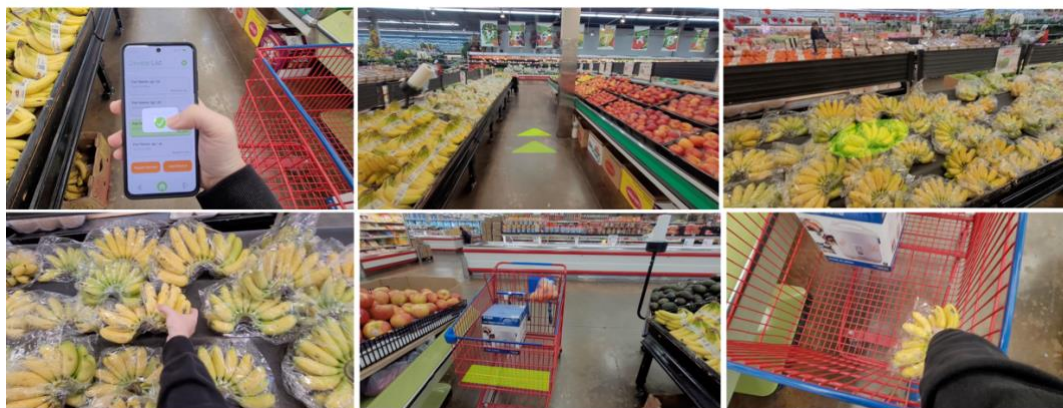
Figure 8. Simulation for Optimal Picking Experience with AR Glasses (Peggy Thai, 2023)

Conclusion: Discussions and Future Works

The "ID+UX Superblock" model marks a significant advance in the realm of industrial design education, strategically addressing the gap between traditional Industrial Design (ID) and User Experience (UX) Design to align with the needs of today's rapidly evolving design landscape. By integrating Systems Design and UX principles into the ID curriculum, the Superblock model demonstrates a profound potential to enrich students' design capabilities, preparing them for the multifaceted challenges of contemporary design.

The case studies presented within this research offer compelling evidence of the model's effectiveness in fostering a holistic design approach. These studies illustrate how students, by focusing on a holistic user experience within a single system-level scale project, can identify opportunities to resolve issues and create a cohesive system of products. Such projects not only showcase students' proficiency in form-giving and user interface design but also highlight their adeptness in the overall design of complex systems, reflecting a comprehensive understanding of both the macro and micro aspects of design.

The implications of adopting the Superblock model extend beyond the immediate enhancement of students' technical skills. It cultivates a dynamic skill set, empowering students with the ability to think critically and creatively about the interconnected nature of products, services, and user experiences. This approach ensures that graduates are capable of innovating within their respective fields and are prepared to contribute meaningful, sustainable solutions to the global community.

However, implementing such an integrated curriculum presents its own challenges, including the need for substantial faculty coordination, technology resources, and industry engagement. Despite these hurdles, the benefits of the Superblock model, as evidenced by the success of the case studies, underscore the importance of continuing to explore and refine this educational approach. Addressing the logistical and pedagogical limitations will be crucial in further developing and scaling the model to meet a broader range of design challenges and opportunities.

In conclusion, the "ID+UX Superblock" model signifies a vital evolution in industrial design education, emphasizing the need for a more comprehensive, integrated approach to prepare designers for the complexities of the current and future design landscape. The model's success in fostering a new generation of designers proficient in designing holistic, user-centric solutions across a spectrum of complex systems holds promise for the continued

advancement of design education. As we move forward, it is essential to build on this foundation, expanding the scope and adaptability of the Superblock model to ensure that it remains relevant and effective in equipping designers to navigate and shape the ever-changing design environment.

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Exploring Student-Centered Initiatives in Virtual and Asynchronous Post-secondary Graduate Programs

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Abstract

As post-secondary education continues to evolve in response to diverse learners, graduate post-secondary programs have embraced virtual and asynchronous learning environments. This paper investigates the implementation and impact of student-centered initiatives within these contexts within online learning communities at the graduate post-secondary level. Educational institutions face challenges and opportunities posed by online learning environments including potential barriers to learning related to engagement, digital literacy, geographical considerations of attending students, student expectations, student motivation, and faculty training as well as retention. Informed through the lens of social justice in education, this work explores a range of student-centered strategies and their effectiveness in promoting student success. The information shared contributes to the growing body of literature on student-centered learning in virtual settings and offers valuable insights for educators, program administrators, and policymakers seeking to optimize the graduate experience. These initiatives are intended to have a broad positive impact on student supports and experience of a post-pandemic society as students choose to access or remain in the online learning environment.

Keywords: Graduate Programs, Student-Centered Initiatives, Online Higher Education, Student Success, Synchronous Delivery, Asynchronous Delivery, Embedded Supports

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Introduction

The theoretical foundations and practical applications of student-centered learning and its applicability to virtual education warrant scrutiny to determine the course of action for increased student-facing initiatives. Examination of various pre-existing and proposed initiatives that provide student-facing opportunities aims to increase connections, community, and collaborative processes within the institution. Furthermore, the findings may be considered an evaluation of the impact of student-centered initiatives on critical outcomes such as student engagement, scholastic achievements, and the development of program-specific skills competencies. Essential elements of online education include strategies to promote student engagement, the development of a social presence, and the creation of virtual communities (Brown & Wilson, 2016). Virtual and asynchronous/synchronous learning environments pose challenges and opportunities including observed barriers to learning related to student motivation and engagement, accessibility, digital literacy, and faculty support/retention.

Guided by the Inclusive Student Services Process Model (Floyd and Casey-Powell, 2004) hereby referred to as "ISSPM", this paper looks to research outcomes and research based on educational institutions that strive to build student connections in an online learning platform. From admission to alumni status, students attending non-traditional learning environments require different options to address their reported demands for services that closely mirror traditional learning experiences while still experiencing the benefits of an online program. As Rumble (2000) highlights, students are "increasingly acting as consumers in their relations with universities, and it is in the service industries that most of the really good thinking about customer care has gone on" (para. 2). Most importantly, evidence-based practise of such strategies should include evaluative measures that consider the student experience.

The concept of student support and evaluative outcomes has been largely ignored in research supports (Rumble, 2000) as highlighted by Watson's (2000) brief section on student satisfaction and student opinion. This article aims to overcome the shortcomings of previous research by exploring the following research question: What types of support strategies and interventions are effective for online students at various transitions of the learning process and how can those stages be best defined for current online learners?

Student Experience Through the Lens of the ISSPM Model

Research suggests that student-centered initiatives, when thoughtfully designed and implemented, have the potential to enhance the quality of education in virtual and asynchronous graduate counselling programs. They foster a sense of autonomy, self-efficacy, and community among students, aligning with the principles of adult learning theory. However, successful adoption requires a shift in pedagogical paradigms, ongoing faculty development, and robust technological infrastructure. Brindley (2014) notes that distance learners are expected to manage multiple roles including effective peer collaboration, create learning networks, plan academic programs, and set study schedules. In addition, these tasks are engaged alongside work and family responsibilities. A challenge of online learning programs is to understand the readiness of online learners prior to attending the graduate level programs (Hoang et al., 2022), where student supports can be embedded (Rumble, 2000), and evaluative measures of strategy efficacy often lacking in the online post-secondary community.

The very points of transition for online post-secondary students are not well-supported in research. This shift in a student's flow through the master's and doctorate-level programming shows a demand for student adjustment as well as multi-faceted touch points that require consideration (Maunder et al., 2013). These touch points can be determined into five key areas as supported by the Inclusive Student Services Process Model (Floyd and Casey-Powell, 2004), guiding future support strategies and interventions that may be more successful for a consumer-centric population of students at the graduate level. These five areas as based on the model include 1) Student Intake; 2) Student Interventions; 3) Student Supports; 4) Student Transitions; and 5) Measurement (Floyd and Casey-Powell, 2004).

Student Intake

Millán et al. (2023) address the early conceptualization of student readiness by addressing digital readiness and the ability to competently navigate online learning management systems including Blackboard, Canvas, and Moodle. While current research supports accessible course materials, effective instructional design, and meaningful use of technology, there exists an increased recognition of aspects including academic and social supports, financial constraints, and student motivation as well as engagement (Samuel and Burger, 2020). A comprehensive student intake enriches the experiences and outcomes not only technical and academic supports; readiness for online learning addresses the benefits of targeted support services (Nichols, 2010). The level of preparedness plays a crucial role in determining the success of applications in the online learning environment, as noted by Hung et al. (2010), Johnson et al. (2008), and Yeh (2010). The online learning readiness (OLR) theoretical framework of Hung et al. (2010) highlights the need to improve various facets of the online learning experience and precipitating factors, including dimensions of supportive leadership as noted by Cowan (2013), prior online learning experience, self-directed use of technology, and student attitudes towards online learning (Hung et al., 2010). Furthermore, the psychosocial stressors of the student prior to the start of online learning lack current research and instead, research tends to consistently present with a focus on technology usage and self-efficacy.

Early indications of online learning challenges addressed by Warner, Christie, and Choy (1998) focused on the Australian vocational education and training sector. Their definition included three key components: students' inclination toward online delivery over traditional classroom methods, their comfort and proficiency in using electronic communication tools for learning, and their confidence and skill in navigating Internet and computer-mediated online learning environments. More recently, Parasuraman (2000) addressed the varying approaches to online learning readiness and the direct connection between the psychological state of the student. As noted in Hoang (2022), Darab and Montazer (2011) developed a multi-dimensional model of assessment addressing readiness dimensions: communication network readiness, equipment readiness, security readiness, financial readiness, human resources readiness, support and supervision and coordination readiness, laws and regulations readiness, standards readiness, and content readiness. Purnell et al's (2016) work adds consideration to changing student demographics, as novice learners are more at-risk than experienced learners. In addition, Kear (2016) identifies student misconceptions about course difficulty and skills necessary for success. These skills connect to Darab and Montazer's (2011) work as these skills also include the motivation of the student, psychosocial factors such as natural supports and family as well as work obligations, and the true financial costs associated with online learning.

While online learning research is limited, Hoang's (2022) research acknowledges the continued challenges of successful student intake supports. A key limitation to the outcomes of the study involves student self-reporting as online learning perceptions may skew results. Qualitative instruments, including addressing not only stressors but also protective factors, will be key to improving student intake services that provide wraparound supports from a comprehensive and data-driven perspective. Ultimately, educational institutions must consider the pre-learner's skillsets, responsibilities, protective factors, and stressors and instruments including online student readiness are important to address these facets. Britto & Rush's (2013) work reminds educational post-secondary communities that "not all students are prepared to take courses online" (p. 31). Despite advances in student supports, online educational programs continue to be challenged to provide appropriate interventions to students presenting with a wide range of needs.

Student Interventions

The identification of the needs of students from the view of academic capacity, psychosocial stressors, natural support systems, motivation and engagement, as well as technological skills is key to student outcomes and ultimately, student attrition. Netanda et al. (2017) highlight the reduction of transactional distance resulting in increased student success and the development of a supportive framework. Results identify that supports offer online learners a multitude of benefits including greater academic success and increased retention. While evaluative measures for outcomes of student interventions have largely been self-reporting (Hoang, 2022), future statistical examination of provisions will support institutions to address the level of interventions accessible by online learners and the engagement by learners to access such services. Kuo and Belland (2016) highlight that student satisfaction is directly linked to their performance as students. However, the interaction between learners and content was not influenced by factors such as the individual student characteristics or the specific course being studied. This could imply that the content itself, or perhaps other external factors, played a more significant role in shaping the interaction dynamics.

In the realm of online education, it is imperative to provide students with comprehensive support that extends beyond academic instruction to encompass the management of external responsibilities and commitments (Whitelock et al., 2015). Whitelock et al. (2015) underscores the significance of recognizing and accommodating the workload of online learners who juggle employment and family obligations. The confluence of assignments with particularly demanding periods in the lives of online students can lead to significant overload, potentially resulting in students falling behind. Therefore, it is unwise to presume that students consistently adhere to their study schedules. These stressors that are consistent with the demographic of the online student as a later-stage adult with additional commitments and responsibilities should be carefully considered.

Student Supports

While educational institutions typically focus supports on academic challenges including writing and communication skills, technological supports, and the provision of assistive technology for learners who benefit from accommodations, more recent studies including Kumar and Coe, (2017) have addressed "socio-emotional supports" (p. 15). Peer supports, including mentoring as well as the connectivity of peers in a seemingly isolated arena of online learning, is instrumental in the network of student supports. Boyle et al. (2010) address

the simplicity of peer mentoring as a low-cost strategy that can be embedded into the learning curriculum.

The development of skills is another facet that online learning environments tend to face as a key challenge with student success and eventually, attrition. Increased student supports may include the socio-emotional perspective that provides enhancement of student experience through socialization opportunities with their peers in addition to building academic skillsets. Increased reports of belonging, as addressed by Boyle (2010), have been reported in addition to students reporting increased motivation, engagement with their instructor or professor, improved study skills, and increased comfort with sharing psychosocial stressors including feelings surrounding academic workload, family obligation, employment challenges, and financial constraints.

A comprehensive student support system has shown an impact on student success. Britto & Rush (2013) provide guidance on the comprehensive support system that positively affected student experience and ultimately, improved student retention rates. The comparative study could easily be absorbed into consideration for future programming in other online institutions, as utility and efficacy were examined with planned future evaluations. A sense of belonging, as adopted by Lee & Choi (2011) suggests that personal support interventions in addition to technological and academic interventions are effective in combatting student dissatisfaction and eventually, student withdrawal (Anderson, 2003; La Padula, 2003). In this supportive phase embedded in online learning environments, early intervention for learners with challenges in addition to the identification of at-promise students are key for student experience, positive engagements during the program, student attrition, and net promotion of the institution after program completion.

Student Transitions

Key touch points of student transition in the online community, as identified by the Inclusive Student Services Process Model (Floyd and Casey-Powell, 2004) include acceptance to the online learning program, the transition between the stages of learning, and ultimately the transition to the labour/employment market. Recognition of the changing expectations between courses and even years of study suggests that students continue to be required to adapt throughout their program, regardless of the experience they brought to the online learning environment as a student or their motivation to fully participate in the student experience (Maunder et al., 2013). A key challenge in research regarding student experience and particularly, the transitional phases in the student's journey, include that research has focused only on the first year of student transitions (Tett, 2000).

The expectations and interpretations of student experience during the transition phases are affected by internal images (Maunder et al., 2013). Negotiating the transitions throughout the educational program includes the aspects of Darab and Montazer's (2011) work of addressing support available to online learners. Also consistent with Darab and Montazer (2011), Maudner et al. (2013) acknowledges the inclusion of authentic student voice in efforts to provide increased research of service provision outcomes. By providing students with direct engagement in the key touch points of their transitions experienced in the online learning community, continued active dialogue between leadership, faculty, and students can increase the reliability of data collection for transition. This student-led approach offers a distinctive and authentic perspective on student life. It underscores the significance of collaborative

efforts between staff and students in enhancing comprehension of educational matters and fostering transformative change (Little, 2011).

Measurement and Evaluation

Effective student supports and interventions can only be determined as such with comprehensive and evidence-based data. However, Gibbs et al. (2006) suggest that there exists a lack of such a system to evaluate the offerings to online learners. Instead, institutions rely on student self-reporting instruments; reliability and validity may be affected by a multitude of factors including the student's internal perception of their experience regardless of the offerings of their program. At this touchpoint of moving students to employment markets, Zuhairi et al. (2019) suggest that alumni of online learning programs are valuable resources. Feedback, involving alumni in projects, developing an alumni network, and updating past graduates on recent updates in the organization can be positive contributors to measurement. Furthermore, mechanisms of assessment can include surveys by students and faculty, staff performance assessments and appraisals, tutor performance evaluations, and alumni surveys (Zahairi, 2019).

A general lack of empirical evidence in the measurement and evaluation phase of the Inclusive Student Services Process Model (Floyd and Casey-Powell, 2004) suggests that instruments relied upon are self-reports completed by students transitioning to alumni. The authors consider the exploration of an online student services self-assessment tool that allows educators to evaluate areas of support. Reliability is questionable; Maunder et al. (2013) identify that student feedback at this point is individual and personal. Establishing student identity at this phase with the additional stressors of changing expectations from student online learner to the workforce adds additional pressures that may affect the student experience and the very perception of that experience.

Conclusion

There is a growing body of literature on student-centered learning in virtual settings that offers valuable insights for educators, program administrators, and policymakers seeking to optimize the graduate counselling experience. The challenges lie in multiple facets of the student experience, including the expectations of students prior to entering the online learning community, academic and non-academic challenges, interventions provided, and measurement and evaluation of supports. Keegan (2003) suggests that online learning programs are further challenged by the determination of support services in two categories: learner support and learning support (p. 1-2). This underscores the importance of prioritizing student agency and engagement in the design and delivery of virtual post-secondary education, acknowledging the benefits for learners in the online learning environments and ultimately shaping the future of counselling/psychology education and practice.

Limitations must be acknowledged as online programs facilitated by post-secondary learning institutions address student experience and success. These include embracing methodology that has been consistently successful prior to the increased popularity of online learning (i.e. peer mentoring), the fallibility of the reported student experience in the single form of student self-reporting, and the recognition of academic learning versus the needs of the learner. Through the lens of the Inclusive Student Services Process Model presented by the work of Floyd & Casey-Powell (2004), further research into the methodologies surrounding the student experience from initial phases of admissions to alumni for the online learner will

improve the understanding of the current processes and add to the understanding of these complex educational issues in a unique virtual learning environment.

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HybridEdu Quiz Maker:
A Tool for Creating Paper-Based and Online Quizzes in Hybrid Classes

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Abstract

This paper presents HybridEdu Quiz Maker (HEQM), a tool for creating paper-based and online quizzes in hybrid classes. The primary goal of HEQM is to simplify the process of generating comprehension assessment tests, making it convenient and efficient. Hybrid classes, which blend in-person and online instruction, often require instructors to create paper-based quizzes (PBQuiz) for in-person sessions and online quizzes (GFQuiz) for virtual learning. This task can be arduous and time-consuming. HEQM offers a unique solution seamlessly integrating with MS Word and Google Sheets. It provides a set of six quiz templates, including fill-in-the-blank, multiple-choice, open-ended, true/false, matching, and ordering questions, in both MS Word and Google Sheets. HEQM's distinct feature is its Word-based import/export. Users can easily import GFQuiz data from Google Sheets to MS Word to create PBQuiz. Similarly, PBQuiz data can be exported and converted for GFQuiz, allowing direct import into Google Sheets for streamlined creation. Editing in MS Word also facilitates quick PBQuiz and GFQuiz generation. HEQM cuts quiz creation time and offers a user-friendly interface, similar to MS Word and Excel, for an effortless transition without new techniques. In conclusion, HEQM offers a practical solution for quiz creation in hybrid classes, demonstrating its potential to save time and simplify the process. Future developments may include database integration for enhanced data reuse.

Keywords: Quiz Maker, Hybrid Education, Hybrid/HyFlex Class, Paper Based Quiz, Online Quiz

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Introduction

In this paper, we introduce a tool currently in development for creating quizzes in hybrid classes to assess students' comprehension. Our tool, named "HybridEdu Quiz Maker (HEQM)", enables educators to create paper-based quizzes (PBQuiz) for face-to-face sessions in Microsoft Word, and with just a few clicks, generate online quizzes (GFQuiz) using Google Forms (GForms). Additionally, the reverse is also possible: creating GFQuiz on Google Sheets (GSheets) allows for the easy generation of PBQuiz. Thus, HEQM enables the two-way creation of both PBQuiz and GFQuiz from a single set of quiz data.

Hybrid classes, which combine face-to-face and online instruction, often require teachers to create both PBQuiz for in-person sessions and GFQuiz for virtual learning. This task can be challenging and time-consuming. HEQM was designed to alleviate some of this burden for teachers. It focuses on enabling easy quiz creation in the familiar computing environments of educators, utilizing two of the most commonly used applications: Microsoft Word and GSheets. GSheets operates similarly to Excel, reducing the learning curve for educators and potentially shortening quiz creation time.

To summarize the features of HEQM, they include: 1) the ability to create quizzes for both face-to-face and online learners from a single set of quiz data, 2) the flexibility to create quiz data in either Word or GSheets, and 3) the use of familiar interfaces and operations, as it offers menus similar to Word and Excel.

HEQM is an improvement upon the quiz creation tools we have developed so far (Matsuo, 2022; Matsuo, 2023). In this paper, we will describe the background of HEQM development, then discuss the functionalities of HEQM, the current status of its development, followed by a discussion, and future directions.

Hybrid Classes After Pandemic and HEQM

The onset of COVID-19 made it essential to adapt to hybrid classes, and in 2020, UNESCO recommended hybrid classes, leading to their global adoption (UNESCO, 2020). While many universities have returned to face-to-face learning, according to a BBC article, a third of U.S. institutions still adopt hybrid classes (Stanley, 2023). A Cengage survey indicates that 76% of students wish to continue hybrid learning (Digital Learning Pulse Survey, 2022). In Japan, following the pandemic, the Ministry of Education published a leaflet "Don't Stop Learning! Remote/Online Education for the Future" based on pilot studies (MEXT, 2021) and issued a notification in 2022 for "Guidance on Using ICT for Students Unable to Attend School Due to Illness or Disaster" (MEXT, 2022), encouraging diverse educational methods using ICT. Our college, while mainly offering face-to-face classes, is also equipped to accommodate students who cannot attend due to disasters or illness.

Thus, the trend towards hybridization in education methods seems likely to continue post-pandemic, increasing the workload for educators. In this context, HEQM can contribute to reducing the time required for creating quizzes, an effective method for assessing student comprehension.

Tests for Assessing Students' Understanding

Davis stated, "Many teachers dislike preparing and grading exams, and most students dread taking them. Yet tests are powerful educational tools that serve at least four functions." (Davis, 1999). This is still recognized by most educators today, as evidenced by the numerous papers on exams, tests, and quizzes reported that have been reported specifically since the year 2020. Among these, papers on quiz creation methods include: 1) tools for creating online quizzes (for example, Shaik et al., 2020), 2) the effects of gamification for enjoyable learning (for example, Waluyo & Tran, 2023; Daulay & Adelita, 2023; Segaran & Hashim, 2022), and 3) cheating prevention measures for fairness (for example, Newton & Essex, 2023; Holden et al., 2021; Zulkifli & Khalid, 2023).

We also consider quizzes indispensable for assessing student understanding in hybrid classes. Initially, we experimented with distributing the same PBQuiz online but identified several issues. We then tried GFQuizzes, which also presented problems. Table 1 summarizes these challenges.

Table 1: Issues Arising from Using Either PBQuiz or Online Tests Exclusively

Test Method	Problems
Distributing the same PBQuiz file online for both face-to-face and online students	Students: Difficult to work on small smartphone screens during online classes. Teachers: Time-consuming to review each student's submitted file.
Creating online tests for both face-to-face and remote learners	Equipment limitations (*): Students use their devices for exams, leading to issues like forgetting devices, time-consuming login processes, and using other apps during tests. *Wi-Fi is available in classrooms, but school-provided devices require prior application by students, which is time-consuming. Also, PC rooms are not always available and are not suitable for regular note-taking classes.

We recognized the need to create both PBQuiz and online tests but found it too labor-intensive. This led to the development of HEQM. Notably, HEQM did not prioritize cheating prevention measures. While this is crucial for exams solely assessing students, HEQM focuses on unit-by-unit comprehension checks and fairness, aiming to administer simultaneous face-to-face and online quizzes.

Reasons for Choosing WORD and Google Forms

In developing HEQM, we aimed to: 1) create a user-friendly tool with operations familiar to many, reducing apprehension in using HEQM, 2) ensure free usage without requiring specialized server operations, and 3) enable rapid development with minimal effort.

1) and 2) have always been our focus. "Development of an instructional material support tool that can be seamlessly used by those familiar with Word." We have previously developed a tool named "Microsoft Word Integrated Text Analysis Tools (MiWIT)" which includes: 1) a Text analysis tool for creating reading comprehension materials, analyzing text and word

difficulty, 2) a tool for collecting authentic materials from the web for teaching, and 3) a PBQuiz creation tool for assessing student understanding (reference). Initially for ESL/EFL material creation, the PBQuiz tool proved useful for other subjects, leading to its separation from MiWIT.

Given that 1) and 2) were already considered in the previously developed PBQuiz tool, we focused on 3) "rapid development" for creating online quizzes, considering the following:

    a) Ability to export Word PBQuiz directly as an online quiz.

    b) Compatibility with familiar Word and Excel for educators.

    c) Free usage.

Commonly used free online quiz tools include Moodle and Google Forms (reference). When developing the online quiz tool, we initially excluded Moodle (though it's possible to add Moodle's GIFT format test and quiz question creation functionality to our tool). Moodle is an excellent tool but requires a server setup, making it not universally accessible. We also considered MS Forms, but at the time of our research, we couldn't find a direct form creation method from external apps. In contrast, Google Forms, with many reports online about creating forms from Google Sheets using Google Application Script (GAS), seemed feasible for development, leading to its adoption.

Overview of HEQM

The key feature of HEQM is its ability to create both PBQuiz and GFQuiz with just a few clicks, regardless of which one is initially made. Furthermore, both quizzes can be created by simply filling out templates.

Figure 1 shows the HEQM menus in Word(Word_HEQM), Figure 2 the HEQM menus in GSheets(GSheets_HEQM), and Figure 3 an overview of HEQM. As seen in Figure 3, HEQM can generate both PBQuiz and GFQuiz data from quizzes created in Word, and similarly from GSheets. Thus, Word and GSheets work together to create both PBQuiz and GFQuiz. This section discusses 1) Quiz formats offered by HEQM, 2) Quiz templates and menus provided by Word_HEQM and 3) Quiz templates and menus provided by GSheets_HEQM.
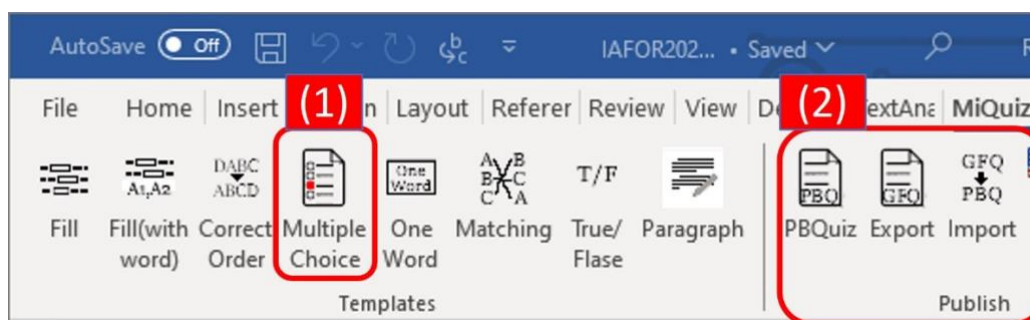
Figure 1: HEQM Menus in MS Word.
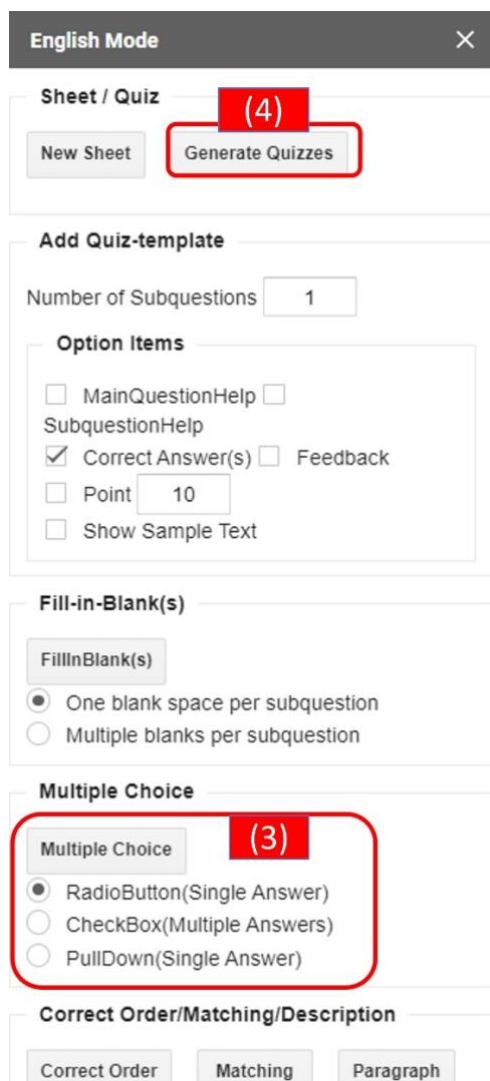
Figure 2: HEQM Menus in GSheets.
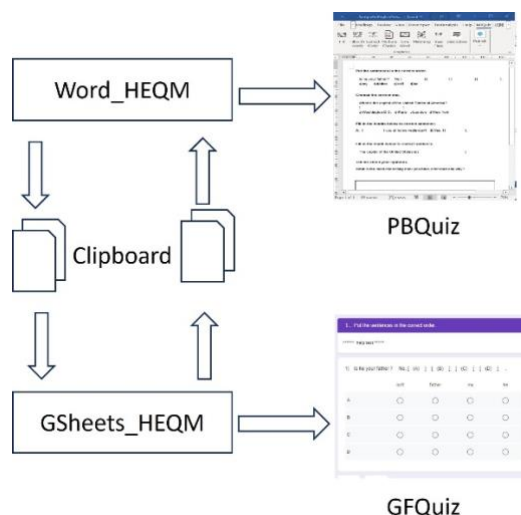
Figure 3: Overview Diagram of HEQM.

Quiz Formats Offered by HEQM

HEMQ currently offers the following commonly used quiz formats:
    a) Fill-in-the-blanks questions (multiple blanks per sub-question)
    b) Fill-in-the-blanks questions with word options (multiple blanks per sub-question)
    c) Ordering questions
    d) Multiple-choice questions
    e) Single-word questions (one blank per sub-question)
    f) Matching questions
    g) True/False questions
    h) Descriptive questions

Quiz Templates and Menus Provided by Word_HEQM

(a)Example of data entered into a multiple-choice quiz template.

(b) Generated teacher's quiz with answers.

(c) Generated student's quiz.
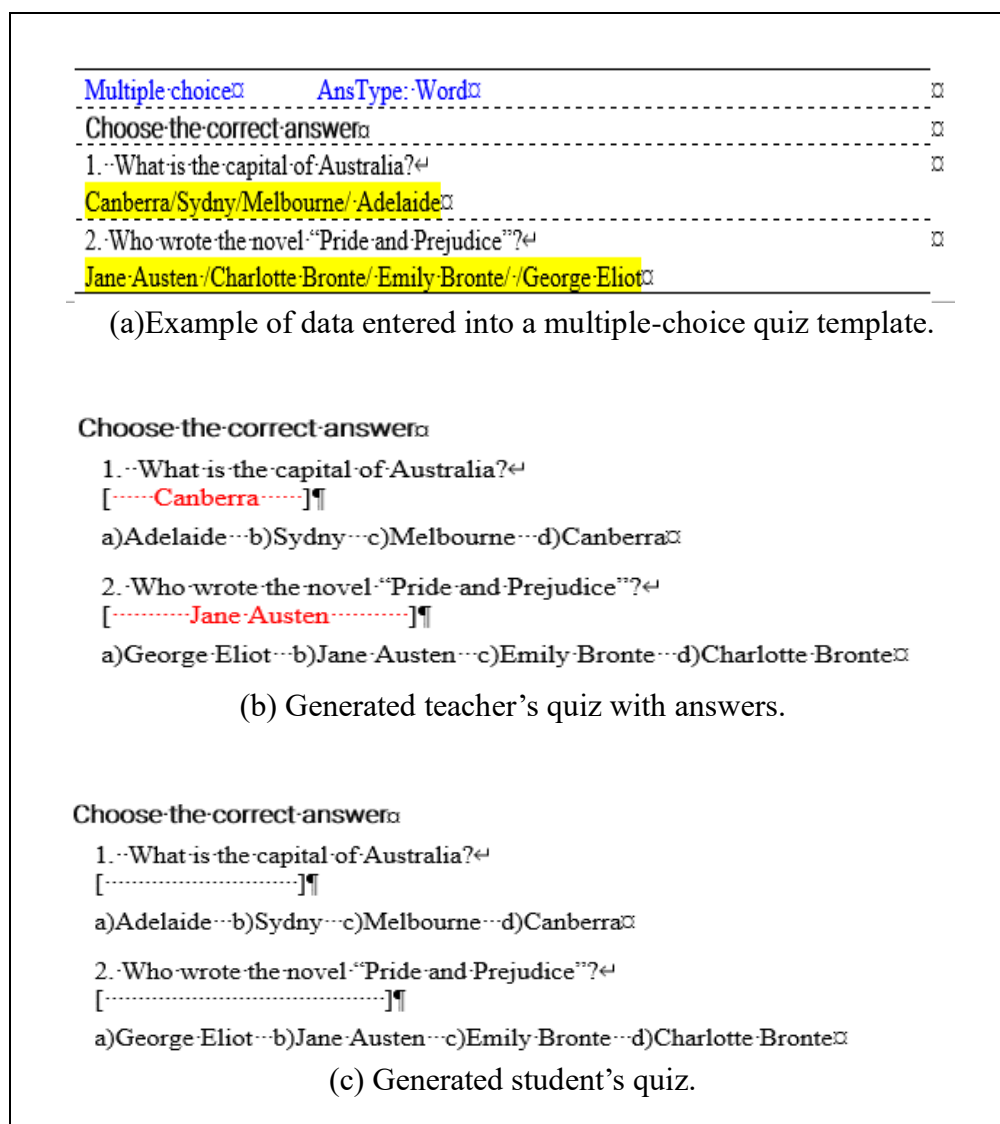
Figure 4: Example of Quiz Creation Using the Multiple-Choice Template in MS Word.

As previously mentioned, Figure 1 shows quiz templates provided by HEMQ in MS Word. Here, the Multiple-Choice format is used as an example for explanation. For other formats, please refer to the appendix. Clicking the "Multiple Choice" menu in Figure 1(1) inserts a "Multiple Choice" template at the current cursor position in the document. An example of quiz data created using this template is shown in Figure 4(a). After creating data with the correct answer at the beginning of each option, clicking the "PBQuiz" menu in Figure 1(2) "publish" group generates both a teacher's version of the quiz with answers (b) and a student version (c).

Quiz Templates Provided by GSheets_HEQM

Similar to WORD_HEQM, we explain using the "Multiple Choice" template as an example. Clicking the "Multiple Choice" button in Figure 2(3) (Figure 5(a)) inserts the template shown within the red frame in Figure 5(b). After editing this template, clicking "Create Quiz" in Figure 2 generates the GFQuiz shown in Figure 5(c). GFQuiz offers radio buttons, checkboxes, and dropdowns for answering multiple-choice questions.

Multiple Choice

Multiple Choice

- ● RadioButton(Single Answer)
- ○ CheckBox(Multiple Answers)
- ○ PullDown(Single Answer)

(a) Multiple Choice menu

	A	B	C
1	Sheet for Quiz Form		
2	Form Url	https://docs.google.com/forms/d/1-yaC2aJizbxnhC	
3	Working Information		
4	--------	--------	
5	Title	MiQuiz	
6	HelpText		
7	--- Write your quizzes down here ---		
8	QuizType	MultipleChoice-Radiobutton	
9	PartQuestion	Choose the correct one.	
10	PartQuestionHelp		
11	Question	What is the capital of Australia?	
12	QuestionHelp		
13	Choice(s)	Camberra/Sydney/Melbourne/Adelaide	
14	CorrectAnswer(s)	Camberra	
15	Point	10	
16	Feedback		
17	-qend-	To add another question, copy from the "question t	
18	-end-of-part-		

(b) Example of data entered into a multiple-choice quiz template

２セクション中２個目のセクション

Choose the correct one.

説明（省略可）

What is the capital of Australia?

- ○ Sydney
- ○ Melbourne
- ○ Camberra
- ○ Adelaide

(c) Generated quiz

Figure 5: Example of Quiz Creation Using the Multiple-Choice Template in Google Sheets.

Exporting Quiz Data From WORD to GSheets

Figure 6 reiterates the overview of HEQM.As shown in Figure 6, to export quiz data created in WORD to GSheets, click the "GFQ" menu button in the Publish group of Figure 1. This action converts the data into GFQuiz format and copies it to the clipboard. Switch to GSheets, click the cell where the data should be inserted, and paste. After pasting, clicking the "Create Quiz" menu generates the GFQuiz, just like when using a template.
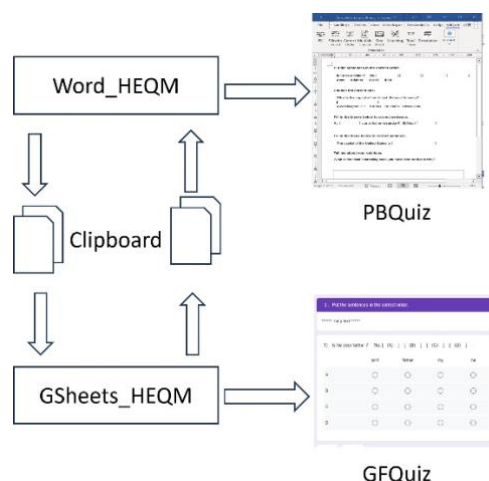
Figure 6: Overview Diagram of HEQM (Reproduced).

Importing Quiz Data From GSheets to WORD

To import quiz data from GSheets to WORD, select the necessary quiz data in GSheets, copy it to the clipboard, switch to WORD, and click the "Import" button (Figure 1[2]). This allows the creation of PBQuiz.

Conclusion

Hybrid Education, previously limited to some educational institutions, has become widespread globally post-COVID-19. Although the pandemic seems to be subsiding, more than 80% of higher education institutions worldwide are reportedly adding online options to most of their courses permanently (reference), indicating the continuation of diverse teaching methods. Tests, whether face-to-face, online, or in hybrid classes, remain an effective method for assessing student understanding.

Most test creation and implementation currently rely on online quizzes like Canvas Quiz and Kahoot, with Moodle also widely used in universities. Recently, most papers on quizzes focus on online quizzes rather than face-to-face ones. We might also exclusively adopt online tests in the future if network conditions permit conducting comprehension tests under the same conditions both in and out of the classroom, significantly reducing the grading workload for educators. However, for the foreseeable future, we believe HEQM will be a convenient tool in reducing the workload for educators. Our project is ongoing, but at our level of familiarity with the tool, it's sufficiently developed for use. By using this tool, we have nearly eliminated the time required to create GFQuiz (and vice versa) from PBQuiz creation. However, our evaluation might be biased, and broad public release with user feedback is necessary. We are currently preparing for public release, having completed the main development phase and focusing on harmonizing terms across Word and GSheets menus and improving the user interface. Once these tasks are complete, we plan to release it. Moreover, with the emergence of generative AI, as exemplified by ChatGPT, educational methods are expected to evolve, and we have started considering incorporating generative AI into HEQM improvements.

Acknowledgment

Appendix : Paper-Based Quiz and Google Forms Quiz Created using HEQM
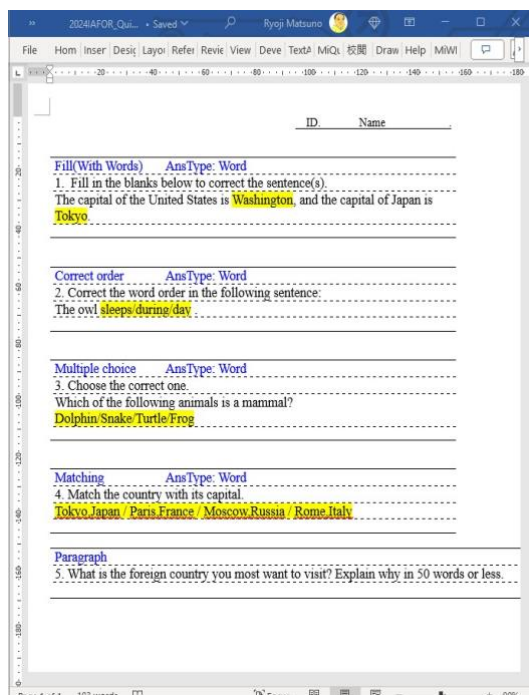
Figure A-1: Creating Quiz Data

Figure A-1: Creating Quiz Data
Figure A-2: Generated Paper Based Quiz
    with Answers (For Teachers)
Figure A-3: Generated Paper Based Quiz
    (For Students)
Figure A-4: Google Forms Quiz Data
    Generated from MS Word
    Documents
Figure A-5: Google Forms Quiz Generated
    from Google Sheets Data

* In Figure A-1, the parts highlighted in yellow are converted to blanks or shuffled according to the quiz type. Instead of highlighting in yellow, you can also enclose it with '@[' and '@]'. For example, in a fill-in-the-blank problem, if you write '@[Washington@]', the part of 'Washington' will be replaced with a blank.

*Please enlarge the figure if it is too small to see.

Figure A-2: Generated Paper Based Quiz
with Answers (For Teachers)

Figure A-3: Generated Paper Based Quiz
(For Students)

Figure A-4: Google Forms Quiz Data Generated from MS Word Documents

	A	B	C
9	PartQuestion	1. Fill in the blanks below to correct the sentence(s).	
10	PartQuestionHelp		
11	Question	The capital of the United States is [　(a)　] , and the ca	
12	QuestionHelp		
13	CorrectAnswer(s)	Washington/Tokyo	
14	Point		0
15	Feedback		
16	-qend-		
17	-end-of-part-		
18	QuizType	CorrectOrder	
19	PartQuestion	2. Correct the word order in the following sentence:	
20	PartQuestionHelp		
21	Question	The owl [　(A)　]　[　(B)　]　[　(C)　]　.	
22	QuestionHelp		
23	Rows	A/B/C	
24	Columns	sleeps/during/day	
25	CorrectAnswer(s)	sleeps/during/day	
26	Point		0
27	Feedback		
28	-qend-		
29	-end-of-part-		
30	QuizType	MultipleChoice-Radiobutton	
31	PartQuestion	3. Choose the correct one.	
32	PartQuestionHelp		
33	Question	Which of the following animals is a mammal? [　　]	
34	QuestionHelp		
35	Choice(s)	A)Frog/B)Turtle/C)Snake/D)Dolphin	
36	CorrectAnswer(s)	Dolphin	
37	Point		0
38	Feedback		
39	-qend-		
40	-end-of-part-		
41	QuizType	Matching	
42	PartQuestion	4. Match the country with its capital.	
43	PartQuestionHelp		
44	Question		
45	QuestionHelp		
46	Rows	Tokyo/Paris/Moscow/Rome	
47	Columns	Italy/Russia/Japan/France	
48	CorrectAnswer(s)	Japan/France/Russia/Italy	
49	Point		0
50	Feedback		
51	-qend-		
52	-end-of-part-		
	QuizType	Paragraph	
	PartQuestion	5. What is the foreign country you most want to visit? Ex	
	PartQuestionHelp		
56	Question		
57	QuestionHelp		
58	CorrectAnswer(s)		
59	Point		0
60	Feedback		
61	-qend-		
62	-end-of-part-		

Figure A-5: Google Forms Quiz Generated from Google Sheets Data

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     perspectives-on-digital-learning-community-college-2079650.pdf

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Promoting a Sense of Community in the Japanese as a Foreign Language Classroom and Beyond

Yoshimi Maeno, Wellesley College, United States

Abstract

Foreign Language Learning could be lonely tasks, memorizing endless lists of vocabulary, grammar, and sentences. In this post pandemic era, it is extremely important for foreign language learners to feel a sense of community when they learn a foreign language. Building a community and promoting a sense of community is a very important part of the language learning process. There are many benefits of community building in the classroom. Classroom community should be a positive learning environment for students. When students feel comfortable in their classroom environment, they are more likely to take academic risks that are necessary for developing different language skills. Cate Denial, an author of "A Pedagogy of Kindness" (2019) mentions that the importance of the teacher having a mindset of collaboration with students in the classroom. She emphasizes that a teacher needs to be a partner with the students in the learning process. In this paper, I point out the importance of having a sense of community when learning a foreign language. I lay out how I promote a sense of community inside and outside of the classroom with my students who are learning Japanese as a foreign language. As qualitative quotes, I list up students' comments on their pair work and group work in my classroom from their LERs (Learning Experiences Reflection Report). Their positive comments confirm that building a sense of community inside and outside of the classroom definitely help students improve their foreign language skills.

Keywords: Community Building in the Classroom, Foreign Language Pedagogy, Teaching Experiences, Pedagogy, Practice & Praxis

Introduction

Foreign Language Learning could be lonely tasks, memorizing endless lists of vocabulary, grammar, and sentences. In this post pandemic era, it is extremely important for foreign language learners to feel a sense of community when they learn a foreign language.

In this presentation, I would like to lay out how I promote a sense of community inside and outside of my Japanese as a foreign language classroom at Wellesley College.

After a long period of time when all the students felt very isolated learning Japanese on Zoom during pandemic, I feel very strongly that building a community and promoting a sense of community with my students in my Japanese classroom is an extremely important part of their language learning process.

Cate Denial, an author of "A Pedagogy of Kindness" mentions that the importance of the teacher having a mindset of collaboration with students in the classroom. She emphasizes that a teacher needs to be a partner with the students in the learning process.

In this paper, I would like to point out the importance of having a sense of community when learning a foreign language. I will lay out how I promote a sense of community inside and outside of the classroom with my students who are learning Japanese as a foreign language.

As qualitative quotes, I list up students' comments on their pair work and group work in my classroom from their LERs (Learning Experiences Reflection Report). Their positive comments confirm that building a sense of community inside and outside of the classroom definitely help students improve their foreign language skills.

Community Building in the Classroom

There are many benefits of community building in the classroom. Classroom community should be a positive learning environment for students. When students feel safe and comfortable in their classroom environment, they are more likely to take academic risks that are necessary for developing different language skills. In my Japanese classrooms, I often encourage students to work with pairs and sometimes groups. After learning basic grammar and vocabulary in each lesson, my students have a lot of opportunities to practice speaking in class. During their speaking practice (I call it drills) in class, my students work with their neighbors to go through some exercises in Japanese. As for the group work, I assign the students to make a skit as a project for the end of the semester. They work with a group, making a script, making a background pictures and music, and perform a role play in front of the class. It is important to point out that I as a teacher go around the classroom and check in with each pair or group in case they have any questions. This is a non-threatening environment for the students, and they often enjoy finding out about each other.

Students' Comments on LERs (Learning Experiences Reflection Report)

Here are some of the students' comments on their pair work and group work in my classroom in their LERs (Learning Experiences Reflection Report) at the end of the semester.

In LERs JPN202-01, JPN202-02, Spring 2023, one student mentioned:

"My partner and I performed a skit in front of the class. Preparing for the oral test with my partner was also a good experience, especially because after the test, my partner explicitly said that it was her best oral test so far. I learned to collaborate with classmates through various activities such as skits, oral tests, and talking to partners during drills."

Another student mentioned:

"Maeno Sensei has a lot of group/partner work in class, which means everyone in class has interacted with the other at least once. This meant our class soon felt like a large friend group, and I felt very comfortable speaking in Japanese (despite mistakes) or performing a skit in front of everyone. Personally, I am usually very tired in the mornings. But going to Maeno Sensei's class always wakes me up (in a good way) and I always leave feeling more confident in my language abilities."

In the LERs there is a specific section for Additional Comments as Inclusive Classroom Environment. In that section, one student mentioned:

"In my three years at Wellesley, it has been Maeno-sensei's courses that really make me feel welcome and like we have a close community in the classroom. We do small partner activities most days and Maeno-sensei lets us joke around with each other without letting us get too off-track. I'm not the best at Japanese, but if I stumble, I know someone is always willing to help me without looking down on my mistake."

Another student commented, "The environment of the class was the best part of the class Maeno-sensei made us all feel like friends and it made going to class exciting."

As Ideas or Skills Learned in Course, one student mentioned, "I was able to further expand my Japanese language skills and interact with peers while doing so. The cultural lessons also allowed me to become more exposed to the Japanese culture."

As Course Valuable Features, one student mentioned, "I really liked the skits and presentations that we had to do at the end of semesters. I found it to be a time that not only allowed me to practice my Japanese speaking skills, but also understand my peers better."

As seen in these students' comments in LERs in Spring 2023, their positive comments confirm that building a sense of community in the classroom definitely help students improve their foreign language skills.

Community Building Outside of the Classroom on Campus

Outside of the classroom, I encourage students to go to the weekly Japan table in a residence hall. It is a lunch table where participants of all levels of Japanese casually talk in Japanese while having lunch. It is hosted by the Japan Club at college. There students can expose to all levels of Japanese, and hopefully feel the sense of Japanese community on campus.

At a residence hall at Wellesley College, there is Japan Corridor, run by a Language Assistant (LA), who is a native speaker of Japanese, and a trained Japanese language teacher. The LA makes plans for the events such as Karaoke, cooking night, movie night, game night, study night, and others. These events are open to Japanese classes as well, and not just for residents

on corridor. The LA also holds office hours in dorm so that students don't have to travel across campus at night. The Japan Corridor is a great residence community on campus, where all the residents have similar interests and goals.

Community Building in the Greater Boston Area

Next, I would like to talk about the Boston Area universities Japanese Speech Event. This event is not a contest in order for people to be friendly to each other among different area universities and colleges. I started 23 years ago to promote a sense of community among Japanese language learners in the Boston Area universities and colleges. The participating universities include Harvard university, Boston University, Boston College, Brandeis University, Northeastern University, UMass Boston, and Wellesley College. In 2023, we started to include poems, skits, videos, and presentations as well. If it is a contest, each college only thinks of winning a contest, therefore for the purpose of friendlier atmosphere, we purposefully made this event to a non-competitive one. After each presentation, anyone can ask a question or give a comment in Japanese. At the end of the event, we always have a reception where all the participants and teachers socialize with each other. Both students and teachers look forward to this event every year.

Conclusions

My students' comments on their pair work and group work in my classroom from their LERs (Learning Experiences Reflection Report) were very positive. Their positive comments confirm that building a sense of community inside and outside of the classroom definitely help students improve their foreign language skills.

What are the benefits of community building in the classroom? Classroom community building creates a positive learning environment for students. When students feel comfortable in their classroom environment, they are more likely to take academic risks, which are necessary for developing language skills including competency and fluency. Competency and resiliency are among the most important factors when the students go out to the real world where they try using their acquired language with the people in the target language communities.

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Analysis of Three Placement Test: Their Roles and Prospects

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The IAFOR International Conference on Education in Hawaii 2024
Official Conference Proceedings

Abstract

Many universities in Japan, specifically in the private sector in local areas, have been struggling to secure applicants because of the declining number of 18-year-old population. These universities have lowered their acceptance criteria to reach their capacity levels. Consequently, concerns have been raised regarding the declining academic levels and widening gaps among students. To cope with this problem, universities have implemented placement tests to place students according to their proficiency levels so that appropriate support can be provided. Meanwhile, most universities provide freshmen seminars designed to help students build the basic knowledge and fundamental skills required for academic studies. These strategies are believed to help students gain the support they need to continue their academic work without dropping out of school. This study aims to analyze placement test scores and GPA scores. The target population comprised 100 new students who took three placement tests–English, Mathematics, and Japanese–at a local private university. The study analyzes the results of the three placement tests and their GPA scores. The analysis involves numerical presentation, distributions, frequency, and correlations. The study found correlations between the three test results and the GPA. Moreover, the unique characteristics of placement test scores with different majors were revealed. It is believed that the results of the study can help review and improve the current freshmen seminar class and basic liberal arts subjects, such as basic Japanese writing, basic mathematics, and first- year students' English.

Keywords: Placement Test, Academic Proficiency, GPA, Freshman Seminar, Analysis of Three Placement Tests —Their Roles and Prospects

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Introduction

The decline in the 18-year-old population has had a considerable impact on universities in Japan, which implement various strategies to cope with filling their capacity levels. Among such strategies, employing early and varying admissions are an increasing tendency. However, such strategies are believed to hinder the selective functions of university entrance examination. As a result, students' academic levels are becoming a growing concern. In fact, such phenomena has been observed in private sectors, especially in small local universities.

Problem Statement

The number of 18-year-olds in the Japanese population had been declining since 1992, and was broadly flat from 2009 to 2018, at 1.18 million. This number then further declined, reaching 1.06 million in 2023. The National Institute of Population and Social Security Research has estimated that the number of 18-year-olds will fall to 98 million in 2032 and below 88 million by 2040. In such a situation, to secure applicants, universities have to accept more students with lower academic levels. Universities face the challenges of maintaining the quality of education as well as supporting such underprepared students.

Various measures have been implemented to cope with declining academic abilities among students. Many universities provide remedial education and freshman seminars, which provide basic knowledge and skills needed for university classes. Others implement placement tests to grade students according to their proficiency levels. Formation of ability-based classes seeks to provide appropriate support for each level while it helps instructors adjust course levels and content accordingly. However, as the number of academically lower students increases, the roles of placement tests should be re-examined.

The current study focused on a small private university that began implementing English and mathematics and Japanese placement tests in 2007 and 2014, respectively. The purpose of these tests is to identify students with low proficiency levels so that necessary support can be provided. However, each placement test is planned, implemented, and evaluated by the responsible faculties in their own subject area. How the results are used depends on decisions made in each faculty, and information regarding placement tests is not shared with other faculties. Like other universities, the subject university has been accepting more underprepared students, which seems to be due to employing various admissions. In such situations, the role and use of placement tests become more critical. Therefore, gaining a complete picture of the placement tests as well as considering their effective use is necessary.

Significance of the Study

Placement tests for various subject areas have been implemented at many universities. In terms of responsibilities, one of the top priorities of universities is to support students with low academic proficiency. Given such a situation, a better understanding of the placement tests has become more important and consideration of their effective use of is necessary. Examination not only of individual subjects but also an overall view of placement tests is urgently required. This study sought to derive a comprehensive understanding of students' academic proficiency levels. Moreover, we focus on the relationship between placement score and individual grade point average (GPA). Such analysis will provide more accurate information necessary for providing a supportive environment by all involved faculties. Such information can help in reviewing and improving the current freshmen seminar class and

basic liberal arts subjects, such as basic Japanese writing, basic mathematics, and first-year students' English.

Background Information

1. Overview of the current issues faced by universities in Japan
2. Types of admissions and entrance examinations at Japanese university
3. GPA system in Japan
4. Roles and use of placement tests at Japanese universities

1. Overview of Current Issues Faced by Universities in Japan

According to the Ministry of Education, Culture, Sports, Science, and Technology (MEXT), the number of college-bound 18-year-olds reached a record low of 1.06 million in 2023. Although the enrollment rate reached a record high of 57.7% for eight consecutive years, many universities, especially those serving local regions, are struggling with a shortage in the number of applicants. These universities cannot achieve their enrollment quotas, which is a serious issue. According to Promotion and Mutual Aid Corporation for Private Schools of Japan, 53.3% of universities did not meet their enrollment quotas. Moreover, as of August 30th, 2023, a total of 92% of private universities did not achieve their enrollment quotas. These figures marked the highest rate since the start of their survey.

To address these issues, many universities have actively incorporated early admissions or alternative admission tracks to secure higher enrollment rates. Such strategies are considered to cause variations in academic abilities among students, with claims that students admitted through these routes are falling behind academically. These students' academic abilities are not clearly identified until they take a placement test at the beginning of the school year.

2. Types of Admissions and Entrance Examination at Japanese University

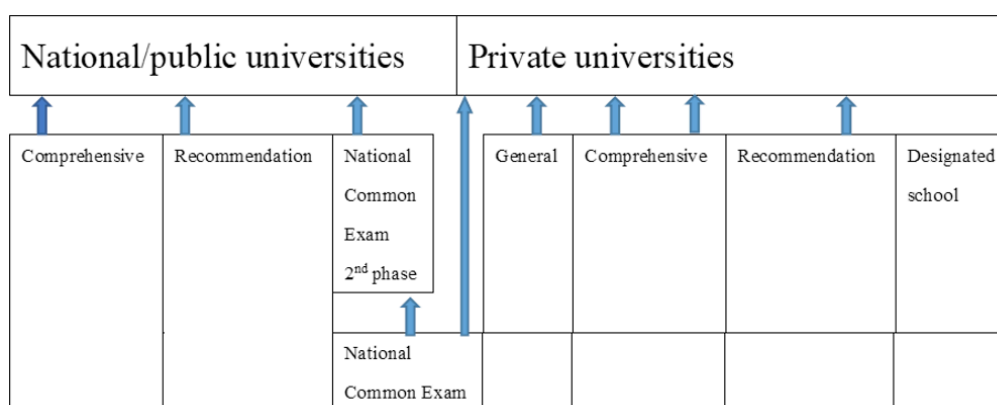The figure below presents various types of admissions at Japanese university.

Figure 1: Types of admissions

In addition to comprehensive selection and recommendation admission, general or national common examination measure students' academic proficiencies through various subject tests. These types of admission basically do not have subject tests, and instead include presentations, group discussions, writing thematic essays for admissions. Another form is designated schools from which universities have agreed to accept a set number of students

from contracted high schools. According to MEXT, 49.7% of new students were admitted to private universities in Japan in 2022 based on general examinations, while 51.2% entered using the recommendation-based method (31.0%) or comprehensive selection (19.3%). In terms of private universities, 48.8% of new students took general examinations, while 51.2% were admitted through the recommendation-based method (31.5%) or comprehensive selection method (19.7%). These figures for private universities indicate a notable change from 2020, where 52.0% were admitted through general examinations, while 47.8% were admitted through the recommendation-based method (34.4%) or comprehensive selection (13.4%). Universities have increased their use of recommendation-based or comprehensive methods as a means to secure more students.

3. GPA System in Japan

GPA is a standardized means of measuring academic achievement on a scale of 0 to 4. The score is calculated by multiplying the "total number of credits by grade (A+, A, B etc.)" and "corresponding grade point (4 for A+, 3 for A, etc.)," then adding the obtained figures for all grades and dividing the result by the "total number of registered credits," which includes courses that resulted in a fail. The formula is indicated below.

$$\frac{(\text{No. of A}^+\text{credits}\times \textbf{4)} \ + (\text{No. of A credits}\times \textbf{3)} \ + (\text{No. of B credits}\times \textbf{2)} \ + (\text{No. of C credits}\times \textbf{1)} \ + (\text{No. of Falling grades}\times \textbf{0})}{\text{Total No.of registered credits}}$$

GPA is an internationally recognized measure of a student's performance. Furthermore, GPA may be used for selecting students for prizes and scholarships, awarding degrees with honors, or setting minimum entry levels for higher education programs.

Responding to globalization, international system prevalent. The GPA system has been introduced to Japan. According to a study by JUDGIT, as of 2018, a total of 92.2% of Japanese universities employ the GPA system. Belfield and Crosta (2012) and Ookouchi and Yamanaka (2016) investigated GPA and established that students' high school GPA could be linked to their college performance.

4. Roles and Use of Placement Tests in Japanese Universities

With growing concern arising given first-year students' experiences, the number of universities in Japan using placement tests has exhibited an increasing trend. Although subjects and use of placement tests varies, they are usually used to identify new students' academic proficiencies as well as to group students for class formation.

Some universities use commercialized or standardized tests while others make their own placement tests. Previous research has examined the relationship between placement tests and school grades (Otani et al. ,2014; Sato et al. ,2016; Ikegami, 2013; Obata, 2014) and documented a weak to moderate correlation between placement tests and grades, and that such correlations became weaker over time. Such research suggests there is some benefit in placing students into different class levels based on placement test results.

In summary, no conclusive evidence of a relationship between placement test scores and college GPA has so far been presented. Moreover, the available studies focus on students from various majors, and few investigate students intention to work as human service professionals, such as physical therapists, occupational therapists, or counselors.

Purpose of the Study

The purpose of this study is threefold:
1. Analyze the three placement tests (English, Japanese, Mathematics) results,
2. Analyze relationship among placement test scores and GPA,
3. Examine the characteristics of different majors in terms of placement test scores and GPA.

The ultimate goal is to assist with reviewing and modifying the current support system, such as pre-entered education, remedial education, proficiency level-based class formation, and the freshman seminar through the practical results derived.

To achieve our research purposes, we adopted the following data collection and analysis methods:
- To address the first objective, data from the three placement tests were analyzed using numerical presentation, distributions, frequency, and correlations.
- To address the second, students' placement test scores and their GPA at the end of the first year were analyzed based on a distribution and correlation approach.
- To address the third, we performed detailed analyses of three placement tests and GPA based on different majors using numerical values, distribution and frequencies, as well as correlations.
- IBM SPSS statistics and Microsoft Excel are used for analysis.

Target Population

A total of 120 first-year students from a small private university participated in this study. This private 4-year-university has approximately 1,000 students, with two departments, health science and nursing. The study sample was drawn from the health science department, which has majors in rehabilitation (physical therapy (PT) and occupational therapy (OT)), and human communication (HC).

Placement Tests and GPA System Used at the University

The university conducts placement tests for English, mathematics, and Japanese. These placement tests are developed, implemented, and evaluated by the faculties responsible for each subject. For English, all new students take the English placement test. Based on the test scores, English course coordinators decide the "cut-off line" to form a special class consisting of the 25–30 students with the lowest scores. These students stay in this class throughout the year. A placement test for mathematics is required for only PT and OT students. Students with low scores are recommended but not required to take a basic mathematics class. For Japanese, a placement test is administered to all students. The information on students' scores is used for the freshman seminar while some students with lower scores are recommended to take non-credit Japanese course.

Regarding the GPA system, individual students' GPAs are calculated each semester and used for the decision for moving up to the next grade level as well as for graduation criteria.

Conclusions

Results

This section presents our results regarding (1) placement test results, (2) GPA results, and (3) correlation analysis among placement test scores and GPA while revealing the characteristics of different majors.

1) Placement Tests Results

The results of three placement tests (mathematics, Japanese, and English) are reported in Table 1.

	English	Japanese	mathematics
PT	50.3	55.4	52.5
OT	51.8	58.2	48
HC	46.8	57.4	N/A

Table 1: Average scores among the three subjects English, Japanese, and mathematics

As presented in Table 1, OT majors had the highest scores for English and Japanese tests. A significant difference in average scores was observed between OT and PT major students in mathematics, and between HC and OT majors in terms of the average English score.

Figures 2, 3, and 4 present box plots of the distributions, central tendencies, and variabilities of each placement test among the different majors.
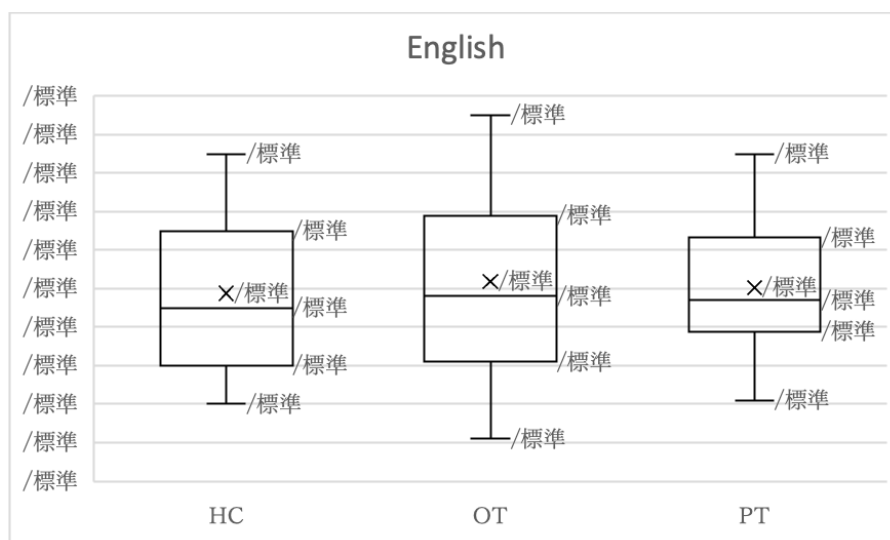
English

HC   OT   PT

Figure 2: Box plot of English placement test

As indicated in Figure 2, OT has a more dispersed distribution, while PT students' score exhibit a more concentrate and positive skewed distribution.
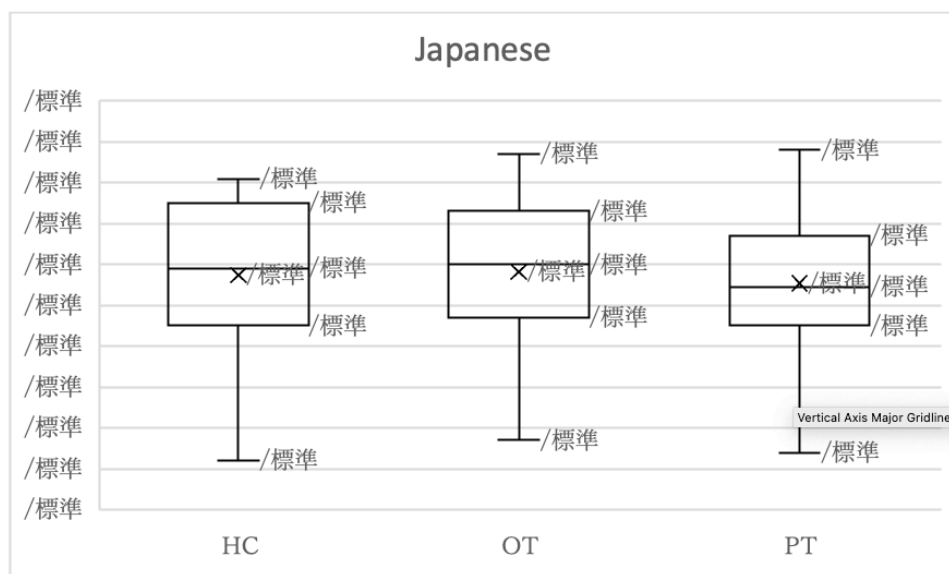
Figure 3: Box plot of Japanese placement test

The results of the Japanese placement test are presented in Figure 3, which reveals a more concentrated distribution for PT department students.
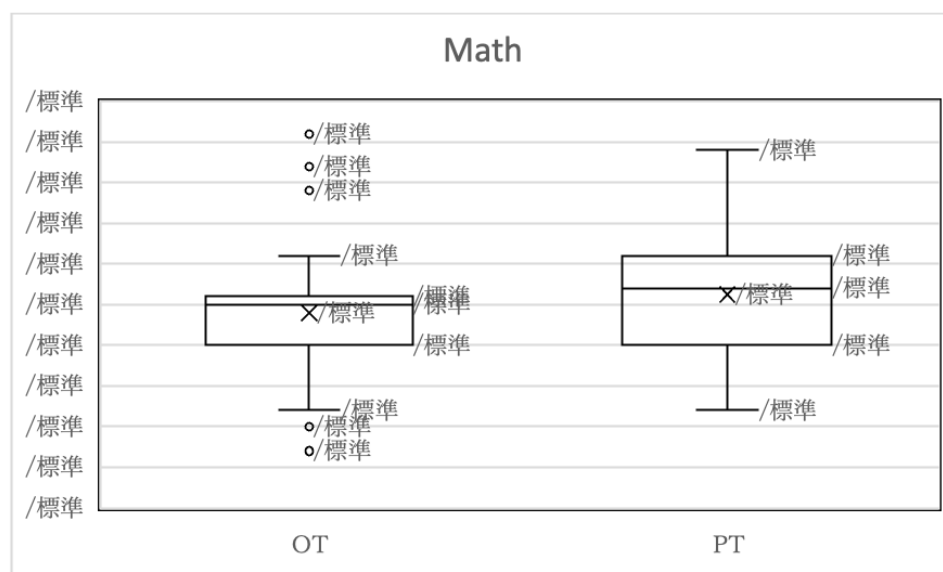

Figure 4: Box plot of mathematics placement test

Figure 4 presents a box plot of the results of the mathematics placement test. Despite the highest average scores on English and Japanese tests, OT students have significantly lower scores for the mathematics test compared to PT students. A lower skewed distribution is observed as well as more outliers.
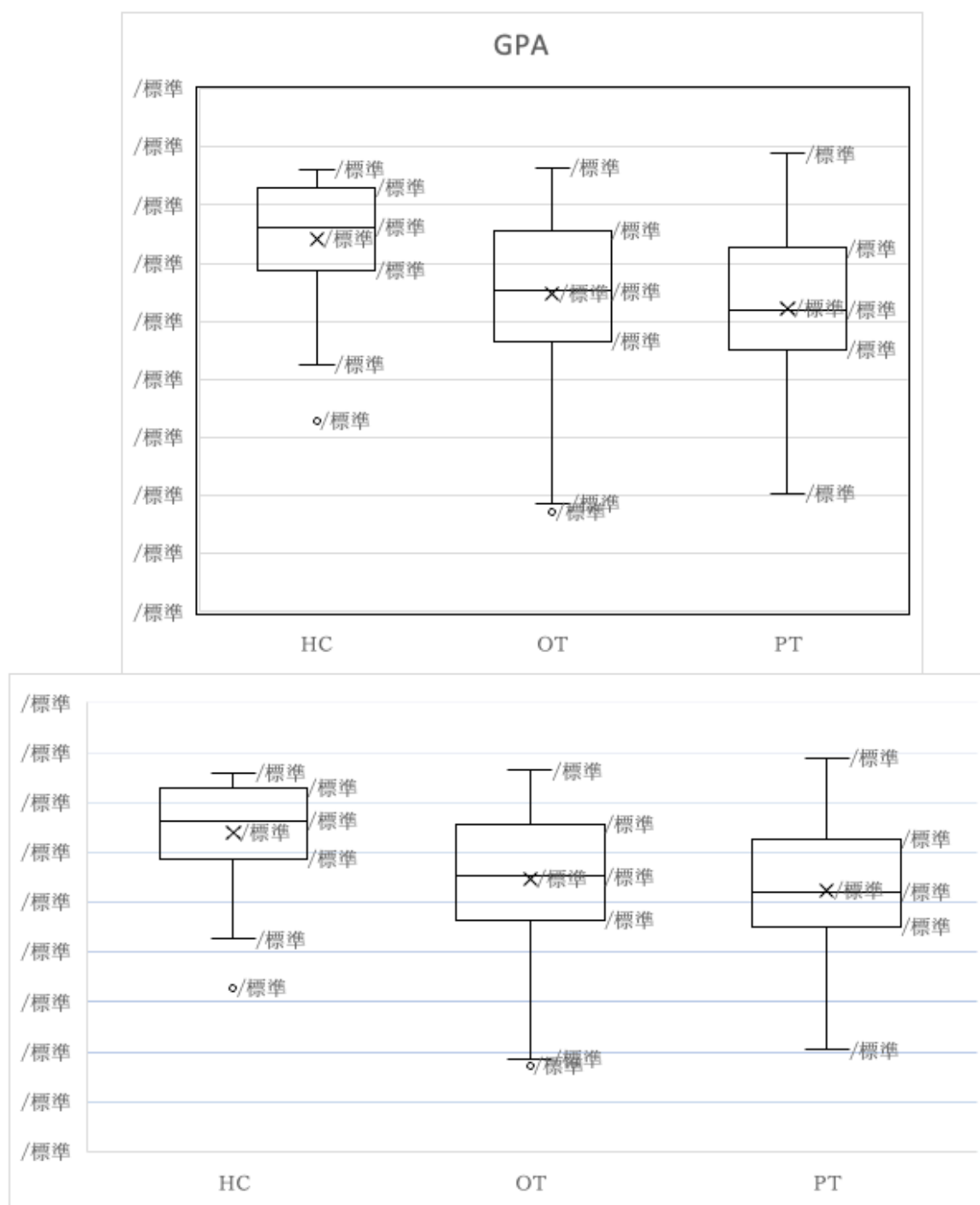
2) Results of GPA

Figure 5: Box plot of GPA

As illustrated in Figure 5, the HC department has significantly better GPA scores, with the average 3.2. while OT and PT students score an average of 2.7 and 2.6, respectively. However, before drawing any conclusions, careful examination and consideration of these scores may be needed.

3) Correlation Analysis Among Placement Test Scores and GPA

The results of correlational analysis of English, Japanese, and mathematics tests as well as GPA are reported in Table 2.

		English	Japanese	Math	GPA
English	Pearson's correlation	1	.549**	.615**	.382**
	Sig. (2 tails)		.000	.000	.000
	N	120	120	97	118
Japanese	Pearson's correlation	.549**	1	.316**	.423**
	Sig. (2 tails)	.000		.002	.000
	N	120	120	97	118
Math	Pearson's correlation	.615**	.316**	1	.360**
	Sig. (2 tails)	.000	.002		.000
	N	97	97	97	95
GPA	Pearson's correlation	.382**	.423**	.360**	1
	Sig. (2 tails)	.000	.000	.000	
	N	118	118	95	118

**. $P<0.01$ *. $P<0.05$

Table 2: Correlational analysis of placement tests and GPA

According to Table 2, weak to moderate, and even fairy strong correlations exist among them. Moderate correlation (.549, $p < .001$) was determined between the Japanese and English scores. Furthermore, a strong correlation (.615, $p < .001$) was also observed between the English and mathematics scores. Regarding the correlations with GPA, weak to moderate correlations were established between each placement test and GPA: English (.382, $p < .001$), Japanese (.423, $p < .001$), and mathematics (.360, $p < .001$).

Next, students' score of all three placement tests were summed up and correlational analysis performed with GPA for each department.

	GPA OT	GPA HC	GPA PT
Peason's correlation	.608**	.529**	.439**
Sig. (2 tails)	.000	.009	.000

**. $P<0.01$

Table 3: Comparison of correlational values

According to Table 3, fairly strong correlation (.608, p < .001) for OT, moderate correlation (.529, p < .001) for HC, and somewhat weak correlation (.439, p < .001) for PT were revealed.

Summary of Findings

Regarding the placement tests, three points are notable:

First, a fairly strong correlation between mathematics and English (.615, p < .001) and English and Japanese (.549, p < .001), and weak correlations between Japanese and mathematics (.316, p < .001) were determined.

Second, OT students have the highest average scores in English and Japanese placement tests while they have significantly low scores on the mathematics test and scores tend to be lower overall.

Third, box plots revealed wide proficiency levels (gap) among OT students, compared to PT or HC students.

For GPA, we observed the following differences in different majors. HC students have the highest GPA average (3.2), with the highest and lowest of 3.8 and 2.13, respectively. Furthermore, the results revealed a more concentrated distribution. For OT students, the average GPA was 2.7, with the highest and lowest of 3.82 and 0.92, respectively. For PT students, the average was 2.6, with the highest and lowest of 3.94 and 1.02, respectively. The latter two majors exhibited similar distribution patterns.

Finally, the correlational analysis revealed a moderate to fairly strong correlation between the total scores of the three placement tests and the GPA. The degree of correlational differences varied by department, while OT major exhibited a strong correlation (.608 p < .001) and PT major had relatively moderate correlation (.439).

Implications

As moderate to strong correlations were found between placement tests and GPA, the latter could be used as a predictor of early failures or at-risk students. Simultaneously, the track of at-risk students needs to be followed so as to avoid drop out or failing. Then, data can be used to review current support systems, such as pre-entered program, low proficiency level classes, and freshman seminar.

Further Investigations

Further investigations focused on the following points are necessary:

First, a careful examination of the GPA score is required. This study revealed distinctive differences among different departments in terms of the GPA. A more detailed examination of each department's background information is necessary. Furthermore, so-called GPA inflation should also be examined.

Second, to provide more individualized and appropriate support for students, the continuation of the study and data accumulation is urgently needed.

Finally, classifying GPA into high, medium, and low groups and examining the tendencies may provide a better understanding of the overall situation.

Limitations

As this study focused on a small university, the sample size was relatively small, which makes generalization of the results difficult. However, this study was also intended to help build a more supportive educational environment based on the results. Moreover, the study should be on-going, and should involve accumulating data every year and follow-up research on individual students to gain accurate information on their difficulties and progress.

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CATalysts for Learning:
Elevating Education With Authentic Classroom Assessment Techniques (CATs)

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Abstract

Classroom assessment techniques, or CATs, are invaluable tools for formative assessment in any classroom and represent a formative approach to assessment. Their purpose is to improve the quality of student learning rather than collecting evidence for evaluating or grading students. Classroom assessment provides faculty with real-time feedback about their effectiveness as teachers and gives students a measure of their progress as learners. It aims to provide faculty with information on what, how much, and how well students are learning. Teachers themselves created, administered, and analyzed CATs. CATs can be used in any type of class: in small groups, or to check students' immediate understanding, or for application and critical thinking. The research on effective practical techniques to measure both student learning and teaching started in 1988 with the classroom research project funded by the Ford Foundation and the Pew Charitable Trust. Numerous articles have been published on the subject, multiple workshops have been conducted nationally, regionally, and locally. This research indicates that the students believe that classroom assessment contributes to greater involvement in learning because they are forced to think about what they have learned. The research also applies to faculty development: many faculty rethink how they teach their classes. Classroom assessment provides the input needed to learn more about what is working and what needs to be changed in their classes. The provided examples of CATs can serve as starting points, models, and inspiration for many new CATs yet to be invented.

Keywords: Assessment, Classroom, Techniques

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Introduction

"Classroom Assessment" is a formative rather than a summative approach to assessment. Its purpose is to improve the quality of student learning, not to provide evidence for evaluating or grading students. It provides faculty with feedback about their effectiveness as teachers, and it gives students a measure of their progress as learners. The aim of classroom assessments is to provide faculty with information on what, how much, and how well students are learning. Such assessments are created, administered, and analyzed by teachers themselves.

Currently the most comprehensive study on classroom assessment techniques appears in the book, **Classroom Assessment Techniques: A Handbook for College Teachers**, by Thomas A. Angelo and K. Patricia Cross (San Francisco: Jossey-Bass, 1993 [Second Edition]).

What is Classroom Assessment?

CATs are formative in nature. Unlike final exams or major term papers, CATs provide faculty with feedback on student learning so that faculty can intervene during the semester to help students learn more completely. CATs are speedy. They often consume just a few minutes of classroom time to administer and can be read easily and quickly by faculty. CATs are flexible. They can be tailored to the unique and specific concerns of the instructor. They can be anonymous for students. The aim of classroom assessment is not necessarily to grade individual student work or to provide individual students with feedback on their performance; rather, the aim is to provide the instructor with feedback on student learning.

What Are the Benefits of Using Classroom Assessment Techniques?

The benefits of using CATs in classroom cannot be overestimated. Classroom Assessment helps faculty to focus on student learning. By determining what students have learned and what is unclear, instructors can focus the class more effectively to meet the learning needs of that group. This may mean reviewing some areas or spending less time in other areas. Unlike student evaluation surveys [summative evaluation] which are typically given at the end of the semester, Classroom Assessment provides an on-going formative evaluation. The instructor can find out what can be changed immediately to help students to learn.

Benefits for Students

Students may be hesitant to ask questions during class. Classroom Assessments give students opportunities to provide anonymous feedback to their instructor about their learning. Students often discover, as the instructor reviews the feedback, that others in the class had similar questions. (Theirs was not a "dumb question" after all). Classroom assessment activities can themselves be positive learning activities for students; they can be developed both to promote (and not just measure) writing skills or critical thinking skills, and to increase student motivation to take themselves and their learning more seriously. In addition, students may become more involved in their learning. Through greater involvement, students are likely to become more self-directed learners, and may be more motivated to successfully complete the class.

When Are Classroom Assessment Techniques Used?

Classroom Assessment Techniques may be used in any type of class. Some techniques are for use in small groups; some are designed to check students' immediate understanding; others are for application and critical thinking.

Reasearch About the Impact of the Classroom Assessment Techniques

These techniques are not new. Effective teachers have been using various methods for years to find out what students are learning or not learning. However, research on effective techniques to measure both student learning and teaching dates back to 1988, with the Classroom Research Project funded by the Ford Foundation and the Pew Charitable Trusts. Since 1988, numerous articles have been published on the subject and hundreds of workshops have been conducted nationally, regionally, and locally. The Classroom Research Project has also sponsored a series of workshops and conferences at the University of California, Berkley. The American Association for Higher Education [AAHE] has established a Classroom Research Community Action group and sponsors conference sessions concerned with Classroom Research.

Research about the impact of Classroom Assessment indicates higher level of student involvement in learning: students believe that Classroom Assessment contributes to greater involvement in learning because they are forced to think about what they have learned. Research also shows the improved quality of faculty development: Classroom Assessment has helped many faculty re-think how they teach their classes. Classroom Assessment provides the input needed to learn more about what is working and what needs to be changed in their classes.

A Selection of Classroom Assessment Techniques

We chose several selected techniques on:
- Assessing Prior Knowledge, Recall, Understanding
- Assessing Skill in Synthesis and Creative Thinking
- Assessing Skill in Application and Performance
- Assessing Skill in Analysis and Critical Thinking

CATs for Assessing Prior Knowledge, Recall, and Understanding

For assessing prior knowledge, recall, and understanding, we suggest the following technique samples: "The Background Knowledge Probe", "The One Minute Paper", and "The Muddiest Point".

- **Background Knowledge Probe Description:** this technique is designed to collect specific and useful feedback on students' prior learning. "Background Knowledge Probes" are short, simple questionnaires prepared by instructors at the beginning of a course (e.g., the instructor requests that students list courses they have already taken in the relevant field), at the start of a new unit or lesson, or prior to introducing an important new topic. Such "probes" may require students to write short answers, to circle the correct responses to multiple-choice questions, or both. They can be used as both pre- and post- assessments: before instruction, to find out the students'

"baseline" knowledge level; and immediately after, to get a rough sense of how much and how well they have learned the material.

Purpose: this technique is meant to help teachers determine the most effective starting point for a given lesson and the most appropriate level at which to begin instruction. By sampling the students' background knowledge before formal instruction on that topic begins, these probes also provide feedback on the range of preparation among students in a particular class.

Suggestions for Use: it can be used as early as the first class meeting. It works well in classes of any size. To assess changes in students' knowledge and concision in responding, the same or similar questions can be used at the midpoint and at the end of the lesson, unit, or term.

Turning Collected Data Into Useful Information: for fast analysis responses can be sorted into "prepared" and "not prepared" piles. For a detailed analysis answers can be classified into categories: [-1] = erroneous background knowledge; [0] = no relevant background knowledge; [1+] = some relevant background knowledge; [2+] = significant background knowledge. By summing the individual numerical ratings for each question, the instructor can find out whether the class as a whole has more knowledge about some topics than about others.

- **The One-Minute Paper:** the instructor stops the class two or three minutes early and asks students to respond briefly in writing to some variation of the following two questions: "What was the most important thing you learned during this class today"? What important question remains unanswered?" (or, "What are you still confused about?")

Purpose: this technique allows faculty to assess the match between their instructional goals and students' perceptions of these goals and their own learning. Also, because the instructor learns what students perceive to be their own learning problems, the likelihood that the students will receive answers to those questions during the next class period is enhanced. The task asks students to evaluate information and to engage in recall.

Suggestions for Use: the task works well in small and large classes. It can be used frequently in course that present students with large amounts of new information on a regular basis.

Turning Collected Data Into Useful Information: often it is sufficient for the instructor simply to tabulate the responses, making note of any especially useful comments.

- **The Muddiest Point:** the instructor asks students to jot down a quick response to the following question: "What was the muddiest point in [the lecture, the homework assignment, the reading, the film, etc.]

Purpose: this technique provides speedy feedback on what students find least clear or most confusing. This info helps faculty decide what to emphasize more and how much time to spend on topics. Students must also quickly assess what they do not understand and must be able to articulate their confusion (which is itself a complex and useful skill).

Suggestions for Use: this technique can be used frequently in courses that present students with large amounts of new information on a regular basis, and it should be presented at the

end of a lecture/assignment. The task should be used sparingly in classes that emphasize integrating, synthesizing, and evaluating information.

Turning Collected Data Into Useful Information: often it is sufficient to group responses according to the particular muddy point. An alternative is to group points according to whether they involve facts, concepts, principles, and so forth.

CAT for Assessing Skill in Synthesis and Creative Thinking

One of the effective technique to assess skill in synthesis and creative thinking is "The One Sentence Summary".

- **The One-Sentence Summary**: the instructor asks students to answer the questions about a given topic: "Who does what to whom, when, where, how, and why"? Then the students are asked to transform responses to those questions into a single grammatical sentence.

Purpose: faculty gauge the extent to which students can summarize a large amount of information concisely and completely. Students are constrained by the rules of sentence construction and must also think creatively about the content learned. Students practice the ability to condense information into smaller, interrelated bits that are more easily processed and recalled.

Suggestions for Use: the task works well when there is information that can be summarized in declarative form, including historical events, political processes, the plots of stories and novels, chemical reactions, mechanical processes.

CATs for Assessing Skill in Application and Performance

To assess skill in application and performance, we chose the following techniques: "Directed Paraphrase", "Application Cards", "Student-generated Test Questions", "Paper or Project Prospectus".

- **Directed Paraphrase**: the instructor asks students to paraphrase part of a lesson for a specific audience and purpose, using their own words. This is especially useful for pre-professional students who will be asked in their careers to translate specialized information into language that clients or customers can understand.

Purpose: this technique allows faculty to examine students' understanding of information and their ability to transform it into a form that can be meaningful to specific audiences other than the student and instructor. This task is more complex than simply paraphrasing (or summary) in that the faculty member directs the student to speak/write to a particular audience and purpose.

Suggestions for Use: the task works well when students are learning topics or concepts that they will later be expected to communicate to others. When this is not the case (perhaps in general education classes in the humanities), the faculty member might want to ask students to write to other students in the class or to other students on campus.

Turning Collected Data Into Useful Information: answers can be grouped into four sets: confused, minimal, adequate, and excellent. Then examine responses within and across the four categories for accuracy, suitability for the intended audience, and effectiveness in fulfilling the assigned purpose. An alternative is to circle the clearest (best) point made by each student and the worst (muddiest) point. Then the responses from students can be grouped to find patterns of clarity and confusion.

- **Application Cards**: after students have been introduced to some principle, generalization, theory, or procedure, the instructor passes out index cards and asks students to write down at least one possible, real-world application for what they have just learned.

Purpose: this technique allows faculty to determine quickly whether students understand the applications of what they have learned. Students are forced to link new information with prior knowledge. They may also have an increased interest in the material covered if they are asked to speak immediately to the ways in which this new material can be applied in real world settings.

Suggestions for Use: most classes cover material that can/should be applied. The technique is often used in the social sciences, in technical fields, and in pre-professional courses.

Turning Collected Data Into Useful Information: answers can be separated into four groups: great, acceptable, marginal, and not acceptable. Responses might be discussed in the next class, with some attention given to factors that argue for and against sets of responses.

- **Student-Generated Test Questions:** students are asked to prepare 2 or 3 potential test questions and accompanying correct (or A+) responses.

Purpose: this technique assesses at least 3 aspects of student learning: Instructors see what their students consider the most important or memorable content, what they understand as fair and useful test questions, and how well they can answer the questions they have posed. This information not only provides direction for teaching but can also alert the teacher when students have inaccurate expectations about upcoming tests. Responding to this technique helps students assess how well they know the material and receiving feedback can refocus their studying.

Suggestions for Use: it can be used in any course in which students take tests. It is best administered 2 or 3 weeks before a major test, such as midterm or final exam, to allow time for feedback and for appropriate adjustments in teaching and studying.

Turning Collected Data Into Useful Information: a form or checklist could be used to sort the types and range of the questions (level of questions, relevance of topics, clarity of responses): Make a rough tally of the types of questions students propose (e.g., how many require only a knowledge of facts & principles? How many require synthesis or analysis?); then take a quick look at the range of topics the questions span (Are some important topics left out?). A few questions selected from the students' responses can be used as examples in giving feedback.

- **Paper or Project Prospectus**: the term "prospectus" is used here to denote a brief, structured first-draft plan for a term paper or term project. The "Paper Prospectus" prompts students to think through elements of the assignment such as the topics,

purpose, intended audience, major questions to be answered, basic organization, and time and resources required. The "Project Prospectus" may focus on tasks to be accomplished, skills to be improved, and products to be developed.

Purpose: this technique assesses students' skill at synthesizing what they have already learned about a topic or field as they plan their own learning projects. The technique can also give the instructor useful information about the students' understanding of both the assignment and the topic – as well as their planning skills – before it is too late in the semester to make suggestions and shape direction.

Suggestions for Use: it is appropriate for any course that requires students to write term papers or to carry out substantial projects. The timely feedback is given well before they begin substantive work on the papers or projects they have been assigned. In fields such as social work, education, and counseling psychology, instructors can employ the prospectus to help students plan internship and fieldwork projects.

Turning Collected Data Into Useful Information: the range of topics and approaches are noted as well as to what degree the prospectuses are related to the content and skills on which the course is focused. A short summary list of suggestions is offered to the class, including suggestions about strengths they can build on and elements that need work.

CATs for Assessing Skill in Analysis and Critical Thinking

For assessing skill in analysis and critical thinking, we suggest the "Pro and Con Grid" and The "Analytic Memo" techniques.

- **Pro and Con Grid:** students are asked to jot down a quick list of pros and cons on a particular topic or issue.

Purpose: the grid gives faculty a quick overview of a class's analysis of the pros and cons, costs and benefits, or advantages and disadvantages on an issue of mutual concern. This assessment forces students to go beyond their first reactions, to search for at least 2 sides to the issue in question, and to weigh the value of competing claims. The grid provides important information on the students' depth and breadth of their analysis and on their capacity for objectivity.

Suggestions for Use: this technique can be used in any course where questions of value are an implicit part of the syllabus. This assessment works well in many humanities, social sciences, and public policy courses. It can also be used to assess students' awareness of potential costs and benefits or of alternative technical solutions to the same problem. Used in this way, this technique can be applied in many science and mathematics courses.

Turning Collected Data Into Useful Information: the instructor starts by listing the points that students have put forth as pros and cons by doing a simple frequency count. Which points are most often mentioned? Have they omitted some points? How balanced are the two sides of the grids? These are possible matters to report on and to discuss in class when students are given feedback.

- **Analytic Memo**: it is basically a simulation exercise. It requires students to write a one- or two-page analysis of a specific problem or issue. The person for whom the

memo is being written is usually identified as an employer, a client, or a stakeholder who needs the student's analysis to inform decision making.

Purpose: this technique assesses students' ability to analyze assigned problems by using discipline-specific approaches, methods, and techniques they are learning. In addition, it assesses students' skill at communicating their analyses in a clear and concise manner.

Suggestions for Use: because preparing and assessing the analytic memos takes quite a bit of time and effort, this technique is best suited to seminars and small classes. It is particularly useful in disciplines that clearly relate to public policy or management, such as political science, economics, criminal justice, social work, education, environmental studies, management, and public health. It works best when used early in the term, as a way to help students prepare for later graded memo-writing assignments.

Turning Collected Data Into Useful Information: the goal (and challenge) is to extract useful information while severely limiting the amount of time and energy spent. A short list of 3 or 4 major points to look for in each memo allows for systematic and quick readings of the memos. The list might include "content" (breadth of the analysis and quality of info), "skill" (were relevant tools or methods used in the analysis?), and "writing" (clarity, conciseness, appropriateness of format). Make up a simple grid on which you can check off "Well done," "Acceptable," or "Needs work" for each of the major points. In the next lesson, focus on the areas that need work.

Conclusion

Some faculty ask students to respond to a question at the end of every class meeting; some faculty integrate the assessments throughout each class meeting. Others use Classroom Assessments at the most critical points in the course, e.g., before a major exam or project. Some use assessments to evaluate the effectiveness of class activities or tests. Still others have used Classroom Assessments to help students to evaluate their own learning process. The frequency and types of assessments used depend on the class, the teacher, and the reasons for assessing students' learning progress.

Anonymous feedback results in responses that are more candid. However, if the assessments are used in the form of homework assignments or small group activities within the class, anonymity is not possible.

It is best to ask learner-centered questions ("What have you learned?") rather than teacher-centered questions ("How do you like my teaching?") The learner-centered questions will show clearly whether or not the teaching is effective. Questions should be asked only if you really want to know the answer and are willing to respond to the feedback to meet student needs.

New users of Classroom Assessment Techniques [CATs] will be most successful if:
- They start with techniques that are quick and easy to use in a classroom setting in which the faculty member and students are comfortable;
- They only use CATs that they have previously tried on themselves;
- They allow more time to complete the task the first time than might seem necessary;

- They "close the loop" by reporting back to students what they, as faculty, have learned from student feedback and how the information can be used to improve student learning.

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Examining the Nursing Workforce Shortage in Vietnam: Implications for Nursing Education

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Abstract
This study examines the nursing human resource crisis in Vietnam that emerged in the wake of the COVID-19 pandemic. A literature review encompassing policy documents, statistics, reports, guidelines, news, media, and academic publications was conducted. Even before the pandemic, Vietnam grappled with a nursing shortage, with a nurse-to-population ratio significantly below the global average. The shortage of nurses jeopardizes nurse-to-patient ratios, patient safety, and equitable access to high-quality healthcare services. The nursing human resource crisis in Vietnam is further exacerbated by the limited capacity of nursing education institutions. Without substantial investments in nursing education, projections indicate that Vietnam may face a crisis of lacking nursing professionals in the near future. The post-COVID-19 nursing crisis in Vietnam underscores the urgent need for reforms in nursing education. Policy interventions should prioritize strategic workforce planning and increased financial investments in nursing education and training programs.

Keywords: Nursing Human Resource, Nursing Education, Workforce Shortage

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Introduction

The shortage of nurses has emerged as a critical global concern, posing significant challenges to healthcare systems worldwide (Drennan & Ross, 2019; Marć et al., 2019). The demand for skilled healthcare professionals, particularly nurses, has consistently outpaced the available supply. The demanding nature of the profession, coupled with insufficient resources for education and training, has hindered the ability to attract and retain a sufficient number of nursing professionals. The consequences of this shortage are far-reaching, affecting not only the quality of patient care but also placing an immense burden on existing healthcare staff, leading to burnout and decreased job satisfaction (Lu et al., 2012). In the aftermath of the unprecedented global challenge posed by the COVID-19 pandemic, nations around the world have grappled with the profound impact on healthcare systems, unveiling pre-existing vulnerabilities and triggering new crises (Al Thobaity & Alshammari, 2020).

This study delves into the nursing human resource crisis unfolding in Vietnam, a crisis that has been significantly exacerbated by the pandemic. The investigation draws attention to a persistent issue predating COVID-19 – the critical shortage of nursing professionals in Vietnam, characterized by a nurse-to-population ratio well below the global average. Even prior to the pandemic, Vietnam was contending with the ramifications of an insufficient nursing workforce (Einhellig et al., 2020), a circumstance with profound implications for nurse-to-patient ratios, patient safety, and the equitable accessibility of high-quality healthcare services. This article synthesizes insights gleaned from an extensive literature review comprising policy documents, statistics, reports, guidelines, news, media, and academic publications, shedding light on the multifaceted dimensions of the nursing human resource crisis in Vietnam.
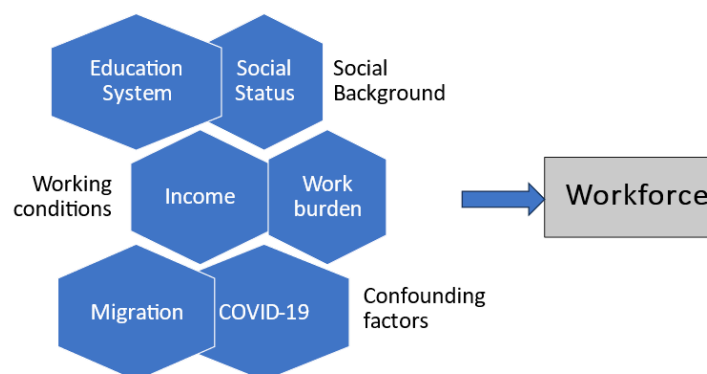

Figure 1: Conceptual Framework (by the authors)

The conceptual framework proposed by the authors illustrates the interconnected factors contributing to the nursing human resource crisis in Vietnam, particularly in the wake of the COVID-19 pandemic.

Development of Nursing Education in Vietnam

Nursing education is a vital component of healthcare systems, providing the necessary knowledge, skills, and competencies to produce competent and compassionate nurses. Vietnam, like many other developing countries, has experienced significant progress in nursing education in recent years, but still faces numerous challenges. Here we also discuss the current situation of nursing education in Vietnam, including the history and development

of nursing education, the current status of nursing education, and the future prospects of nursing education in Vietnam.

Nursing education in Vietnam has a relatively short history. Before the 1970s, nurses in Vietnam were trained on the job, with no formal nursing education programs. During the French period, numerous hospitals were established by the French in Vietnam. Prior to the year 1900, they implemented an apprenticeship system for individuals interested in working in hospitals. The training provided was informal, resembling more of an "on-the-job training" approach. These individuals, often referred to as assistants, were adept at technical skills, proficient in their craft, and primarily assisted French physicians (Children Hospital, 2023). During the war time, since 1954, the Ministry of Health (MoH) established a comprehensive primary-level nurse training program to supplement the rapid training of nurses during the war. In 1968, the MoH further expanded the program by introducing intermediate-level nurse training, admitting students who had completed secondary education for a 2-year and 6-month duration of training in intermediate-level nursing. In the South Vietnam, in 1956, the Chief Nurse School was established in Saigon, providing a 3-year training program for nursing supervisors. In 1968, due to a severe shortage of nurses, a 12-month basic nursing program was introduced (Children Hospital, 2023).

In the early 1970s, the Vietnamese government recognized the need for formal nursing education programs and established the first nursing school in Hanoi, followed by the establishment of several other nursing schools throughout Vietnam. These nursing schools provide basic nursing education programs, including diploma programs and bachelor's degree programs. The nursing education programs were typically three to four years in duration and included both theoretical and clinical components.

In 1975, the country was reunified. The MoH unified the guidance for patient care and treatment in both regions. Consequently, the nursing training program was standardized, focusing on training high school-level nurses for a duration of 2 years and 6 months (Children Hospital, 2023; Vietnam Ministry of Health, 2020). In 1982, the MoH issued titles for head nurses of hospitals and head nurses of departments. In 1985, the MoH established a nursing research team, and some hospitals experimented with separating nursing units from medical units, with a pilot project at the National Pediatrics Hospital and the General Hospital of Uong Bi.

In the 1980s, a part-time Bachelor of Nursing Science (BSN) program was introduced at Hanoi Medical School. In 1986, regarding nursing education at the university level, the MoH, in agreement with the Ministry of Education and Training (MoET), initiated the first Bachelor of Nursing program at Hanoi Medical University in 1985. In 1986, a similar program was introduced at Ho Chi Minh City University of Medicine and Pharmacy, and by 1996, regular Bachelor of Nursing programs were established (Ly & Elderton, 2016).

The training of nursing professionals at the college level began in 1993, and currently, the MoH is gradually elevating junior colleges into health colleges. Since 2003, the duration of the intermediate nursing training program has been reduced from 2 years and 6 months to 2 years. In 2006, Ho Chi Minh City University of Medicine and Pharmacy, under the approval of the MoH and MoET, commenced the first Master of Nursing program in Vietnam. Regarding the training of nursing administrators, classes for nurse administrators have been organized since 1982. By 2005, the Nursing Management program was restructured by the

MoH into a training program for nursing administrators, providing unified training for nursing administrators at the department and hospital levels nationwide.

In the 1990s, the Vietnamese government began to place greater emphasis on nursing education, recognizing the critical role of nurses in providing quality healthcare. The government began to increase funding for nursing education programs and worked to improve the quality of nursing education (Duong et al., 2021; Fan et al., 2012; Ly & Elderton, 2016). There are currently over 140 nursing schools in Vietnam, offering diploma programs, bachelor's degree programs, and master's degree programs in nursing. The nursing education programs in Vietnam are regulated by the MoH and MoET (Vietnam Ministry of Health, 2020). Figure 2 shows the health professionals education system with all types of education program from elementary to the doctoral level.
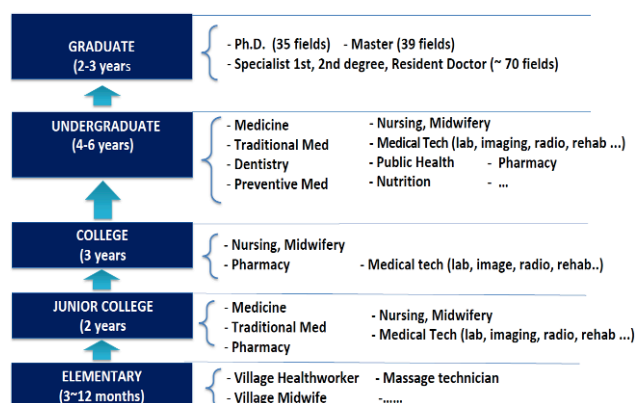
Figure 2: Healthcare Professional Education System (Source: MoH, 2020)

Social Perception About Nurses as Healthcare Professionals

In the Vietnamese language, the term "y tá" translates directly to "a helper of the doctor." However, the Vietnamese word for "nurse" has recently transitioned to "điều dưỡng," signifying "carer" in official documents. Despite this official change, the original term "y tá" continues to be widely used in everyday life. The historical perception of nursing as a subordinate to physicians prevailed until the early 1990s, relegating nurses to mere assistants in healthcare settings (Huynh & Windsor, 2022). This deeply ingrained hierarchy resulted in nursing being seen as a less prestigious profession, leading to an unappealing career choice (Jones et al., 2000). Until the 2000s', government documents still classified the nursing role as a "doctor's assistant" as they need to follow the physicians' orders (Ministry of Health, 2011, 2015).

Nursing Workforce

Low priority and interest towards nursing education compared to medical education. Very few enrollments in Nursing Bachelor program (4 year) compared to college (3 year) or junior college (2 year) program. For example, the bottom-up training project (MOH, 2012) has produced 1,448 physicians, but only 24 nurses. Figure 3 compares the enrollment of Nursing and Pharmacy in 2020, where there is an clear lower number of enrollments in bachelor (4-year) nursing program but higher in college (3-year) nursing program.
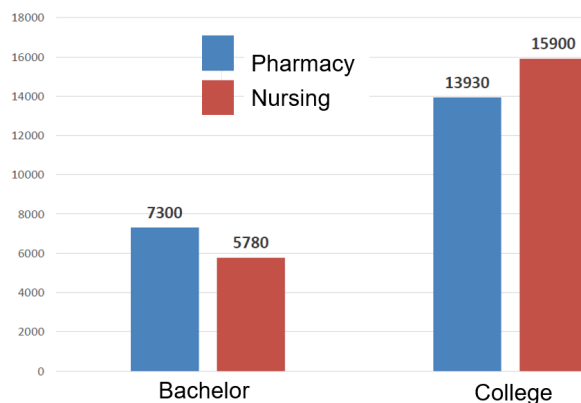
Figure 3. Number of enrollments in 2020 (Source: MoH 2020)

The country has grappled with strikingly low ratios of nurses to the population as well as nurses to physicians, exacerbating the strain on healthcare systems (Figure 4, 5).
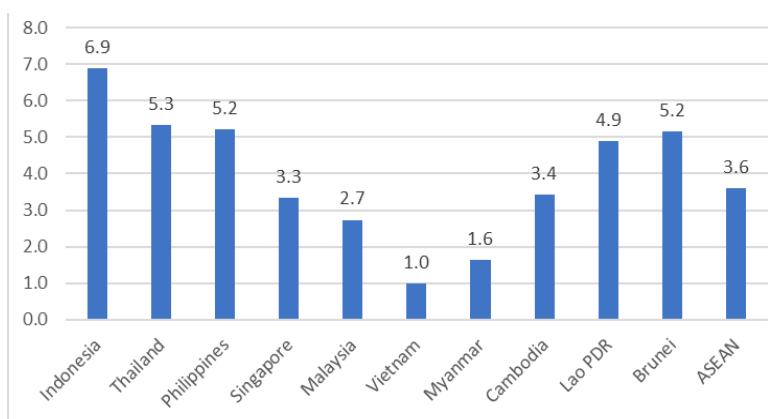

Figure 4. Nurses/Physicians ratios of ASEAN countries (Source: WHO, 2014)

Figure 4 shows the nurses/physicians ratio of Vietnam was the lowest among ASEAN countries in 2014 (Efendi et al., 2018). It was improved substantially in 2020 as shown in Figure 5, but still the lowest among the countries of comparison.
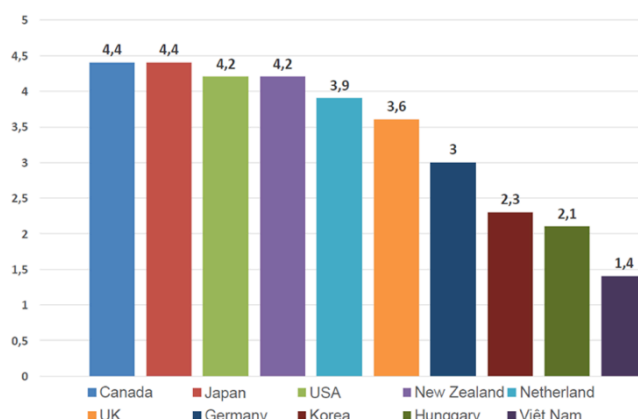
Figure 5. Nurses/Physicians ratios prior to COVID-19
(Source: *Health at glance: OECD indicator, OECD,2020*)

According to a report in 2015, the nurse-to-physician ratio remains low and impractical, standing at 1.8 nurses to 1 physician. The lowest ratio is observed in hospitals under the MoH

(1.22 nurses to 1 physician), while the highest is in provincial hospitals (1.56 nurses to 1 physician) (HSPH, 2015). This ratio has not been improved in recent years (Figure 4). The number of nurses with bachelor and higher degrees is still less than 20% of the total nursing workforce (Figure 6).
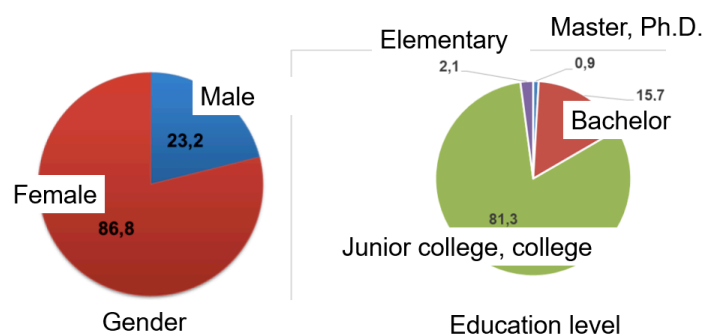

Figure 6. Characteristics of Nursing professionals (Source: MoH 2020)

Accreditation and Migration of Nurses

In the health workforce, nurses are active players in international migration. In ASEAN, the international migration of nurses is led by the Philippines followed by Indonesia (Efendi et al., 2018). On the other hand, uneven distribution and shortages in the health workforce in ASEAN countries has been reported by some researchers. The ASEAN region is very diverse in terms of health systems, disease burdens, population, and health transitions. ASEAN agreement to recognize those who have trained for at least 3 years and license issued by the host country (2007). Nevertheless, migration of nurses from and to Vietnam to ASEAN countries is still not reported.

The global scarcity of nurses has given rise to a notable trend of nurse migration across borders. One such migration pattern has been towards Japan, facilitated by the Economic Partnership Agreement (EPA) program established in 2008 (Hirano & Komazawa, 2022). This initiative has provided opportunities for foreign nurses to fill gaps in Japan's healthcare system (Otomo, 2022). Similarly, Germany has also been attracting nurses since 2013 through efforts promoted by the GIZ (Hillmann et al., 2022). Since a decade, the many healthcare universities have established specialized programs in language and skills for students interested in working in these countries.

Shift from the public sector to the private sector among nurses seeking better opportunities and compensation. Furthermore, a significant migration trend involves nurses moving from rural to urban areas, often in pursuit of improved career prospects and higher standards of living (Vietnam Ministry of Health, 2020).

Impact of COVID-19

There are significant challenges faced by the nursing workforce during the pandemic, including increased workloads (T. T. Nguyen et al., 2022; T. T. H. Nguyen et al., 2022), heightened infection risks, burnout (Duong-Quy et al., 2022; P. T. Nguyen et al., 2022; T. Van Nguyen & Liu, 2022), and attrition rates. Official reports highlight a concerning trend of healthcare personnel leaving their positions or resigning. In 2021 and the first half of 2022, there were 9680 health professionals, including 2,874 nurses quitted their job (Ministry of Health, 2022). In HCMC in the first half of 2022, there were 874 health professionals,

including 391 nurses quitted their job (HCMC Health Department, 2022). The shortage of professionals has led to the mobilization of healthcare students to volunteer during the COVID-19 pandemic (Tran et al., 2022). The reasons for quitting the job include a stressful working environment with job stress, high responsibility, endless night shifts, a high risk of infection, and insufficient time to care for family and small children; a low income of only about 7-9 million VND (300 USD) per month, which is not enough to cover living needs; attractive offers from the private sector prompting a shift from the public sector; and the difficulty of handling professional duties due to low-quality materials won through bids to enter the hospital.

The number of nursing student enrollment decreased. In 2022, the number of students enrolled has decreased by more than 60% compared to 2021 (Pham Ngoc Thach Medical University, 2022). Difficulty in recruiting students. Many schools that offer nursing training also face many difficulties in enrolling in this field. Tuition fees for nursing bachelor's and nursing college programs are quite high (35-40 million VND/year), but when they graduate, the work is hard, the salary is low, and there is no incentive scheme. Without increased investment in nursing education, projections indicate a shortage of 50,000 nursing professionals in Vietnam by 2030 (WHO, 2022).

To response to the situation, efforts have been made by the government to elevate the payment system for healthcare professionals to the highest level. The MoH is in the process of formulating a master plan aimed at renewing the nursing policy to encompass comprehensive care until the year 2030. At the local level, initiatives are being implemented to increase income, incentives and extend the recruitment for mid-level nurses, midwives, and medical technicians. Furthermore, policies concerning tuition fee exemption have been introduced to attract more students to the nursing field (Phong, 2022).

Conclusion

As we navigate the complex terrain of healthcare challenges, this article aims to illuminate the critical importance of addressing the nursing human resource crisis in Vietnam, emphasizing the imperative for education reform to fortify the nation's healthcare infrastructure and ensure the well-being of its citizens.

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Using the Partial Credit Model and Rasch Model to Examine the FOCIS Survey

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Abstract

This study examined the dimensionality and effectiveness of the five categories Likert Scale of the framework for observing and categorizing instructional strategies (FOCIS), a survey that measures students' preference for learning activities in science instructions, developed by Tai et al. in 2012. The data included 6546 students from 3rd to 12th grade including 4 school districts. The results show that the FOCIS survey has 7 dimensions measuring students' preferences. This study only tests the effectiveness of the *Competing* dimension. Compared to the Partial Credit Model (PCM) model and Rasch model, condensing down the categories to dichotomous items fits the data better. The AIC and BIC decreased, and the infit outfit improved on the Rasch model.

Keywords: Item Response Theory, Partial Credit Model, Validity

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Introduction

A framework for observing and categorizing instructional strategies (FOCIS) and an instrument to measure students learning activities preferences in science learning was developed by Tai et al. (2021) in 2012 (Figure 1). Educators can understand the types of activities students enjoy in science by using the FOCIS survey. However, this survey has not been tested through the item response theory method yet. The aim of this study is to examine the measurement dimensionality and effectiveness of the five categories Likert Scale. The original students used the confirmatory factor analysis to examine latent variables. In this study, the main focus is on the effectiveness of response categories.
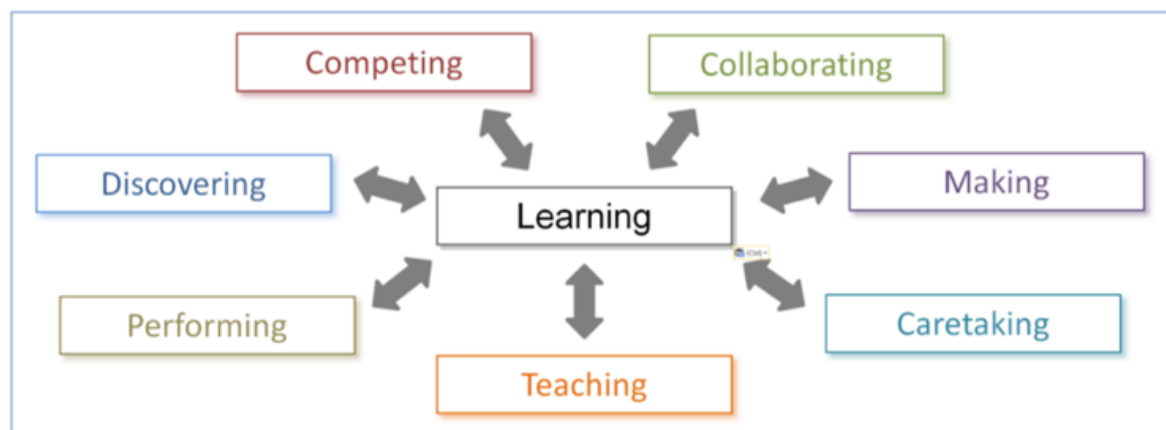

Figure 1. *Framework for Observing and Categorizing Instructional Strategies (FOCIS)*

Perspective/FOCIS Framework

A sufficient among of studies demonstrate that students' interest and attitude toward science are two effective indicators of students' future career expectations and participation in science, technology, engineering, and mathematics (STEM) (Koballa, Jr. & Glynn, 2007; Lent et al., 1997; Luce & His, 2014; Luce & Woodman, 2014; Simpson et al., 1994). Science-focused activities can spark students learning interests in science. To better understand students' science learning activities preferences, Tai et al. developed a conceptual framework for observing and categorizing instructional strategies (FOCIS) and deconstructed activities into seven categories: (a) *Collaborating*, (b) *Competing*, (c) *Making*, (d) *Discovering*, (e) *Performing*, (f) *Caretaking*, and (g) *Teaching/tutoring* (2012).

Based on the definition of the authors, collaborating happens when group members work together on a project or task. This category contains 4 indicators to measure. *Competing* activities were defined as compelling participants to seek to win, which have four indicators. Making activities is the process of constructing an object by applying ideas and materials (four indicators). Discovering activities contain five indicators that measure the performance of participants in learning new things, figuring things out, and problem-solving. Performing is the activities associated with presentations and audiences as outcomes at a specific place and time, meeting a challenge (four indicators). Caretaking (three indicators) is caring for others, animals, and even objects. Last but not least, teaching is helping others to learn (four indicators).

Purpose and Research Questions

The purpose of this research was to conduct a dimensionality analysis to test how many dimensions the FOCIS has. Through running a Partial Credit Model analysis of the dimension of *Competing*, this study enquires whether the Likert-Scale can effectively capture information. Using the FOCIS survey data from 2012, this project will answer the following questions:
1. Does the FOCIS survey measure multiple latent traits (multidimensional)?
2. Is a 5-point Likert Scale effective in measuring the individuals in 4 items of *Competing*?

Design/Procedure

Sample

The FOCIS survey instrument was given to students in the 3rd through 12th grades in 2012. A total of 7382 students took the survey. After removing all missing values, the sample size is 6546. Surveys were handed out across three different school districts in Virginia and two different school districts in Illinois. Twenty-five schools participated in data collection.

Measures

The FOCIS survey is the instrument to measure students' preferences about those types of activities. According to the framework, the survey contains seven dimensions with 28 items. Response categories were provided on a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), which were recoded into: 1 = 0, 2 = 1, 3 = 2, 4 = 3, 5=4. Recoding was required for the intended PCM analysis. Focus on the *Competing* dimension, the wording of the question, "I like to focus on my own goals, rather than competing with others", was reversed. Therefore, before analysis, this item was recoded as 5=0, 4=1, 3=2, 4=3, 5=4. The target variables are listed below (Full items attached in Appendix B):

 feelcmpt: I like an activity that involves "Being in a competition".
 exctcmpt: I get excited when I hear there will be a competition.
 mptothr: I enjoy competing against other people.
 focusown: I like to focus on my own goals, rather than competing with others.

For demography information, sex was coded 1 for male and 2 for female. Race was coded as white, Latino, black, Asian, and multi-race.

Statistical Analyses

Using RStudio eRm package and ltm package, the focus of this analysis is to re-evaluate the effectiveness of the FOCIS survey in the Item Response Theory lens. Two Rstudio packages were used in this study to conduct the factor analysis (CFA), ltm, and Psych.

Factor analysis considers the possibility that items are related to one or more common factors and treated as parallel observations. The assessment of factor analytic fit tests is based on the prediction of item-covariance uniformity in the variance-covariance matrix (van der Lans et al., 2021). To answer the first research question factor analysis was conducted on the full data set to test the dimensionality of the survey.

Considering this instrument using a five-point Likert scale (strongly disagree, disagree, neutral, agree, and strongly agree), this project would use the partial credit model (PCM), a Rasch-based model, to analyze the polytomous categories response data. Embretson and Reise (2000) illustrated that PCM is perfectly appropriate for analyzing attitude responses on a multi-point scale. The IRT model is able to place the personal traits and item difficulty on the same scale and able to exam whether items in the survey vary in difficulty, compared to the sum scores method used in this article. This study mainly focused on one of the dimension analyses: *Competing*. The model equation is below:

$$\underline{P}_{ix}(\theta) = \frac{\exp\left[\sum_{j=0}^{x}(\theta - \delta ij)\right]}{\sum_{r=0}^{mj}\left[\exp \sum_{j=0}^{x}(\theta - \delta ij)\right]}$$

Where $\sum_{j=0}^{0}(\theta - \delta ij) \equiv 0$

The δ_{ij} $(j = 1, ..., m_i)$ term is the item step difficulty associated with a category score of *j*; a higher value of a particular δ_{ij} means the more difficult a particular step is relative to other steps within an item This equation can be interpreted as the probability of an examinee responding in category x on an m_i step item, which is a function of the difference between an examinee's trait level and a category intersection parameter. This study mainly focused on one of the dimension analyses: Competing. (Embretson & Reise, 2000).

Analyses and Findings

Descriptive Statistics

The sample consists of 6546 students in 25 schools. Descriptive statistics for the sample are provided in *Table 1*. 51.12% of students are male and 48.88% of students are female. The race and ethnic information are as below: 0.57% American Indian; 1.79% Asian; 16.18% Black; 16.98% Hispanic; 0.1% Pacific Islander; 15.16% Multiple races and ethnic group students; and 49.22% White students. As *Table 2 and Figure 2* show, category 5 is the most endorsed one in feelcmpt, exctcmpt, cmptothr, while the first category is the most endorsed one in the focusown item.

The frequencies of participants' total scores reflected the distribution of total scores (*Table 3, Figure 3*). Preliminary analysis of the parametric assumptions revealed that *Competing* total scores were normally distributed. The skewness of total scores is -0.497448 (|skewness values| < 1.0). the highest frequency of total raw scores is 13.

Variables	Percent %
Gender	
Male	51.12
Female	48.88
Race	
AmInd	0.57
Asian	1.79
Black	16.18
Hispanic	16.98
Pacific Islander	0.1
Multi-racial	15.16
White	49.22

Table 1. *Descriptive Statistics for Student Gender, Student Race (N =6546)*

	Thresholds					Item Total Score	count
	0	1	2	3	4		
feelcmpt	0.1189	0.102	0.2605	0.214	0.3046	16257	6546
exctcmpt	0.1801	0.1257	0.2178	0.1819	0.2944	14956	6546
cmptothr	0.1743	0.1166	0.1911	0.1856	0.3324	15614	6546
focusown	0.3291	0.13	0.1146	0.2324	0.194	11994	6546

Table 2. *Proportions for Each Level of Response and Item Total Scores (N =6546)*
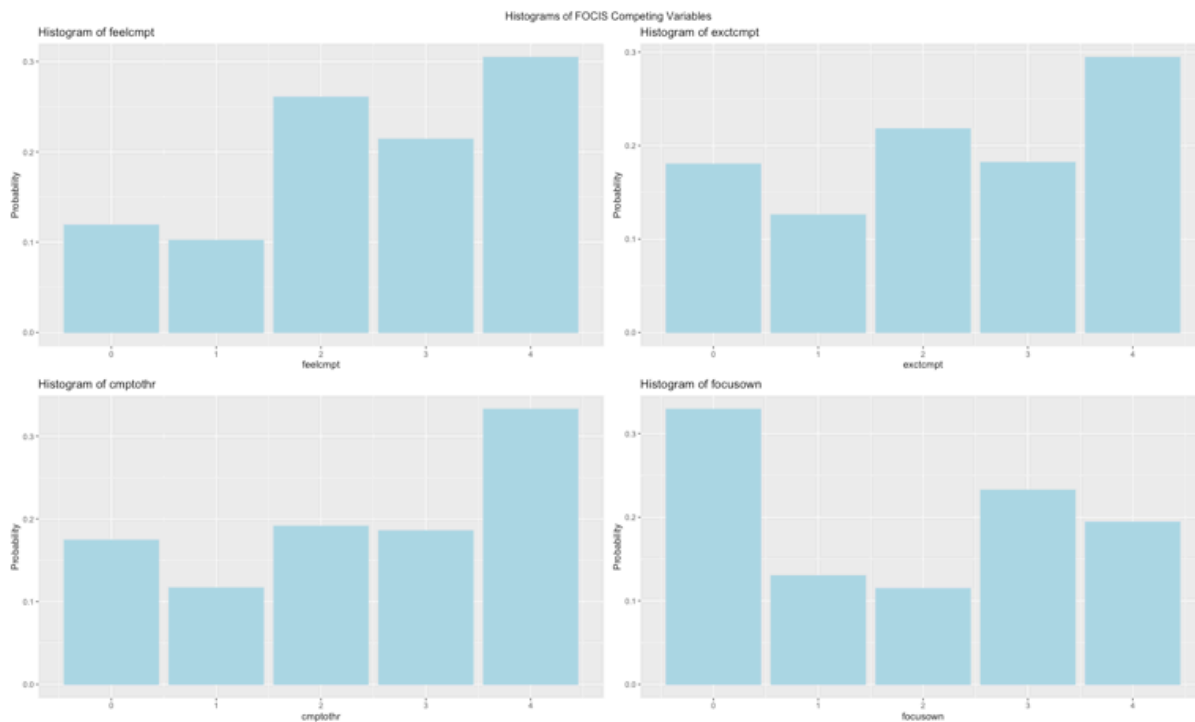
Figure 2. *Histogram of FOCIS Competing variables*

Total Score	Frequency
0	329
1	184
2	194
3	223
4	319
5	237
6	344
7	385
8	411
9	497
10	556
11	514
12	728
13	731
14	410
15	338
16	146

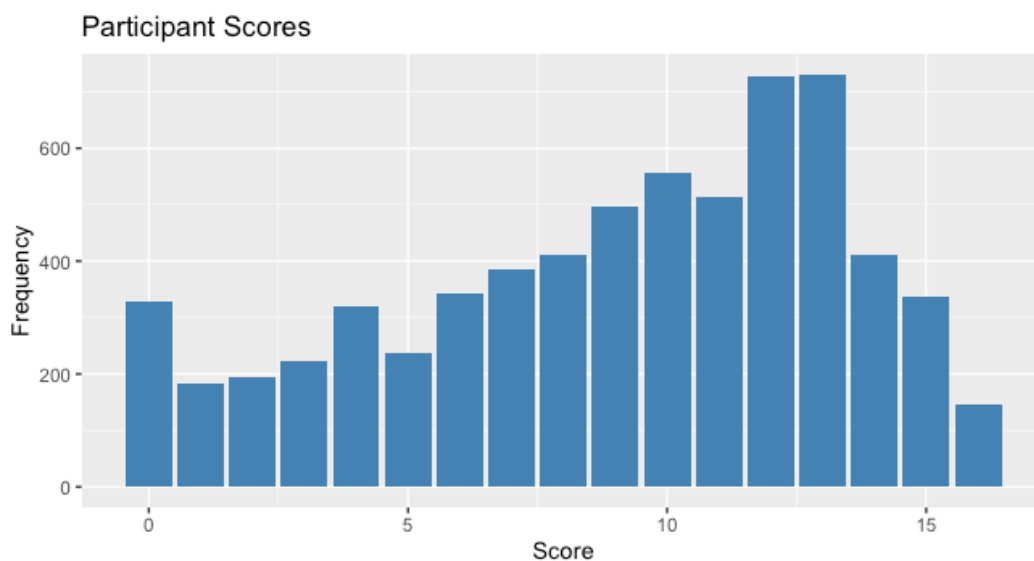Table 3. *Frequencies of Participant Total Score (N =6546)*

Figure 3. *Histogram of FOCIS Competing personal raw total scores*

Dimensionality Analysis

The screen graph (***Figure 4***) shows that this scale has seven dimensions. The eigenvalues did not drop much after the seven factors and the eigenvalue of the seventh factor was larger than 1. What's more, using polychoric correlations, the pattern of items loading on each factor showed feelcmpt, exctcmpt, cmptother loading on the same factor. The loading of focusown is relevantly lower than other items (Table 4). The Cronbach's alpha is 0.7306, indicating the items have acceptable internal consistency.
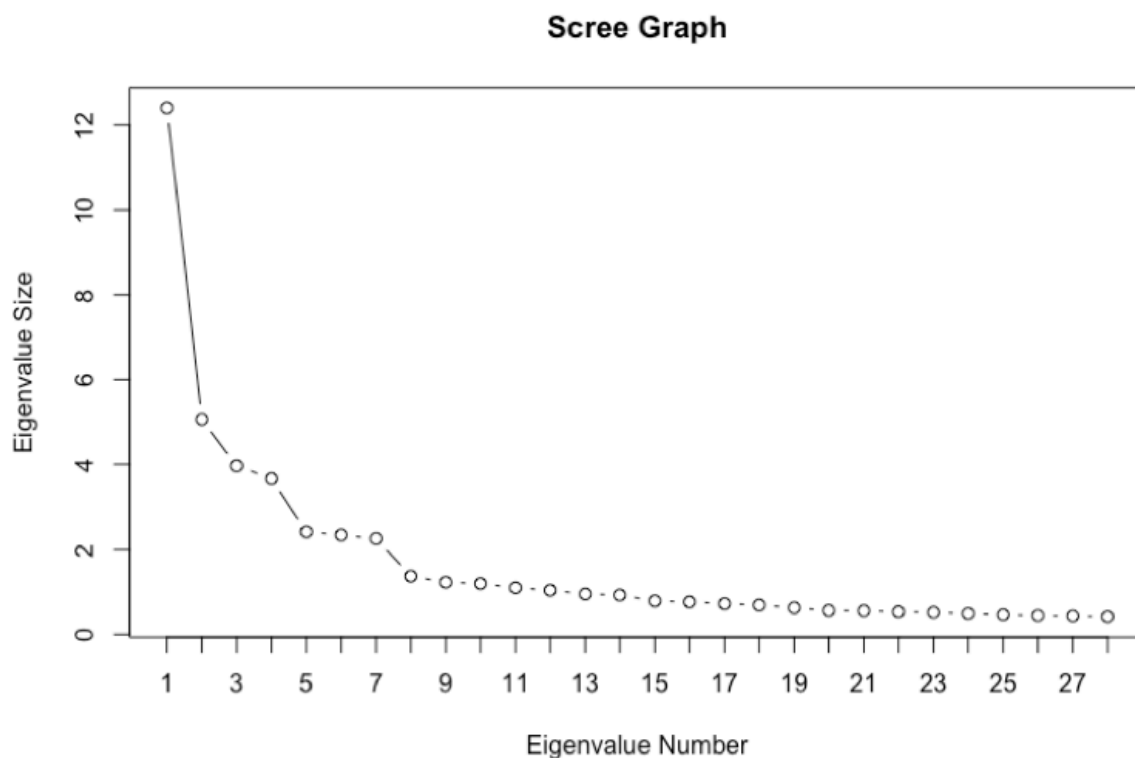
Figure 4. *Scree Graph*

Competing Items	Factor loading						
	1	2	3	4	5	6	7
feelcmpt I like an activity that involves "Being in a competition"	-0.02	0.85	0	-0.01	-0.02	0.01	0.01
exctcmpt I get excited when I hear there will be a competition.	-0.01	0.88	0	0.03	0.02	0.01	0.02
cmptothr I enjoy competing against other people.	0.02	0.89	0	-0.01	-0.01	-0.01	-0.02
focusown I like to focus on my own goals, rather than competing with others.	-0.17	0.14	0.01	0.02	-0.09	-0.06	0.01

Table 4. *Factor loadings*

Infit and Outfit of Competing

As the infit outfit table shows all items in the *Competing* dimension are misfitting. The item feelcmpt, exctcmpt, cmptothr are overfitting. The infit and outfit are smaller than 0.6, which is considered overfitting by liberal standards. The model might absorb noise or random variation in the data rather than the underlying pattern. The infit and outfit of focusown item are larger than 1.4, which indicates this item is underfitting. The model might have too few parameters and fails to capture the underlying pattern (***Table 5***).

	Chisq	df	p-value	Outfit MSQ	Infit MSQ	Outfit t	Infit t	Discrim
feelcmpt	3431.256	6070	1	0.565	0.582	-27.432	-28.934	0.786
exctcmpt	3106.681	6070	1	0.512	0.528	-29.464	-34.111	0.836
cmptothr	3025.23	6070	1	0.498	0.528	-28.667	-33.289	0.834
focusown	11775.39	6070	0	1.94	1.764	30.305	37.599	-0.076

Table 5. *Infit and Outfit Outcomes*

Item Difficulty and Thresholds

On average, the mean of the item difficulty is 0. The most difficult item is focusown (beta=1.22). Feelcmpt is the easiest item (beta=-0.946). How all thresholds of the four items are reversed. For instance, the first threshold of item one is -0.575 while the second threshold is -1.489 smaller than threshold one (***Table 6***).

	Location	Threshold 1	Threshold 2	Threshold 3	Threshold 4
feelcmpt	-0.946	-0.575	-1.489	-0.954	-0.766
exctcmpt	-0.0895	-0.092	-0.504	0.074	0.164
cmptothr	-0.18525	-0.089	-0.478	-0.073	-0.101
focusown	1.22075	0.802	1.227	1.024	1.83

Table 6. *Item difficulty and Item Thresholds*

Person Traits and Thetas

The mean person trait (mean=0.23) is higher than the mean item difficulty (mean=0), which suggests that, on average, the individuals in your sample have a higher trait level than the average difficulty of the test items. In other words, the test items might be relatively easier for the respondents in your sample. Examples of person traits are listed in ***Table 7***.

However, it's essential to consider the distribution of item difficulties and person traits, as individual items might still be challenging for some respondents, and some items might be easier for others. Analyzing the distribution and variance of both person traits and item difficulties can provide more insights into the appropriateness of the test items for the sample (***Figure 5***).

In conclusion, the test items may not be optimally targeted for the sample since the average ability level of the individuals is higher than the average difficulty of the items. The test items might be relatively easier for the respondents in this sample. It might be helpful to include more challenging items in the test to better discriminate between individuals with higher ability levels.

Estimate	Standard Deviation	Error	2.50%	97.50%
theta 1	0.96855899	0.5151915	-0.0411977	1.9783157
theta 2	0.96855899	0.5151915	-0.0411977	1.9783157
theta 3	-0.5990954	0.469392	-1.5190868	0.32089609
theta 4	0.73726666	0.4521136	-0.1488597	1.62339302
theta 5	-0.3977457	0.430668	-1.2418395	0.4463481
theta 6	0.73726666	0.4521136	-0.1488597	1.62339302
theta 7	0.96855899	0.5151915	-0.0411977	1.9783157
theta 8	1.29245982	0.635236	0.04742024	2.53749941

Table 7. *Person Traits*
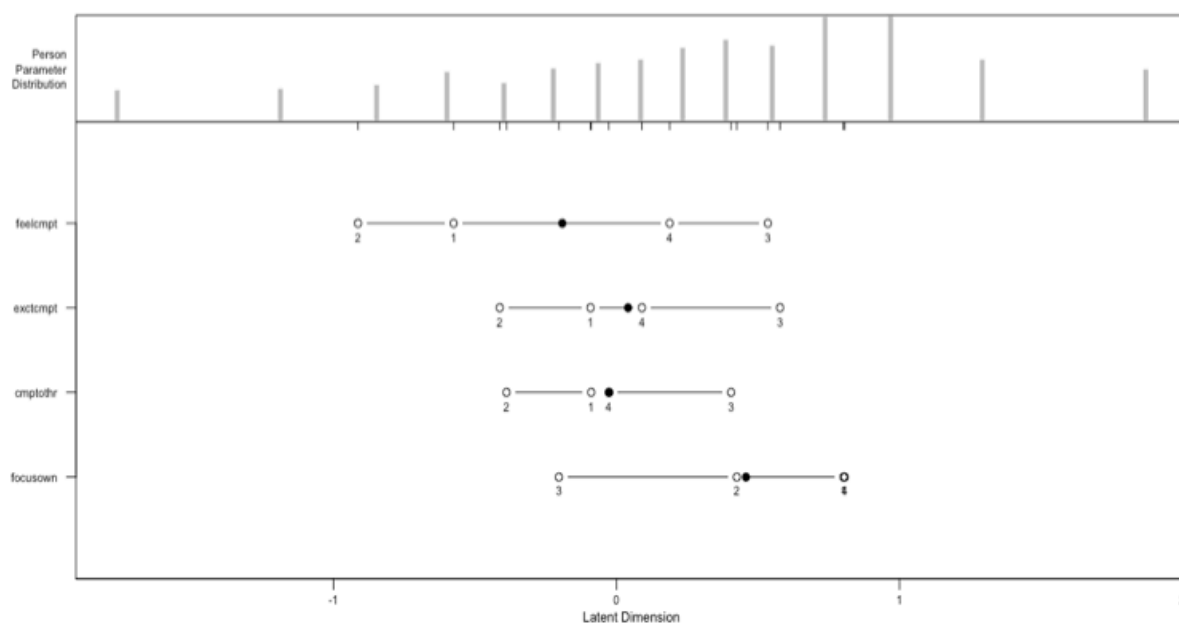
Figure 5. *Person Item Map*

Category Response Curves (CRCs)

As ***Figure 6*** shows, the second category and fourth category are never the most likely categories among all four items. People are not picking the second and fourth item. The third category of feelcmpt, exctcmpt, cmptothr items has a short peak response window while the focusown item does not contribute to this item. Results indicate that the four items might not need 5 categories to capture information. It suggests that maybe the dichotomous category functions better. Since all items only have three or two major points, the results suggest that maybe consider condensing five categories down to dichotomous categories.
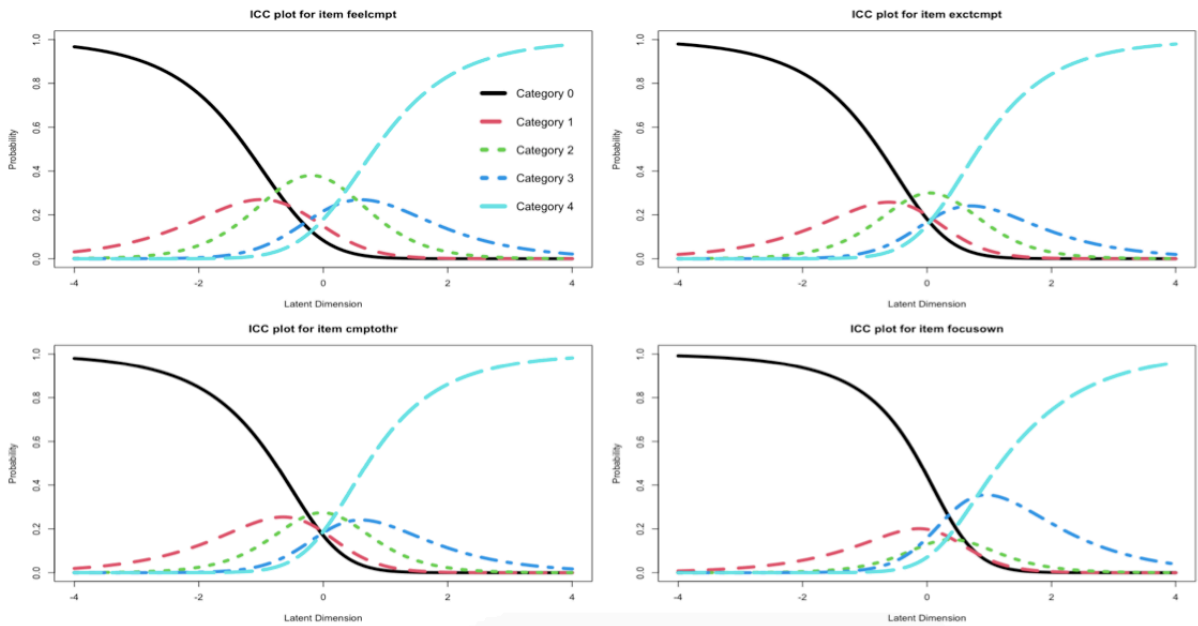
Figure 6. *Category Response Curves*

Item Information

For the first three items (***Figure 7***), the most information this survey got was from items located on zero. The item focusown provided the highest amount of information compared to the other three items. However, most information about the scale is slightly larger than zero. Similarly, on the total information (***Figure 8***), the most information about the scale is slightly bigger than zero.
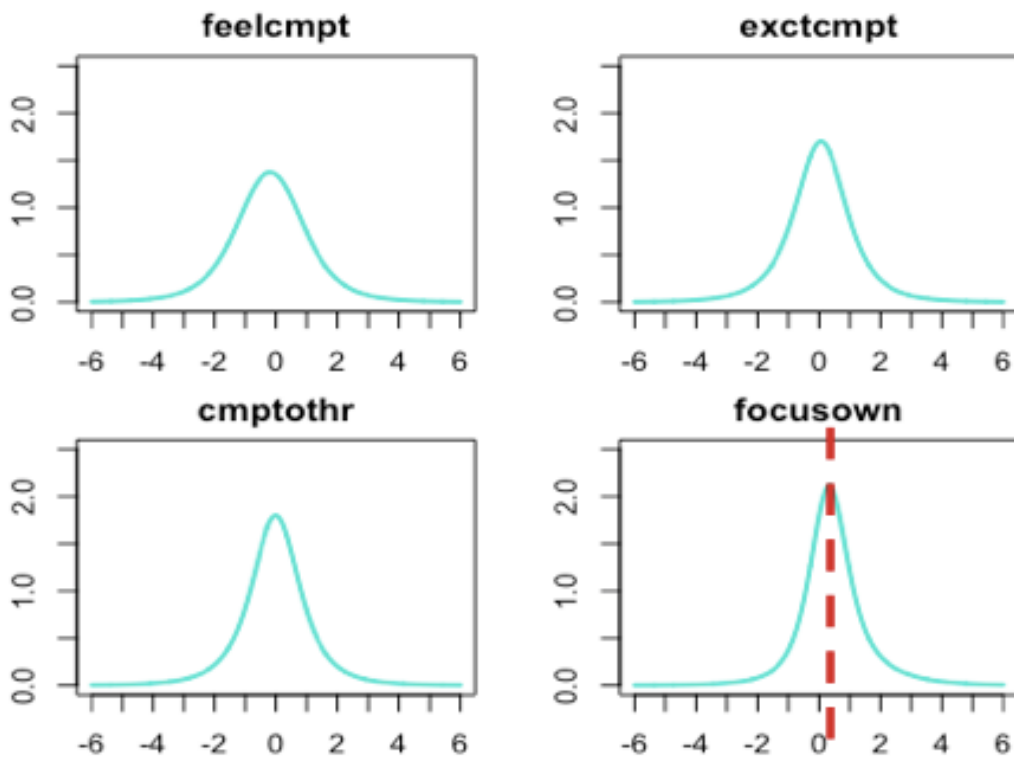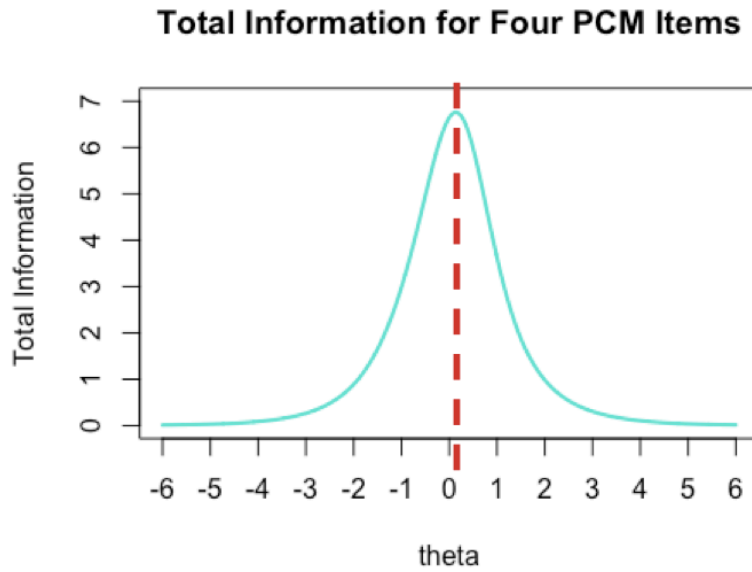

Figure 7. *Item Information*

Figure 8. *Item Total Information*

Condense Categories

Based on the results above, this study condensed the categories down to dichotomous categories. According to the frequency table of items endorsement and density plot, we combine categories one to three as one category, coded as 0. Categories four and five combine into one category coded as 1 (as ***Figure 9***). The condensed data was analyzed by Rasch Model through eRm package. To compare the model fit, this study looked at infit and outfit as well as AIC and BIC.
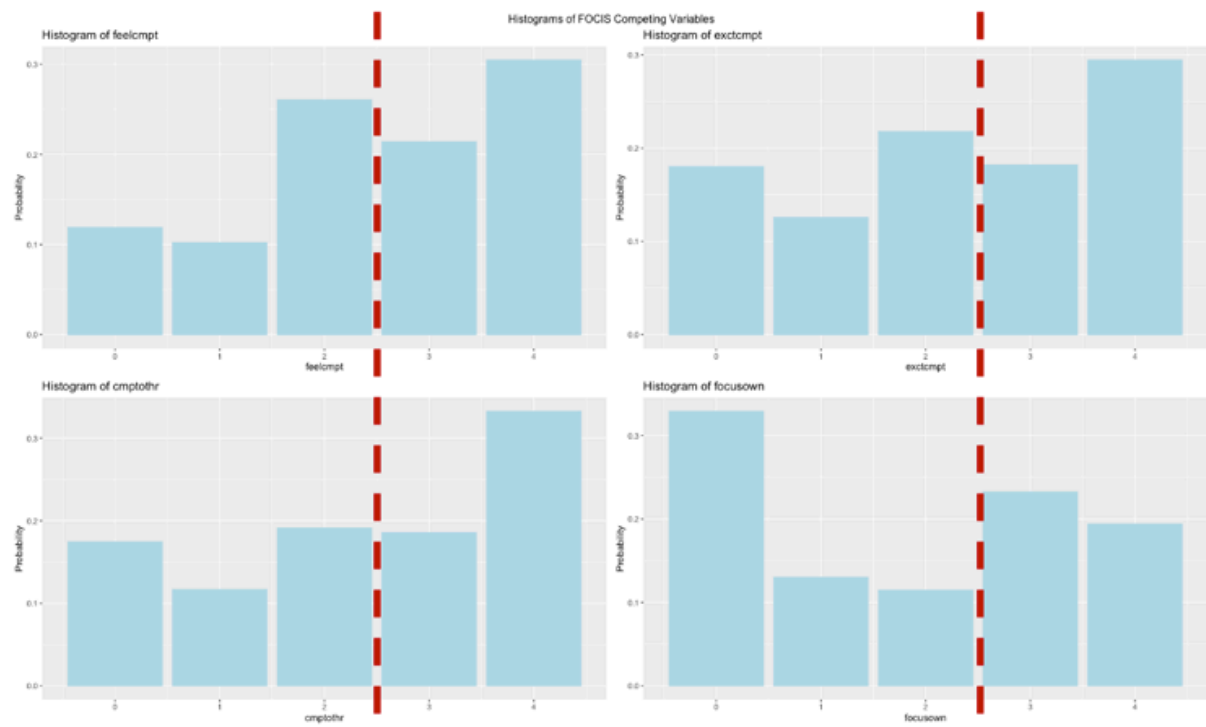

Figure 9. *Condense Categories*

Model Comparison

The infit and outfit of feelcmpt, exctcmpt, cmptothr all increased. However, the infit and outfit of focusown item underfitting worse than the PCM model (***Table 8***).
AIC and BIC described that the Rasch Model fit better. Both values of AIC and BIC decreased dramatically (***Table 9***).

	Chisq	df	p-value	Outfit MSQ	Infit MSQ	Outfit t	Infit t	Discrim
PCM								
feelcmpt	3431.256	6070	1	0.565	0.582	-27.432	-28.934	0.786
exctcmpt	3106.681	6070	1	0.512	0.528	-29.464	-34.111	0.836
cmptothr	3025.23	6070	1	0.498	0.528	-28.667	-33.289	0.834
focusown	11775.393	6070	0	1.94	1.764	30.305	37.599	-0.076
Rasch								
feelcmpt	2090.032	3447	1	0.606	0.728	-15.139	-13.787	0.55
exctcmpt	2228.24	3447	1	0.646	0.674	-20.679	-20.399	0.836
cmptothr	2129.38	3447	1	0.618	0.654	-21.413	-21.097	0.808
focusown	6988.273	3447	0	2.027	1.585	33.435	37.791	-1.425

Table 8. *Infit and Outfit Comparing Table*

	value	npar	AIC	BIC	cAIC
PCM					
joint log-lik	-30181.51	30	60423.02	60624.36	60654.36
marginal log-lik	-37758.23	15	75546.46	75648.26	75663.26
conditional log-lik	-19834.34	15	39698.69	39800.48	39815.48
Rasch					
joint log-lik	-7224.279	6	14460.557	14497.431	14503.431
marginal log-lik	-13881.577	3	27769.155	27789.514	27792.514
conditional log-lik	-4356.108	3	8718.216	8738.576	8741.576

Table 9. *Model Fit*

Conclusion

Factor analysis presented the FOCIS survey did have 7 dimensions. The loading on focusown item is not aligned with other items well, The focusown item is the only item in the whole survey that has the reversed phrase question, which might explain the reason for the underfitting of this item. People might be confused about the phase or not pay attention to the pattern change in this item.

Based on the infit, outfit, and CRCs of PCM, the results showed five categories did not capture the information well for this population. Two or three categories of the four items of *Competing* are the never likely answer items with reversals. Compared to the condensed Rasch model, AIC and BIC suggested the model fit better. Additionally, the AIC and BIC of the Rasch model indicate the model fits better than PCM.

Contribution/Significance

The FOCIS instrument could be used to assess the enjoyment of different science activities with 3rd to 12th-grade students and provide information for youth STEM program developers and instructions for evaluating and modifying the program. This analysis indicated that a dichotomous design of *Competing* dimensions can better capture information. It is also worth conducting an analysis of other dimensions in the future.

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AI, AI, Who Is the Most Beautiful Person in the World?

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Abstract
This research focuses on applying AI to evaluate students' performance in makeup learning, aiming to provide them with a self-learning reference tool and professional grading assistance. Use AI technology to verify whether facial makeup can enhance facial appeal. This research has two main goals: to achieve the effectiveness of students' makeup learning through AI technology, thus providing beneficial tools for students learning the art of makeup, to evaluate students' makeup skills in major exams in a fast and fair manner, trying to reduce the biases in judgment standards among different evaluators and ensure the consistency of assessment results. The essence of the study aims to establish a teaching assistant model. Using AI technology to verify whether facial makeup can enhance facial appeal. Where AI rated their facial makeup and bare faces after attending courses, providing scores for before and after their makeups. Comparing the bare and made-up faces of 100 models, the study used specific big data algorithms to distinguish between made-up and bare faces. The results prove that AI can effectively evaluate the results of facial makeup. In addition, the study used a CNN model (ResNet18) trained on the SCUTFBP-5500 public dataset, which contains 5500 images of faces. All the images in the dataset were rated in the scale of five by 60 volunteers and is a widely used benchmark for facial beauty evaluation. We aim to eventually develop a new assisting model for makeup education [1].

Keywords: AI Big Data, Makeup, Facial Beauty Prediction, Attractiveness

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I. Introduction

The use of data processing to enhance the good taste of life is the perfect combination of technology and humanity. Not only Data can be quickly and massively accumulated and analyzed [2], but also qualities such as emotional preferences have 1gradually become quantifiable. Today, makeup is crucial to human beings [3]. Research has found that makeup may affect emotional interaction and interpersonal communication [4]. Physical attractiveness also affects the accuracy and speed of emotion perception. People with beautiful face were judged to be happier [5][6] An attractive person is also more likely to get a higher salary. Statistically, the facial attractiveness of high school graduates is positively correlated with their income Both male and female raters think that women who wear makeup are more attractive and have more social potential than those who do not. In experiments on enrollment status, tip collection and romantic relationships, women who wear makeup get better results [7]. The study surveyed 50 Brazilian women and have them rate themselves on the perspectives of attractiveness, health, self-esteem, femininity, satisfaction with their appearance, age, dominance, self-confidence and competence. The results showed higher scores for people who wear makeup [8]. Makeup has even become a therapy, giving older people a higher sense of well-being [9].

Cosmetics serve as a means to enhance human characteristics. In the field of psychology, there has been a long-term study of the relationship between the perception of biological facial signals and attractiveness [10]. Makeup can not only improve the appearance, evenness and texture of skin but also make people look healthier, more vibrant and youthful [11] [12]. This suggested that the original appearance is not a fixed attribute but rather a self-image and social perception that can be modified and controlled by individuals [13].

Make-up is an important field of fashion in contemporary times. Few colleges or research institutes, however, have considered it as an object of study. We take "makeup" as the research object by bringing artificial intelligence into the field of makeup that has a huge market [14]. It is important to announce that this research will have multiple influences, deconstructing the barriers between colleges and vocational schools. Science and technology research comes from the needs of human nature, and it is hoped that the boundary of makeup education and technology research will also be broader [15]. Taiwan's makeup license exam has great influence Cosmetology students need to learn skills in the process of development. Whether it is makeup or hairdressing, a lot of practice is demanded [16]. we hope that eventually a new assisting model for makeup education will be developed [17].
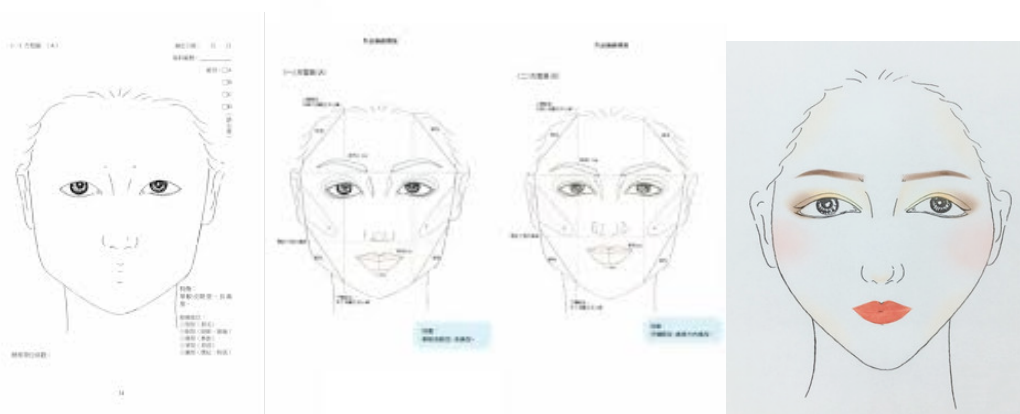

Fig. 1 Makeup design drawing for the Class B cosmetology (a) Base drawing of design drawing (b) Completed drawing of design drawing.

II. Literature Discussion

The SCUT-FBP5500 dataset [18] is a standard benchmark dataset in facial beauty prediction task, which contains totally 5500 frontal faces collected from Internet with diverse properties and diverse labels labeled with beauty scores ranging from by totally 60 volunteers. SCUT-FBP5500 data set released by South China University of Technology. The dataset can be divided into four subsets with different races and gender, including 2000 Asian females, 2000 Asian males, 750 Caucasian females and 750 Caucasian males as shown in Fig2.
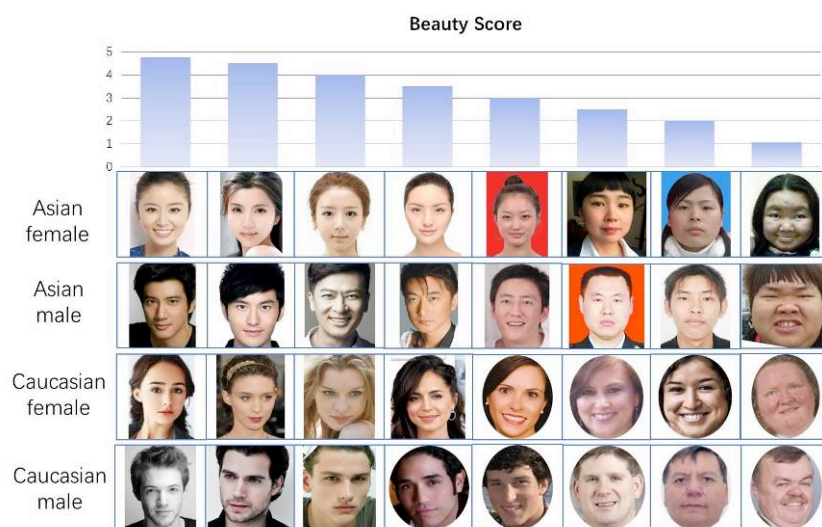
Fig. 2 SCUT-FBP5500 dataset

In this study, we investigate the use of Res Net 18 trained by SCUTFBP5500 as a backbone for score estimation, provided by [19]. ResNet 18 is a deep neural network comprising 18 layers with residual blocks. The residual block is the most important part in Resnet, which includes a shortcut connection, which allows information to flow more easily through the network. This helps prevent the vanishing gradient problem and enables the successful training of deep neural networks.

It is widely use in image classification tasks. Compare to other Resnet architecture, Resnet 18 has smaller model size with a better performance, which allows it to perform various tasks with less resources.
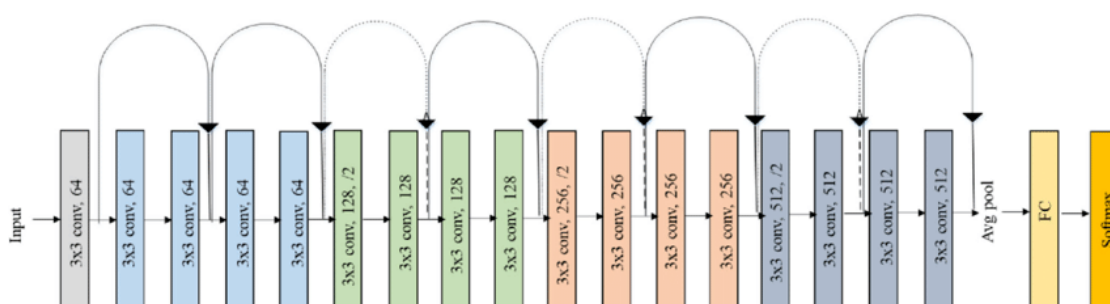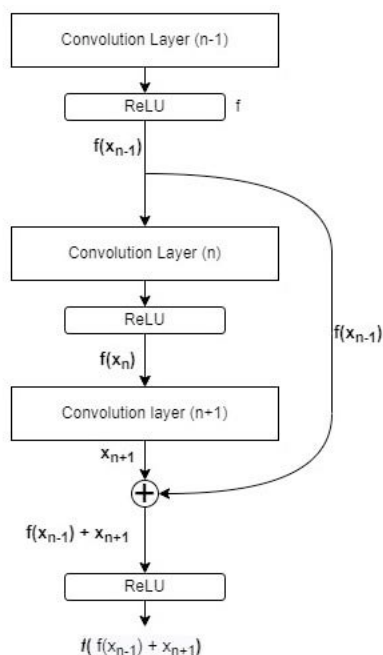

Fig. 3 Res Net 18 is a deep neural netword

Fig. 4 Res Net 18 is a deep neural netword

III. Research Methodology

The study uses an additional database for experimentation and comparison, involving 100 Asian female models aged between 18 and 21 who contributed a total of 1,200 images and categorized into 5 scoring intervals. Each of the models was assigned a unique number and has two photographs: A) without makeup, and B) with makeup. Before taking the photo, their hair was tied back with hairbands and covered with headscarves to prevent any interference with facial shape. Both the headscarves and clothing were white, and the models maintained a consistent facial angel, with their head and neck positioned forward without facial expressions. This is to ensure that the face was the primary variable in the test.
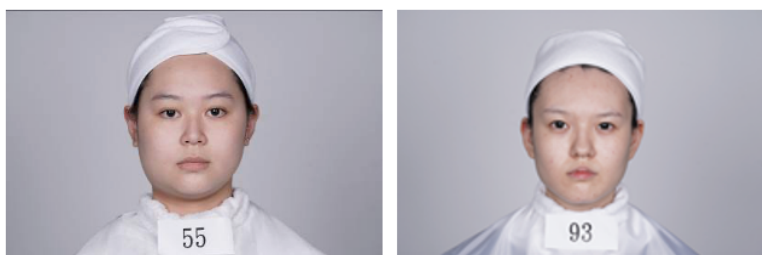

Fig. 5 Before the photoshoot, the model's hair was tied up with a hair tie.
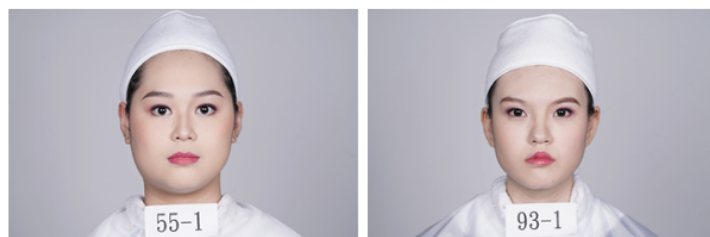**(Photo without makeup)**

Fig. 6 There is no hair on the face. Avoid interference from hairstyle
**affecting your face shape. (makeup photo)**

In this stage, the dataset SCUT-FBP5500 has facial photographs with their five-level rating for facial attractiveness. We proceeded to let 60 adults view a series of these photographs and ask them to rate each photo on a scale of 1 to 5.

Research has shown that when having newborns (less than a week old) looking at facial photographs, nearly every baby spends more time staring the more attractive faces. Current studies have also indicated that facial symmetry is an attractive signal. People with higher facial attractiveness often carry specific genes that contribute to symmetrical facial appearance [20][21].

Experiment Procedure

In our experiment, 100 set s of photos of models without makeup are inputted into our trained machine to obtain scores. Each of the models contributed 5 different types of photos with makeup. The scores for facial attractiveness have significant increase after applying makeup. Below listed the scores for the first 50 models for analysis. The first column indicated the model number and the second shows the score for the model's makeup-free photo.

Fig. 7 The line graph below shows the curve for models' natural face in blue (0), alongside the line of their facial attractiveness with make up:
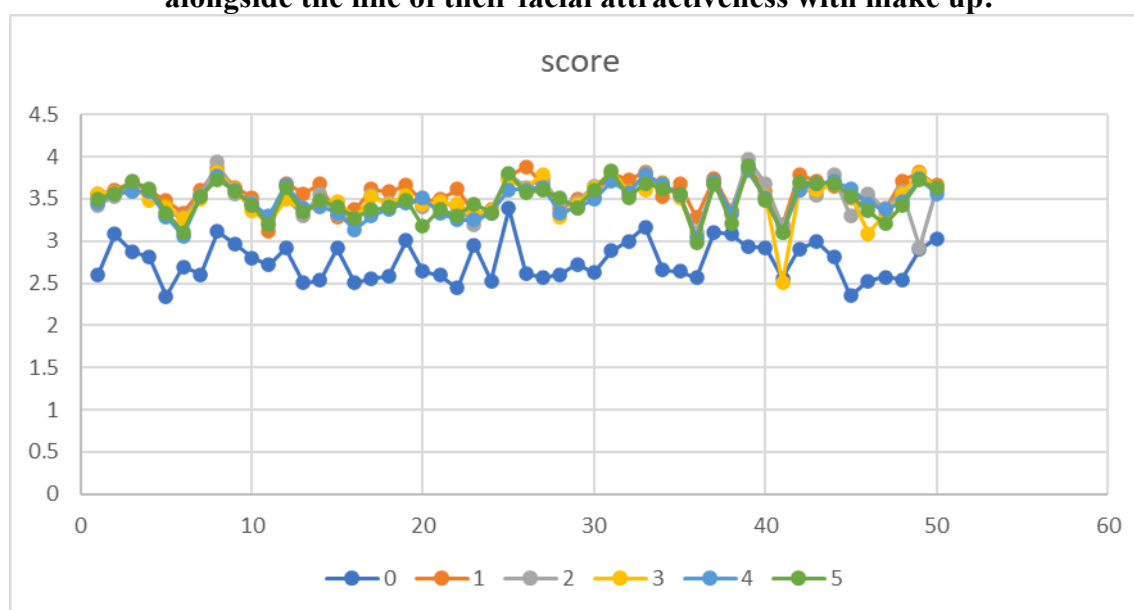
After being rated by AI model, the blue line representing the facial attractiveness scores of the models without make up, which is consistently lower than the scores for the five different makeup styles. This shows that the facial attractiveness scores of those 100 models with makeup are increased.

The Resnet18 was utilized to train a system developed by the SCUT-FBP5500 database. The above mentioned AI trained system demonstrates that makeup dose enhance facial attractiveness. Furthermore, AI has the capability of rapidly and extensively evaluating different makeup techniques.

Marvin Lee Minsky (b1927~2016) , an AI Pioneer, said in Society of Mind (Simon & Schuster Press, Original work published 1986) [22]. "The question is not whether intelligent machines have emotions, but how can machines have no emotions after they have

intelligence." We need to put humanity and culture at the forefront to develop computer capabilities in order to make them more human. The word "Aesthetics" comes from the Greek "ααὶσθητικός ", which means sensitive, sensual, and is an adjective used to modify feeling and perception. Immanuel Kant (b1724~1804) (Critique of Judgment, **b**1789~1790 [23]) believes that when the senses are satisfied, the individual will have a feeling of enjoyment and pleasure, and thus obtain the joy of beauty. But judging whether something is beautiful has a third requirement: the pleasure that arises in the individual must be thought through, because the judgment of beauty is not only sensual but also rational.

Conclusion

Makeup is an existence that cannot be independent of the face. This behavior is influenced to some extent by culture and customs. The face is the beginning of a person revealing themselves to the world. How to use appropriate makeup, it is very important to add points to your appearance. How should I describe it to bring out my own characteristics? Makeup is the embodiment of beauty in life, not only to find a person's bright spot, but also to enhance one's own taste and enjoy the pleasure of appreciating beauty. Adding more rational judgment criteria to the ecosystem of this industry at this stage will be a good factor in the entire makeup ecosystem.

The face is where an individual begins to present themselves to the world. Learning how to use makeup to enhance one's appearance is important. However, how can we showcase our individual characteristic? Makeup is a display of beauty in our daily life, not only for reveal one's highlight but also for promoting our teste and enjoying the pleasure of appreciating aesthetics. The futural goal is to develop a better makeup scoring tool which is established with ethical deep leaning unbiased facial aesthetic evaluation. This involves using AI techniques to explore more humanities fields [24].

Our study helps learners understand their level, while bringing a new evaluation method to examination and reduce human control or bias to increase objective in scoring. At the stage in the ecosystem of this industry, rational evaluation criteria are being incorporated. Using AI to assist in determining facial attractiveness can establish standard for beauty evaluation based on data, or even compare different racial conception of beauty. The further research can also address on contemporary ethnic Chinese standard of facial attractiveness. All these represent the potential applications of AI in makeup research with many possibilities yet to be discovered [25].

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A Qualitative Exploration Into the Impact of Interdisciplinary Education on Graduate Students in Japan

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Abstract

Interdisciplinary educational programs in graduate studies often serve as a crucible for innovation and comprehensive knowledge. In Japan, such programs have garnered attention and have progressively been integrated into the academic landscape, aiming to foster collaborative knowledge creation and address complex global issues. This study delves into the nuanced experiences of graduate students engaged in such programs at a Japanese national university, examining their motivations, learning experiences, outcomes, and the challenges they encounter. Employing a phenomenological approach, this study aims to elucidate the multifaceted experiences and perceptions of students, offering a lens through which to comprehend their academic journeys amidst the confluence of diverse disciplines. Through semi-structured interviews, we carefully collected data from 24 participants, thereby allowing for an in-depth exploration and subsequent analysis of their narratives and reflections. Our primary findings indicate that students have clear motivations and learning objectives, and their expectations align closely with the course design. Furthermore, they assign a high rating to the course's utility. However, they also face challenges related to time constraints and the difficulty level of the course. The insights garnered provide a foundation for emphasizing potential improvements and proactive measures in interdisciplinary educational strategies and policies. By charting the terrains traversed by these graduate students, this study not only illuminates their pathways but also engenders considerations for evolving pedagogical practices, thereby seeking to enrich and bolster the learning experiences of future academic cohorts within interdisciplinary contexts.

Keywords: Graduate Program, Interdisciplinary Education, Japan

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Introduction

Contemporary societies face complex and multifarious challenges, as underscored by the Sustainable Development Goals (SDGs). Addressing these challenges transcends the scope of unidimensional approaches; rather, it necessitates the cultivation of advanced capabilities that enable a comprehensive perspective (Wilson, 2010).

Universities and other higher education institutions bear a significant responsibility: they are the epicenters of pioneering research and the crucibles for educating the forthcoming generation of scholars and professionals. A retrospective analysis from educational offerings to course structures indicates an escalating demand and interest in interdisciplinary and transdisciplinary approaches to education, as identified by Boor et al. (2021).

The contemporary global education paradigm is experiencing a discernible shift, with a reduced emphasis on the mere acquisition of knowledge and an increased focus on the development of skills and competencies. This transition is reflected in initiatives such as the Organization for Economic Co-operation and Development (OECD)'s Definition and Selection of Competencies (DeSeCo) project. The project redefines "competency" as more than a mere collection of knowledge and skills; it represents an individual's ability to effectively deploy a range of resources, including attitudes and values, to achieve specific objectives (Rychen & Salganik, 2003). The DeSeCo project asserts that the essence of competency lies in the adept application of these resources in various contexts and scenarios. In parallel, the OECD Education 2030 project echoes this sentiment, envisioning an education system that aligns with the demands of a rapidly evolving society (Shirai, 2020).

This conceptual shift is also evident in Japan's recent educational reforms, particularly the 2017-2018 revision of the national Course of Study, which underscores the importance of competencies. The updated framework structures the desired qualities and abilities around three foundational pillars: "Knowledge and Skills," "Thinking, Judgement, and Expressive Skills," and "The Power to Learn and Humanity." These pillars serve as guideposts for fostering a capable and holistic individual, poised to navigate and contribute to a complex world.

In 2006, Japan's Ministry of Education, Culture, Sports, Science and Technology introduced the "Promotion of Graduate School Education Policy Guidelines." Recognizing the critical need for enhancing graduate schools' role in talent development and establishing graduate programs of international repute, these guidelines were set against the backdrop of an emergent "knowledge-based society" (MEXT, 2006). The policy articulated a roadmap for future graduate education reform, emphasizing the alignment of industry and societal needs with the offerings of graduate education and committing targeted support to graduate schools charged with cultivating highly innovative and adaptable researchers.

Building on these foundations, the "Doctoral Program Leading Initiatives" were launched in 2011, reinforcing the commitment to develop global leaders capable of operating seamlessly across industry, academia, and government sectors. By 2013, this initiative had successfully implemented 62 such programs (MEXT, 2019a). Moreover, the "Excellence Graduate School Program," introduced in the 2018 academic year, aims to foster doctoral candidates who are poised to become global leaders. This program is dedicated to advancing the creation and application of new knowledge, addressing and resolving societal challenges, and driving innovation (MEXT, 2019b).

The objective of this study is to qualitatively investigate the impact of interdisciplinary education on graduate students at a leading national university in Japan. The research will address the following questions:

1. What motivates graduate students to participate in interdisciplinary education programs?
2. What primary learning experiences do graduate students report in these programs?
3. What outcomes are associated with interdisciplinary education for graduate students?
4. What challenges do graduate students encounter in interdisciplinary education?

Interdisciplinary Graduate Education Programs at a Leading Japanese University

At the forefront of interdisciplinary education, a distinguished Japanese university offers two innovative programs: the Graduate Minor Program and the Graduate Program for Advanced Interdisciplinary Studies. Designed to cater to a variety of academic interests, these programs present students with a comprehensive learning experience, centered around well-defined academic themes. The key distinction between these programs lies in their credit requirements — the Graduate Minor Program requires students to earn more than 14 credits, in contrast to the Advanced Interdisciplinary Studies Program, which requires over 5 credits.

Central to these programs is a student-focused philosophy, which grants individuals the autonomy to tailor their academic journey according to their interests. This personalized approach not only fosters engagement with current interdisciplinary issues but also encourages the integration of knowledge across different fields, bridging the gap between academia and real-world challenges. A fundamental feature of these programs is the collaborative learning environment they promote. By bringing together students, faculty, and peers from various disciplines, these programs create dynamic educational spaces that are rich with diverse perspectives and opportunities for meaningful exchange.

As of the 2023 academic year, the breadth of offerings is impressive. The university has introduced 24 Graduate Minor Programs and 44 Graduate Programs for Advanced Interdisciplinary Studies, showcasing its dedication to encompassing a wide range of scholarly pursuits. The data presented in Figure 1 illustrates the evolution of the educational programs since their inception in 2008, starting from a modest 14 to a substantial 68 programs over time. Correspondingly, there has been an upward trend in the number of applicants, with the count nearing 900 at its zenith. Yet, the recent three-year trend shows a notable decline in applicant numbers, a downturn attributable to the effects of the global pandemic.

Upon completion, students receive a certificate that not only represents their academic journey but also stands as a testament to their commitment and scholarly endeavors. This formal recognition highlights the value of their interdisciplinary education and the breadth of knowledge they have gained.
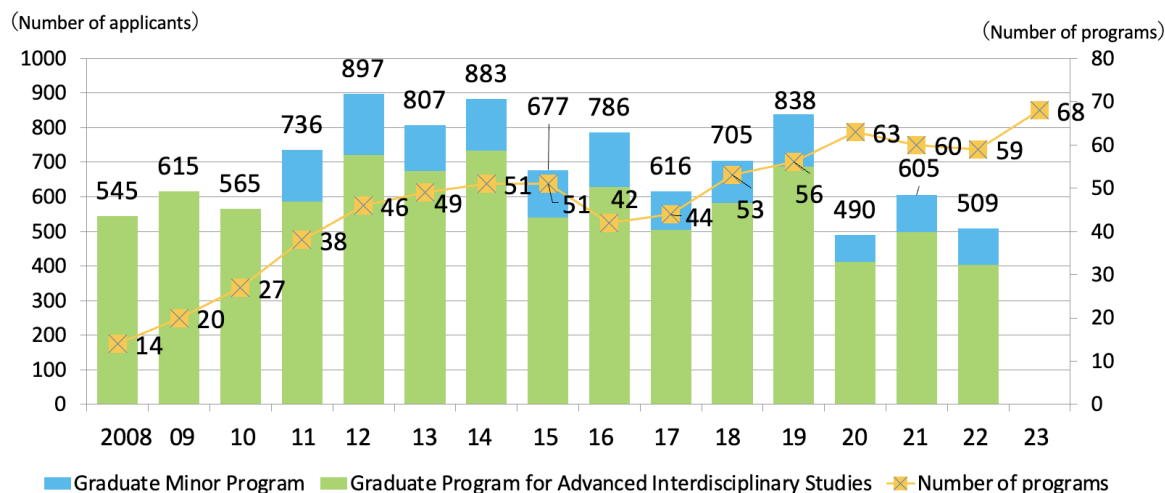
Figure 1: Number of programs and applicants

Methodology

Qualitative research methods, such as semi-structured interviews, enable researchers to engage in open-ended, conversational exchanges with participants. This facilitates the emergence of rich, detailed narratives that quantitative methods might overlook. By employing a qualitative approach, we were able to capture the diverse, multifaceted realities of graduate students, offering insights into their motivations, challenges, and aspirations in a way that standardized measures could not. Moreover, the choice of qualitative research underscores our commitment to valuing the voices and perspectives of our participants. It aligns with the phenomenological framework's emphasis on the lived experiences of individuals, seeking to understand the essence of these experiences from the participants' viewpoints. This methodological stance not only enriches the depth of our findings but also contributes to the broader academic discourse on graduate education by highlighting individual experiences within their socio-cultural contexts.

This study was underpinned by a qualitative research approach, characterized by the use of semi-structured interviews carried out from 2020 to 2023. Throughout this period, our research team engaged with a diverse group of 29 graduate students, including 24 pursuing master's degrees and 5 doctoral candidates. This cohort was carefully selected to maintain a gender balance, with 16 males and 13 females, providing a wide range of perspectives.The interviews were conducted with meticulous attention to detail. Sessions were held in Japanese, facilitated by a pair of researchers, and consisted of small group discussions to encourage in-depth dialogue. Each interview spanned approximately 90 minutes, resulting in a total of 12 hours of comprehensive qualitative data.

For the data analysis, we employed a phenomenological framework to capture the essence of the participants' experiences (Creswell & Poth, 2016). This intricate process entailed intensive reflection by the interviewers, extensive notetaking, and the thorough transcription of the audio recordings. The analysis culminated with the systematic coding of data and the formation of clearly defined thematic categories.

The Motivations for Interdisciplinary Graduate Education

Students embark on interdisciplinary studies for a variety of reasons. A key motivation is the acquisition of diverse perspectives and methodologies distinct from their primary field of study. For instance, a doctoral candidate shared how exploring sports within the context of education led to a profound reevaluation of standard teaching and coaching methods, resulting in significant insights.

> "It was significant to be able to view my research field from different standpoints. My specialty is education, so I had been looking at sports from the perspective of education and my personal interests. However, the content of the lectures mainly involved the long-term maintenance of physical functions and research and insights from the clinical side. Looking at sports and education from the opposite perspective, I discovered that what I had always considered 'common sense' in terms of classroom content and coaching in junior and senior high school activities actually had room for reevaluation. This revelation was truly an eye-opener." (Doctoral candidate, Graduate School of Human Science, Sports Medical Science Research Program)

Another driving factor is the desire to deepen specialization. A master's student i recounted their journey in graduate research on nanodevices, leading them to further their expertise in nanotechnology through a minor program. This reflects a commitment to enhancing their knowledge and skill set in a specialized area.

> "When I entered graduate school, I was conducting structural analysis of nanodevices in my research, so I took the first minor program to deepen my knowledge and technology related to nanotechnology. Among those courses, there were lectures on machine learning, and from autumn, I enrolled in a data science program that included those lectures in its curriculum requirements." (Master's student, Graduate School of Engineering Science, Advanced Inter-/Multi-Disciplinary Programs in Nanoscience and Nanotechnology)

Two other prominent motivations for pursuing interdisciplinary studies are broadening career competencies and fostering multigenerational and multidisciplinary interactions. A master's student in Engineering, despite a primary focus outside finance, chose to study finance as part of their interdisciplinary education. This strategic decision was aimed at enhancing their job prospects, demonstrating a proactive approach to career development.

> "I was interested in economics and finance and was considering a career in the financial sector. My expertise was not directly related to finance, but I systematically studied it to enhance my appeal during job hunting, hoping it would be effective." (Master's student, Graduate School of Engineering, Finance and Insurance)

Simultaneously, a student sought to enrich her educational journey by engaging with people from different fields and generations. This student, interested in medical ethics, selected a program that included medical ethics lectures, illustrating the desire for a diverse and enriching learning environment.

"I sought opportunities for interaction with individuals from various disciplines and age groups. My interest in medical ethics, closely related to my major, guided me to a program that offered relevant lectures." (Master's student, Graduate School of Human Science, UNESCO Chair in Global Health and Education: Social Design for Health)

These motivations reflect a deep understanding of the importance of broadening career skills and the value of diverse perspectives and interactions in the educational process.

Learning Experiences in Interdisciplinary Graduate Education

In the interdisciplinary graduate programs, students have had transformative learning experiences, each unique to their field of study. A master's student highlighted the importance of applying systematic knowledge to their research. The student appreciated the interactions with instructors and peers from various fields, which significantly enriched their learning. A notable achievement was the application of Digital Humanities (DH) methods in their research, leading to recognition at a young researchers' forum. This instance underscores the real-world impact of interdisciplinary education.

"The course content was beyond my expectations. Learning systematically and performing actual analyses using sample data was invaluable. Connecting with DH instructors and peers from different fields allowed for a richer educational experience. My research, influenced by courses like 'Linguistic Statistics' and 'Basics of DH,' received an encouragement award at a research forum." (Master's student, Graduate School of Humanities, Digital Humanities)

Similarly, a master's student in the School of Engineering, whose primary focus was not finance, pursued a finance minor to enhance their job prospects. This strategic move led to a successful transition into the financial industry, exemplifying the practical benefits of interdisciplinary learning.

"Coming from a non-finance background, I systematically studied finance to stand out in the job market. This approach paid off, as I secured a job offer as a specialist (Quant) in the financial industry and succeeded in the university-level mathematics exams specific to finance roles." (Master's student, Graduate School of Engineering, Finance and Insurance)

In the School of Law and Politics, a master's student in Global Japanese Studies immersed themselves in Japanese culture, arts, and philosophy. This experience not only met but exceeded their expectations, significantly enriching their knowledge and enhancing their research capabilities.

"Studying in Japan, I sought to gain in-depth knowledge about Japanese culture, arts, and philosophy. The program provided excellent classes and content, including unique experiences like museum visits with professors. This broadened my understanding of how different fields of knowledge interconnect, which I believe will be beneficial in my future research." (Master's student, Graduate School of Law and Politics, Global Japanese Studies)

Each of these experiences reflects the foresight of students in choosing interdisciplinary paths, adapting to the dynamic demands of their fields, and the transformative impact of such education on their professional and academic journeys.

Learning Outcomes in Interdisciplinary Graduate Education

The study of learning outcomes, as informed by De Greef et al. (2017), highlights that interdisciplinary understanding is anchored in critical thinking, collaboration, and reflection (Figure 2). These skills and subskills are indispensable in formulating common objectives, evaluating decisions, and addressing cognitive biases, crucial for excelling in a diverse academic and professional milieu.

Our review of learning outcomes unveils key areas of development. In the realm of critical thinking, a project-based activity in data science required students to analyze data sets and adapt when results deviated from initial expectations, sharpening their analytical skills. A master's student in data science described this process: "We had considerable freedom in our analysis, which made choosing the theme challenging. The frequent need for trial and error when hypotheses did not hold was a significant part of the learning experience."- Master's student, Graduate School of Engineer Science, Data Science.
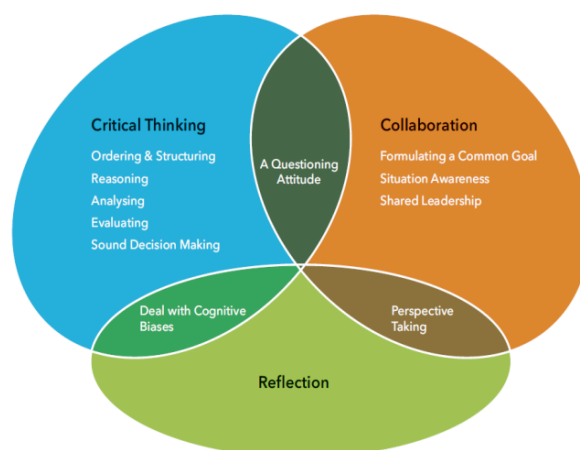

Figure 2: Skills and subskills that foster interdisciplinary understanding

In terms of collaboration, working in teams taught students to appreciate diverse opinions and address complex issues beyond their immediate fields. This fostered interdisciplinary communication and problem-solving. A student shared their experience: "In the team, learning to value different ideas and think flexibly about solving problems was transformative. It opened me up to areas outside my expertise and improved my ability to communicate complex ideas simply."- Master's student, Graduate School of Law and Politics, Cross-Boundary Innovation.

Reflective practices enabled students to deepen their knowledge and reevaluate the positioning of their research, enriching their overall understanding and application of interdisciplinary concepts. A student reflected: "The program helped me deepen my engagement with diverse knowledge areas. Reconsidering the disciplinary context of my research and exploring different regional studies was invaluable in understanding the broader significance of my work." -Master's student, Graduate School of Language and Culture Studies in Language and Culture, Global History.

These learning outcomes showcase the profound impact of interdisciplinary education in fostering critical thinking, enhancing collaborative skills, and encouraging reflective learning, all vital for thriving in today's complex academic and professional environments.

Navigating Challenges in Interdisciplinary Graduate Education

Interdisciplinary graduate programs, while offering a breadth of knowledge and fostering innovation, present unique challenges for students. These issues range from logistical to academic, impacting the overall educational journey.

Course scheduling conflicts have emerged as a notable obstacle. Students frequently encounter difficulties aligning their schedules to accommodate all required courses. For instance, a student from the School of Language and Culture Studies highlighted the struggle of balancing their schedule, stating, "The biggest challenge was aligning my timetable. I had to drop a desired program because it conflicted with my core courses." -Master's student, Graduate School of Language and Culture Studies in Language and Culture, Global History.

Time Management is another critical issue, particularly for students who are trying to balance their academic research with personal and professional commitments. A medical student shared their struggle, noting, "Balancing my research with part-time work and other personal responsibilities required a significant investment of time, making it a tightrope walk between various commitments." -Master's student, Graduate School of Medicine, "Medical Device Design" and "Cross-Boundary Innovation".

Course Accessibility also poses a significant challenge, with the absence of online learning options exacerbating the difficulty of attending classes, especially for those who need to travel between campuses. A student remarked on the logistical hurdles, "The lack of remote learning options added another layer of complexity to attending classes, especially when needing to navigate between different campuses for various courses." -Master's student, Graduate School of Language and Culture Studies in Language and Culture, Linguistics.

Complexity of Course Content presents an academic challenge, with students outside their primary field of study finding it difficult to grasp the material. An engineering science student explained, "The diversity of available courses is great, but the assumption of pre-existing knowledge makes it challenging to branch out into new areas of study."-Master's student, Graduate School of Engineer Science, Advanced Inter-/ Multi-Disciplinary Graduate-level Programs for Education, Research and Training in Nanoscience and Nanotechnology.

These highlighted challenges point to the necessity for interdisciplinary programs to evolve continually and adapt, ensuring they meet the varied needs and constraints of their student body more effectively.

Discussion and Conclusion

Interdisciplinary studies are at the forefront of educational innovation, challenging students to rethink traditional paradigms and encouraging the fusion of diverse perspectives. Our research into student motivations and outcomes reveals a compelling draw toward these programs, fueled by the desire to expand research abilities, deepen subject-matter expertise, and cultivate versatile career skills. The tangible benefits of this educational approach are

evident in the enhanced critical thinking, teamwork, and introspective skills that students develop. At the core of this transformative educational experience is experiential learning. Through hands-on project work and real-world problem-solving, students are able to translate theoretical knowledge into practice—a process that is crucial for their personal and academic growth.

Despite these advantages, it is important to acknowledge the challenges that students face, including managing time effectively, navigating course availability, understanding complex material, and maintaining a balanced academic workload. These challenges call for continuous improvement and the establishment of robust support structures within interdisciplinary education to maximize its effectiveness.

In conclusion, the goal of interdisciplinary programs is clear: to integrate diverse academic fields into a cohesive framework that produces adaptable, innovative thinkers ready to tackle the multifaceted problems of today. To fully realize the potential of these programs, we must implement strategic support systems that promote flexible course scheduling, improve time management, and provide expansive access to a variety of courses. Looking ahead, the ongoing refinement of these programs is critical. We must actively respond to the challenges faced by students, evolving our teaching strategies to better equip them for the intrinsically interdisciplinary demands of the global arena.

Acknowledgements

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Stretching the Zone of Proximal Development:
Accelerating Learning Through ZPD Elasticity

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Abstract

Vygotsky's (1986) theory of the Zone of Proximal Development (ZPD) is often cited in pedagogical approaches that position the learning just above the learner's independent problem-solving level, but which the learner can do with the help of a More Knowledgeable Other (MKO). However, these approaches reflect only a partial understanding of Vygotsky's work, which describes learners of the same ability level as having ZPDs with vastly different potential for "stretching" to more complex content (Zaretskii, 2009). Learning situated at the outer limits of one's ZPD has the potential to increase the efficiency and quantity of learning over traditional methods of instruction. The present Randomized Control Trial placed Pre-K to 2nd grade learners (N = 1407) into a business-as-usual control group, or a treatment condition designed to explore the elasticity of their ZPDs and its leveraging effects on their learning. Key findings showed that when compared to the control group, learners in the treatment group were able to significantly increase their learning pace and the amount of content learned, while continuing to demonstrate mastery of the content. Implications from this work suggest that better understanding and leveraging the ways in which learners' ZPDs demonstrate varying elasticity (ability to stretch) may provide opportunities to accelerate learning and mastery of content, especially for learners who are most at risk for not meeting grade level expectations.

Keywords: Learning Sciences, Early Childhood Education, Literacy, Zone of Proximal Development, Learning Acceleration, Personalized Learning, Adaptivity, Smart Learning Systems, AI, Machine Learning, Big Data, Vygotsky, Bloom, Achievement Gap

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Introduction

The performance of K-12 students in the United States has long faced significant challenges in mathematics and reading. National measures of achievement have consistently shown more than two-thirds of 4th and 8th graders performing below proficiency expectations (deBrey, et al., 2019; NAEP, 2022), with measures of international achievement well behind their peers in other nations (NCES, 2022; OECD, 2022). The recent Covid-19 pandemic intensified this challenge, with many learners as much as two years behind their grade level expectations (Dorn et al., 2021; Patrinos, Vegas, & Carter-Rau, 2022). Additionally, related research shows that students who leave kindergarten without critical math and literacy competencies are likely to fall further behind as they move from grade to grade (Duncan et al., 2007). Contributing to these challenges is dramatic learner variability present before learners even begin formal schooling (Thai, Betts, & Gunderia, 2022; Pape, 2018). Learners often begin kindergarten with vast differences in their prior knowledge and readiness-to-learn in school settings (Betts, Thai, Jacobs, & Li, 2020; McWayne et al., 2012). These differences are often exacerbated rather than addressed by traditional methods of instruction that target the collective learning needs of both whole and small groups of learners rather than the unique needs of individual learners. Unlike one-to-one tutors, most classroom teachers simply do not have the time to assess and address every individual need of each learner (Bloom, 1984).

The Problem

Addressing lost learning opportunities requires understanding and mitigating the factors that contribute to disparities in learning outcomes. It requires acknowledging that curricula and instructional approaches that adhere rigidly to grade-level standards without considering students' readiness-to-learn can cause gaps to form in the learner's architecture of understanding. To bridge these gaps, a two-pronged solution is essential. Firstly, there must be mechanisms to swiftly identify and address gaps or misunderstandings in foundational or prerequisite content. Secondly, adaptive learning pathways that utilize individual learners' existing competencies to efficiently facilitate new learning must be developed. Solving for this in traditional classrooms is extremely difficult due to time and resource constraints. However, through combining various principles of the learning sciences and the affordances of "Smart Learning" systems that incorporate Artificial Intelligence and machine learning, it is now possible to develop solutions that can address these challenges at scale (Betts et al., 2020; Betts, Thai, & Gunderia, 2021).

Theoretical Framework

Various theories explain why some children seem to learn easily while others do not. Bloom's (1984) theory of Mastery Learning challenged traditional educational models by suggesting a move from 'one-size-fits-all' teaching modes to more personalized approaches. Bloom explained that the typical classroom setting, where all students receive the same instruction at the same pace culminating in a standardized assessment, benefitted some students while disadvantaging others (Guskey, 1997). For example, in traditional settings the test often marks the *end* of learning a concept, affording students only one chance to demonstrate their understanding. Moreover, learners are frequently required to move on to subsequent content whether or not they have mastered prerequisite content (Au, 2007). Consequently, this approach can create a cumulative disadvantage for those who do not grasp concepts as

quickly, leading to a widening gap in understanding as the curriculum progresses (Bloom, 1968, 1984; Guskey, 1997).

In contrast, Bloom's observations of one-on-one tutoring revealed a strikingly different outcome. Tutors provided highly individualized feedback, allowing students to proceed only after they had shown proficiency in the current topic (Bloom, 1984; Guskey, 1997). This required the tutor's deep knowledge of the content, including understanding of granular learning objectives and optimal learning trajectories (Guskey, 1997). This led Bloom to posit that if classroom instruction could emulate the individualized approach of tutors, including elements like detailed knowledge maps, pre-assessments, targeted feedback, corrective measures, and enrichment activities, all students could achieve a higher level of understanding (see Figure 1; Bloom, 1968, 1984). Bloom's Mastery Learning theory held that all students could achieve with the right pace, high-quality materials, and pedagogy.
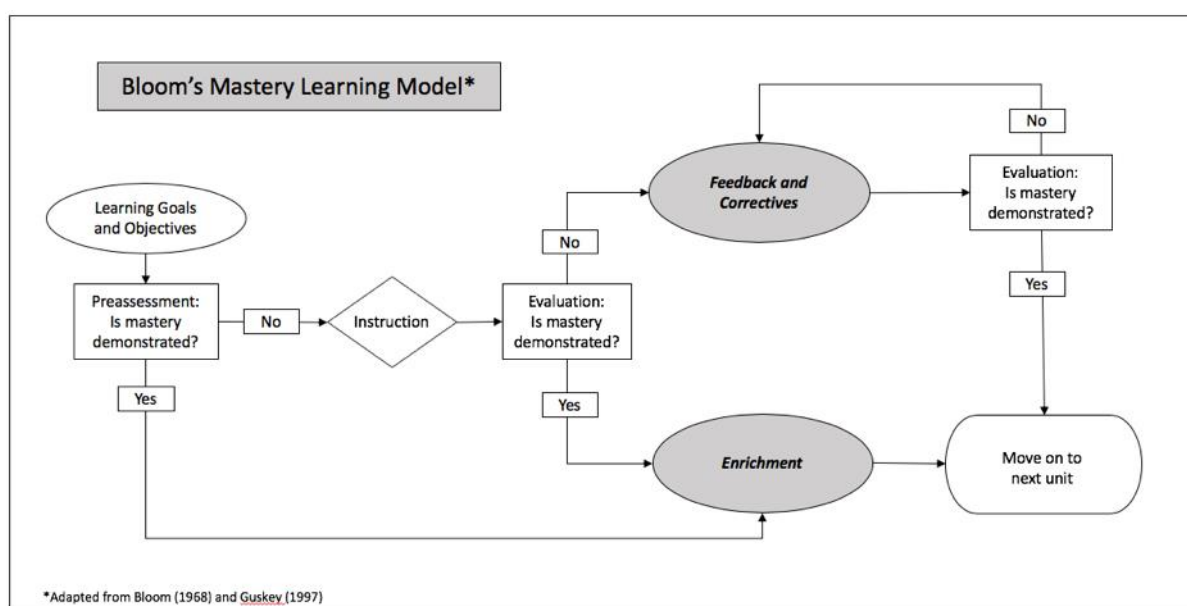

Figure 1: Bloom's Mastering Learning Model. Adapted from Bloom (1968) and Guskey (1997), sourced from Betts (2019)

Long before Bloom, Vygotsky (1986; Vygotsky & Cole, 1978) described the optimal conditions for learning—primarily the importance of learning that was guided by a More Knowledgeable Other (MKO) through Zones of Development (ZoD). Today, the application of Vygotsky's theories in K-12 education often lacks depth (John-Steiner & Mahn, 1996). Typically, the role of the MKO is narrowly ascribed to the teacher, overlooking the diverse array of individuals and resources that can facilitate learning (Rogoff, 1990), including "Smart Learning" digital resources that deploy "intelligent tutors" (Betts, Thai, & Gunderia, 2021). Moreover, common understanding of Vygotsky's ZoDs has frequently been reduced to a narrow focus on only the Zone of Proximal Development (ZPD)—without a clear understanding of how that ZPD fits within the overall learning theory. Furthermore, the ZPD is frequently misunderstood as a fixed range or level that can be addressed through uniform strategies (i.e., the very next thing to be learned), rather than as a fluid and elastic space of potential development unique to each learner (Zaretskii, 2009; Vygotsky, 1986).

Vygotsky's framework for understanding learning and development encompasses several zones that are critical to optimizing learning (see Figure 2; Zaretskii, 2009). The Zone of Actual Development (ZAD) represents what a learner can accomplish independently and

serves as a baseline for assessing potential growth (Vygotsky, 1986). The Zone of Proximal Development (ZPD) is the area where learners can perform a task with guidance and support of an MKO; this is where learning is most effective (Chaiklin, 2003; Vygotsky, 1986). Beyond the ZPD lies the Zone of Insurmountable Difficulty (ZID), where the task becomes too challenging for the learner, even with assistance or help of an MKO (Daniels, 2008; Vygotsky, 1986). More importantly, at the boundary between the ZPD and the ZID lies the Point of Difficulty (PoD), which represents the point at which the potential for maximum learning with an MKO can occur (Vygotsky, 1986; Zaretskii, 2009). A comprehensive understanding of these zones enables educators to scaffold instruction effectively in the moment, ensuring that students are neither under-challenged within the ZAD nor pushed beyond their ZPD into frustration (Gallimore & Tharp, 1990).
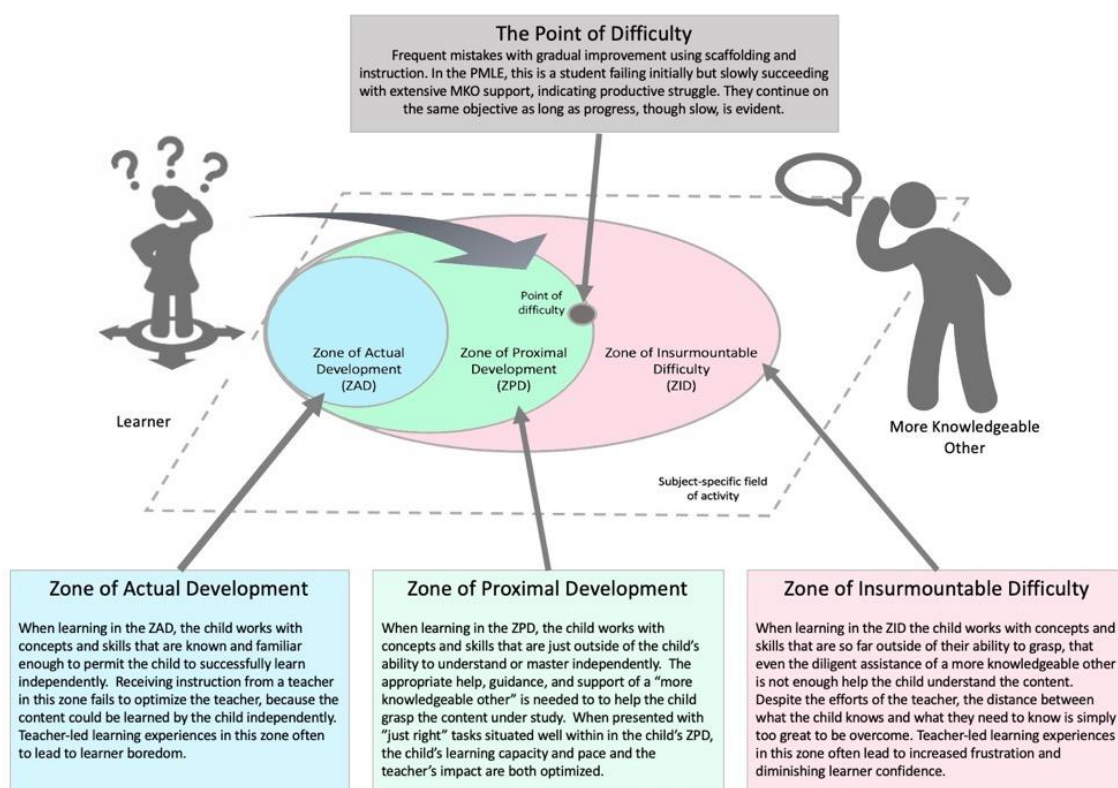

Figure 2: Vygotsky's Zones of Development (Betts, Thai, & Gunderia, 2021; Zaretskii, 2009)

Furthermore, it is vital to understand the ways in which each learner's ZPD varies. Citing Vygotsky's work, Zaretiskii (2009) explains that while two learners are similar in terms of their actual development, they may differ greatly in what they can learn with support:

> One child can solve problems at a nine-year-old level, while the other one performs at a twelve-year-old level. This begs the question: do the levels of development of these children differ? Obviously, yes, but not in terms of their actual level. Instead, they differ in terms of the breadth of their ZPD. One child, as Vygotsky wrote, has a ZPD that is four years ahead of his mental age, while the other is one year ahead. In terms of the state of maturing processes, one child has gone four times farther than the other, and this must be kept in mind both in assessing that child's development and in educating him (p. 75).

Understanding the elasticity of the ZPD is an important part of increasing learning efficiency. It may also inform the design of interventions, including those deployed in Smart Learning systems, that are sensitive to learners' individual capabilities and can quickly identify the optimal level of challenge required for learning, thereby fully leveraging the potential of the ZPD (Zaretskii, 2009).

Building "Smart Learning" Systems That Leverage Bloom and Vygotsky

Applying the learning theories of Bloom and Vygotsky, the learning engineering team at Age of Learning, an international EdTech company, has spent nearly a decade developing a smart learning system for identifying and teaching students within their ZPDs. This Personalized Mastery Learning Ecosystem (PMLE) uses formative assessment, direct instruction, and dynamic scaffolding features to locate a student's ZPD and act as a More Knowledgeable Other to facilitate optimal and efficient learning (Betts, Thai, & Gunderia, 2021; Owen & Hughes, 2019; Thai, Betts, & Gunderia, 2022). This system is the underlying framework upon which our personalized learning program—My Reading Academy—is built.

Components of the Personalized Mastery Learning Ecosystem (Adaptive System Only)

The complete Personalized Mastery Learning Ecosystem is comprised of many components. For the purposes of the present discussion, only the components of the digital adaptive personalized learning system used by the student are discussed. Other components of the PMLE (e.g., parent/caregiver portal, teacher portal, etc.) are beyond the scope of this study (e.g., see Betts, Thai, and Gunderia, 2021; Thai, Betts, and Gunderia, 2022).

Knowledge Map

To find a student's ZPD, it is important to have a comprehensive understanding of the possibility space for a learner's potential ZPD. In the PMLE, this possibility space is described in a data structure called a Knowledge Map (KM). Deeply aligned with Bloom's (1984) theory of Mastery Learning, a KM is a framework that uses discrete and granular learning objectives to map out all the relationships between concepts, principles, skills, and data in a knowledge space (e.g., foundational reading skills, etc.). A KM provides the basis for efficient identification of what students know, what they do not yet know, and what they are most ready to learn next (Figure 3). Each "node" on the KM represents a specific learning objective (LO). These LOs are connected by various relationships (e.g., pre-requisite, successor, parallel, etc.), forming numerous potential pathways through the KM for students to achieve mastery in a subject (Figure 4).
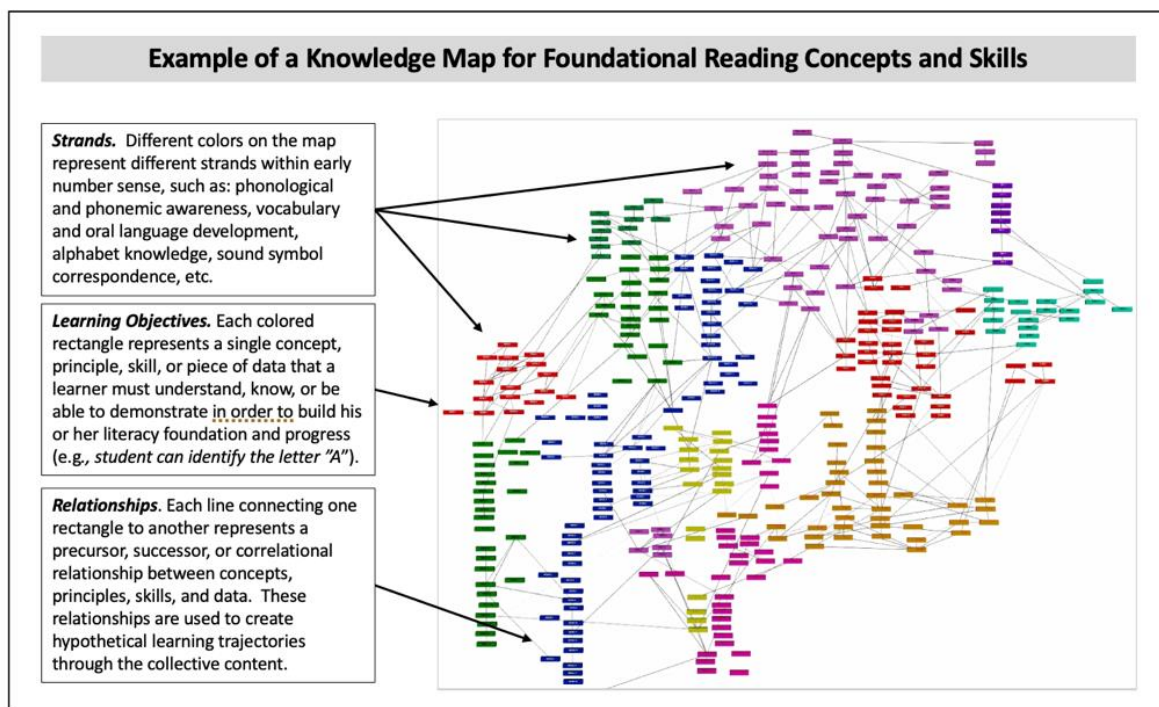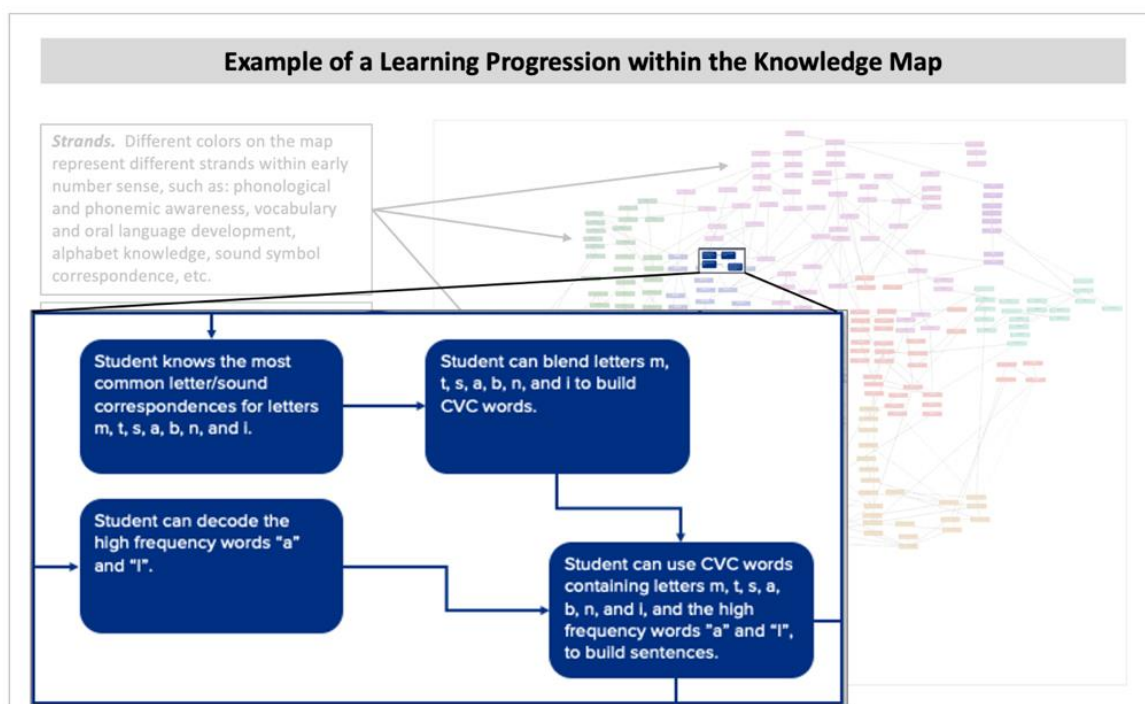
Figure 3: Example Knowledge Map

Figure 4: Example learning objectives in a learning progression

Learning Activities

Students advance through the system by demonstrating their mastery via digital interactions called Learning Activities (e.g., games, digital books, etc.). These activities are continuously assessed to determine the learner's level of understanding, and to identify where and when MKO features (e.g., wrong answer feedback, scaffolding, modeling, etc.) can be deployed to

advance in-the-moment learning. Within the system, there are two main types of learning activities: *Direct Instruction* and *Scaffolded Assessment (*i.e., practice activities with formative assessments).

Direct Instruction

Digital games or videos used for explicit teaching of specific objectives are defined as Direct Instruction. For example, My Reading Academy uses videos featuring Miracle, a human host, and Nano, a virtual robot (Figure 5). Miracle is the digital embodiment of the MKO who both instructs and provides feedback and scaffolds to Nano, who proxies the student. Nano, by design, always learns in their ZPD, mirroring potential student questions and misunderstandings. In this way, the student benefits from the support of the MKO even when they are not able to directly interact with her.

Figure 5: Human host Miracle acts as the MKO for Nano, the robot proxy for the learner

Scaffolded Assessment

Scaffolded Assessment (SA) activities serve two purposes: to provide support to the student while practicing within their ZPD (should they need it) and to conduct formative assessment without supports to determine if the student is ready to advance. Each activity during Scaffolded Assessment provides students an opportunity to demonstrate mastery of a learning objective. The activity represented in Figure 6, for example, assesses a student's ability to match spoken words with their written form. When a student struggles, the system applies various levels of support, and offers direct instruction again as needed—just as an MKO would in a real-world learning context. Subsequent rounds are again presented without supports to reevaluate if the student's proficiency has improved or if the objective remains within their ZPD (i.e., the learner needs the help of an MKO). This cycle of assessment and support, typically over 4-6 rounds, repeats throughout the activity. When the student demonstrates mastery by completing the task correctly without help, they are considered to have moved into their Zone of Actual Development (see Figure 2), and it is time to move onto a new LO and a more challenging activity.

Initial instruction: "The bird wants the word: chip!"

After 3 incorrect attempts: "Drag this word to the box."

After dragging: "Let's sound it out! Ch--i--p. Chip!"

Figure 6: My Reading Academy task to demonstrate mastery of matching written words to auditory prompts

Scoring and Knowledge (Node) Map Traversal

Data from Scaffolded Assessment activities are used to evaluate student proficiency on a learning objective, resulting in a *Pass, Stay,* or *Fail* condition (Figure 7). This designation depends on the student's incorrect attempts and the amount of scaffolding needed. A *Pass* progresses the student to Direct Instruction on the next topic. A *Stay* keeps them in the same activity with new tasks and opportunities to receive scaffolds and feedback again as needed. A *Fail* sends them back to Direct Instruction for material review before reattempting the assessment.
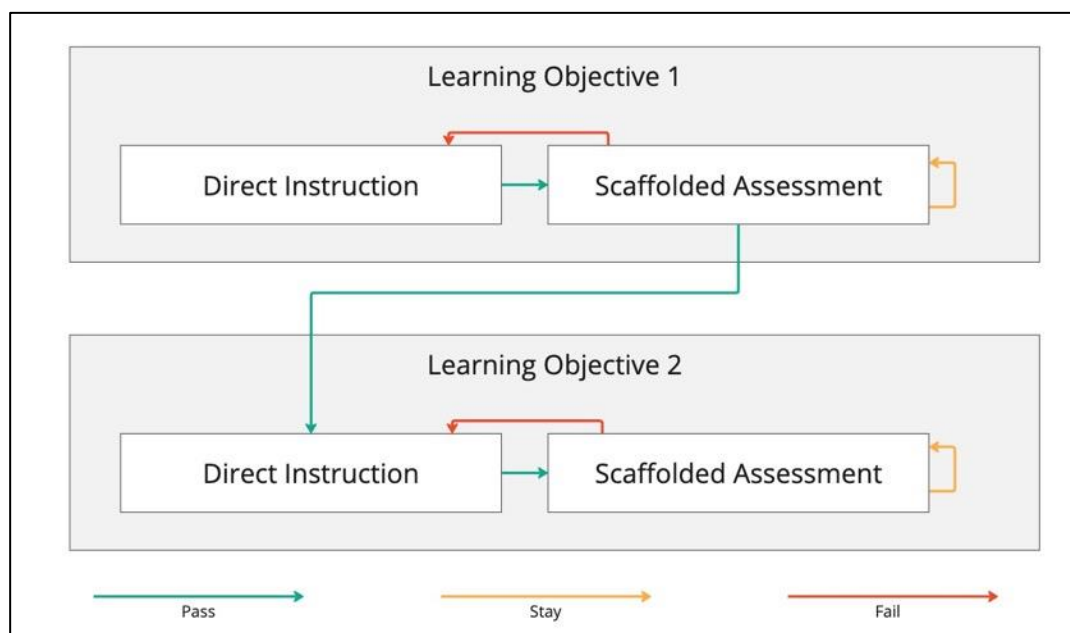

Figure 7: Node Traversal

Opportunities for Iteration and Tuning

Data gathered from learning activities provides opportunities for dynamically determining in which ZoD a learner is operating at any given moment. Learners requiring little to no help to successfully complete activities are likely working in their ZAD. Learners who are unable to pass activities across multiple attempts, even when provided with all feedback, supports, and scaffold features, are likely working in their ZID. Learners who require the support of many or all the support features but are making consistent progress toward mastery across attempts are likely working in their ZPD (see Figure 8).
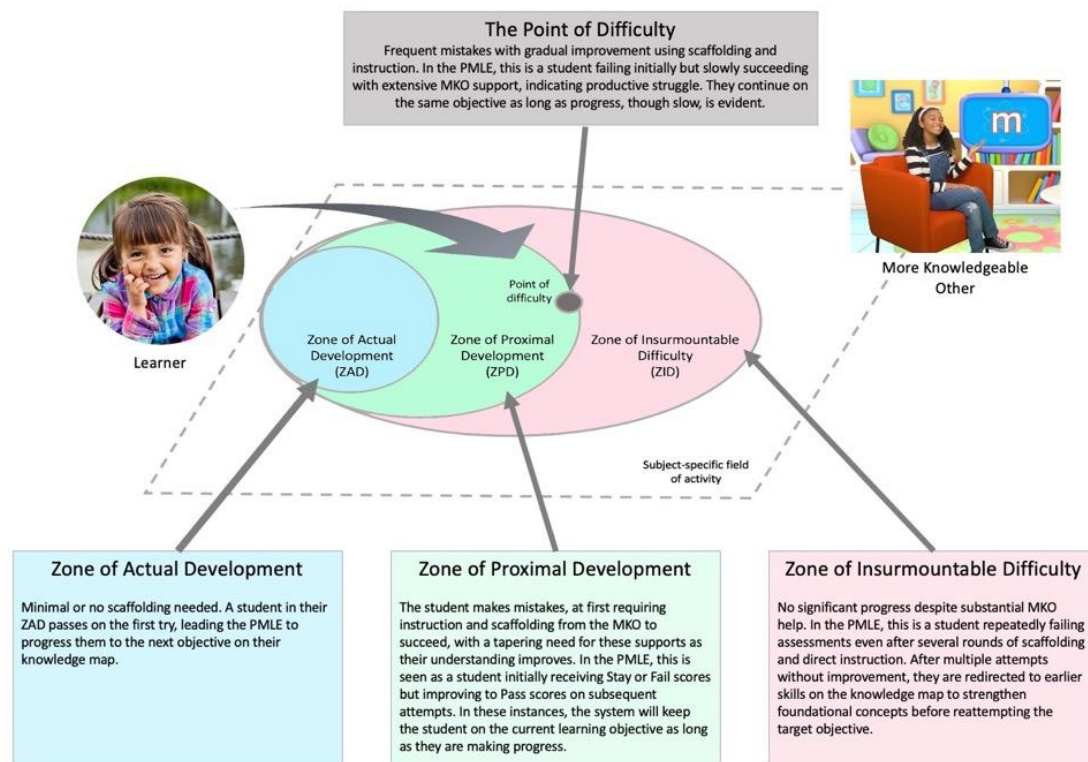
Figure 8: Zones of Development in the Personalized Mastery Learning Ecosystem

The system provides various adjustable levers to tailor its functionality and optimize for different goals. For instance, increasing initial scaffolding can benefit students at their Point of Difficulty when learning a new objective.

Tunable aspects of the system include:
- Movement extent on passing or failing (default is sequential completion without skipping)
- Activity sequence for each objective (default is Direct Instruction followed by Scaffolded Assessment)
- Scaffold level and escalation pace (default is starting without scaffolds, increasing gradually with each wrong answer)
- Duration of assessment activities (default is 4-6 rounds per activity)

These tunable aspects allow for a wealth of exploration and research opportunities to investigate how the learning theories of Bloom and Vygotsky can be embodied in a digital learning context.

Methods

In the present study, we used a Randomized Control Trial (RCT) to investigate how a digital, adaptive, Smart Learning system can effectively identify and engage each learner's ZPD, dynamically adjust their learning path accordingly, and assess learning outcomes, all while maintaining learning efficacy. The specific research questions that guided this study were:

(1) Can we use adaptivity levers in the system to increase learning efficiency while maintaining learning efficacy?

(2) Can we use student performance in the system to identify evidence-based boundaries between a learner's ZAD and ZPD?

(3) Can the system identify learners operating within their ZADs who could increase their learning if advanced to later content with the support of MKO features?

The significance of this research is threefold: theoretically, it contributes to the broader knowledge base of the learning sciences by testing foundational learning theories in a digital age. Practically, these findings can inform the design and development of adaptive learning products that produce more student learning more efficiently at scale. And lastly, findings may inform curriculum development and pedagogical strategies to better accommodate individual learner needs and increase learning efficiency within the classroom setting.

Treatment

For the purposes of this study, a new "Accelerate Mode" (AM) feature was developed as an intervention to implement with a test group of students. The AM is designed to leverage the relationships between learning objectives in our knowledge map, as well as scaffolding within activities, to digitally simulate the ways an MKO would dynamically respond to the teaching needs of an individual learner. By strategically adjusting the activity sequence for an LO, it is possible to determine whether the learner is operating within their ZAD or their ZPD.
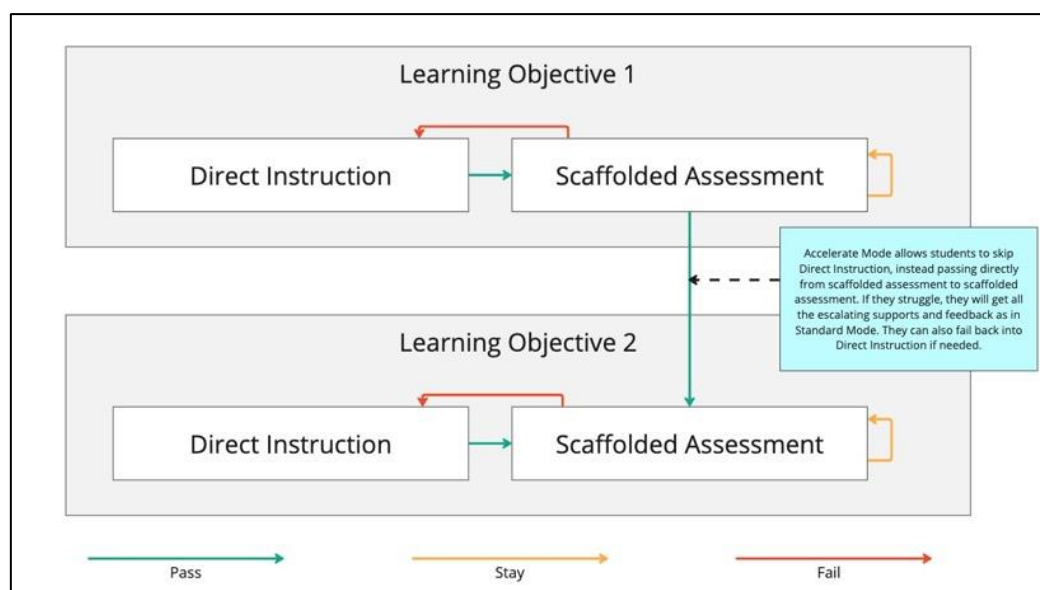

Figure 9: Node traversal in Accelerate Mode

Accelerate Mode permits students to move directly to the terminal Scaffolded Assessment activity for a successor LO (or node), bypassing direct instruction and practice activities (Figure 9). If, when accelerated to the new node, the learner requires many or all of the MKO features (i.e., scaffolded supports and feedback) but still shows progress, the learner is deemed to be in their ZPD. In this case, AM is turned off for this student, allowing them to proceed through the new node and its successors with the default activity sequence and supports. Conversely, if the learner is able to successfully complete the successor node using

few or none of the MKO supports, they are deemed to be in their ZAD, and are then accelerated to the next successor LO, where the process is repeated.

Metrics & Hypotheses

Successful placement of a learner in their ZPD was measured using four different metrics, including (1) *Activity attempts per node* (i.e., how many activities did learners play to "Pass" a node?), (2) *Time spent per node* (i.e., how long did it take for a learner to "Pass" a node?), (3) *Node reach count* (i.e., how many unique nodes did learners "Start"?), and (4) *Performance on subsequent nodes* (i.e., what was the pass rate on the first attempt of the "Terminal" activity of each subsequent node after beginning the experiment?). Related to these metrics, we developed three separate hypotheses as follows:

    I. The test group in Accelerate Mode should have lower activity attempts per node compared to the control group in default mode (i.e., learners are able to "Pass" the node in fewer play-throughs of each activity)

    II. The test group should have a lower quantity of time spent learning per node compared to the control group

    III. There should be no significant difference in performance on subsequent nodes between test and control groups (i.e., future learning remains robust even though only the terminal activity is played while in AM)

Study Sample

Dual performance-based criteria were used to determine student eligibility for the Accelerate Mode intervention. This dual-criteria approach was instrumental in capturing a broad spectrum of learner profiles, essential for delineating the boundaries between ZAD and ZPD accurately. Multiple eligibility criteria also allowed for investigation of learner variability and its impact on students' respective ZPDs. The criteria for inclusion were:

    1) A streak of consecutive passed terminal assessment activities on the first attempt, referred to as "Boss Streak"

    2) An average of 90% pass rate on all activities played with at least 7 nodes completed, referred to as "High Pass Rate"

These criteria were applied to a population of approximately 13,400 children enrolled (at the time) in the My Reading Academy program, resulting in the identification of about 1,400 Pre-K to 2nd Grade students for inclusion in the sample. The split between Boss Streak and High Pass Rate learners was 80% versus 20% in both test and control.

Data & Results

The RCT was deployed for 3 weeks in which random sampling of eligible students generated about N = 700 observations per arm of the test. To control for Type I and Type II errors in our test results, we set the statistical thresholds of $\alpha = .05$ and $\beta = .2$ respectively. After 3 weeks we were able to call the test with the following results (Table 1).

	N		Mean		
	Control	Test	Control	Test	*p*-value
Nodes Reached	706	701	6.52	9.16	.00
Activity Attempts per Node	706	701	4.34	3.43	.00
Avg Time Spent per Node (Mins)	706	701	14.48	11.88	.01
Subsequent Node Pass Rate	706	701	.35	.42	.02

Table 1: Summary Data for Accelerate Mode 1ˢᵗ Test

Results demonstrated a remarkable set of outcomes for the test group over the control, including:
- Improved learning speed—fewer attempts, less time to complete nodes
- Increased node progress—more nodes reached
- No appreciable negative impact on performance—higher pass rate

When we looked at the results by the eligibility criteria segments, we observed an informative divergence that served as important investigative milestones into the questions of learner variability and students' respective ZPDs (Tables 2 and 3). We observed that:
- Both criteria increased node progress—more nodes reached for both Boss Streak & High Pass Rate cohorts
- High Pass Rate cohort increased total learning efficiency—more nodes, in fewer attempts, in less time
- Boss Streak cohort improved performance—pass rate on subsequent nodes was higher than control with mixed efficiency results (i.e., similar number of attempts in a similar amount of time)

	N		Mean		
	Control	Test	Control	Test	*p*-value
Nodes Reached	565	561	6.38	8.33	.00
Activity Attempts per Node	565	561	4.59	3.90	.40
Avg Time Spent per Node (Mins)	565	561	15.54	13.58	.10
Subsequent Node Pass Rate	565	561	.33	.39	.01

Table 2: Summary Data for Accelerate Mode 1ˢᵗ Test: Boss Streak Cohort

	N		Mean		
	Control	Test	Control	Test	*p*-value
Nodes Reached	141	140	6.98	11.88	.00
Activity Attempts per Node	141	140	3.49	1.86	.00
Avg Time Spent per Node (Mins)	141	140	11.33	6.18	.00
Subsequent Node Pass Rate	141	140	.45	.53	.14

Table 3: Summary Data for Accelerate Mode 1ˢᵗ Test: High Pass Rate Cohort

Extended Research and Results

To further our investigation and understanding of how Accelerate Mode impacted learner variability and stretching the ZPD, we chose to run a second RCT test with all students regardless of past performance. Students who were part of the first RCT test were excluded from our second test, resulting in roughly 12,000 students in our second test, with about N = 6000 per arm. Similar in design to our first test, this test ran for 3 weeks, after which time we saw no significant difference in any of our impact metrics between the test and control groups (Table 4). That is, students in the test group did not show improved learning speed from the Accelerate Mode treatment. As a result, we called the test for the control.

	N		Mean		
	Control	Test	Control	Test	*p*-value
Nodes Reached	6,044	6,019	9.54	9.44	.21
Activity Attempts per Node	6,044	6,019	4.93	4.98	.32
Avg Time Spent per Node (Mins)	6,044	6,019	14.72	14.83	.38
Subsequent Node Pass Rate	6,044	6,019	.28	.28	.40

Table 4: Test Summary for Accelerate Mode 2ⁿᵈ Test

Discussion

In our initial RCT, we identified 2 groups of students who we hypothesized were not working in their ZPDs, or at least not at their PoDs. In other words, we believed that in their current placement they could learn the requisite LO without the support of an MKO (i.e., they were

in their ZADs). Our test results strongly supported this hypothesis. Students in the test group were able to progress faster and farther through our Knowledge Map without weakened performance. Of the test group students who completed at least 1 final assessment activity while in the test, 78% passed on their first completed attempt, without Direct Instruction or other MKO support. Moreover, 48% of test group students who completed 5 final assessment activities passed all 5 on their first completed attempt and another 32% passed 4 out of 5 on their first completed attempt. And, while only 22% of test group students completed 20 final assessment activities, over 90% of those students passed 16 or more of the activities on their first completed attempt. Such strong performance without MKO assistance confirmed that these students were working in their ZADs rather than their ZPDs. In addition, as many as half of the test group students who did not pass the final assessment activities on the first attempt succeeded on their second attempt after receiving direct instruction and varying degrees of MKO support. This provided evidence that these students were working at least partially in their ZPDs.

Dynamically identifying which Zone of Development a given student is working in at any given moment illustrates one of the challenges of a Smart Learning system. That is, the system does not know what other instruction a student is receiving outside the system, including in a traditional classroom, on other digital tools or products, with a tutor, or otherwise. Thus, it is an ongoing effort to identify whether the student is being presented with LOs currently in their ZPD versus LOs that were in their ZPD at the time of the initial placement assessment but are no longer stretching the learning of the student. Our program uses successful completion of an LO's activities and its prerequisites to determine whether a student has reached their ZAD on a given LO. We assume that this status means they are not likely to be in their ZID for the next LO. But given the elasticity of individual learners' ZPDs, performance on prerequisites does not indicate whether a student will be in their ZPD or still in their ZAD on the next LO. Understanding in which zone the student is operating on any given LO provides an opportunity to improve their learning experience with the right level of support.

Our analysis of the test group students in our RCT revealed that most students were working in their ZADs when the test started and continued to do so through a number of subsequent nodes (i.e., they passed final assessment activities without help). While we achieved our goal of improving learning efficiency while maintaining efficacy for these students, another goal – enabling students who were not learning in their ZPD (i.e., content was too easy) to reach their ZPDs – remained. To determine whether we met this goal, we monitored students in both the control group and the test group for 6 weeks post-test to assess whether the test group reached their ZPDs. We tracked the same metrics used in our original RCT to evaluate the hypothesis that test group students would need more time and more attempts to pass the final assessment activity on each LO and that pass rates would drop as these students entered their ZPDs and approached their PoDs.

Our analysis found that as the test group students progressed through more advanced content, they began to make more use of MKO features, indicating that after the initial acceleration, they reached and then continued to learn in their ZPDs. Specifically, for the test group students, learning speed decreased, more MKO features and attempts were needed, and pass rates declined over time, suggesting that students were approaching their PoD and engaging in more in-the-moment learning. The ability to identify students not working in their ZPDs and, even more importantly, to move them there as quickly as possible, is a valuable finding

for our program and the broader education community, especially for those developing adaptive learning products and models.

Limitations

Our initial RCT included two groups of students, identified with rather specific criteria described above. After this test's success, we hypothesized that there could be other students not working in their ZPDs who did not meet either of our eligibility criteria. Since developing a comprehensive set of criteria to identify these other students could be challenging, we applied the Accelerate Mode treatment to all students to determine whether students already working in their ZPDs would not be harmed by the treatment or even could benefit from it.

This second RCT was not a success (Table 4). While the learning pace and performance of the test group students did not meaningfully differ from the control group students, this result does not imply that no harm was done to students already working in their ZPDs. Our first RCT showed that the eligible students (high performers in our system) moved faster under the intervention. Thus, to see no difference between the test and control groups in test 2, non-high-performing students in the test group would have to move more slowly, thereby balancing out faster progress by the high performers in the test group. As a result, it is unclear that more students reached their ZPDs by starting all students on the final assessment activity for each new LO and we rejected this option for finding additional students outside of their ZPDs. Exploring further methods to recognize other groups not working in their ZPDs remains an important area for future research.

Conclusion

In sum, our Accelerate Mode treatment succeeded in moving test students into their ZPDs. However, assigning final assessment activities at the beginning of an LO, even for students identified as likely to benefit from this intervention, is somewhat of a blunt instrument. To achieve even more efficient student learning, it is necessary to better understand the conditions in place when a student enters their ZPD and as they approach their PoD. The more we understand about the transition to the ZPD and the approach to the PoD, the more we can do to get students there and ultimately increase the pace of their learning.

As described earlier, a critical problem to solve remains devising ways to help students become proficient in their grade level expectations as quickly as possible. For the two-thirds of students who are a year or more behind, the need to find better ways to foster more learning at a faster pace is critical. A major insight that emerged from this study centers on how typical pedagogical approaches may or may not support maximum learning efficiency. In line with Bloom's theory of Mastery Learning, many instructional approaches, including those deployed in many digital adaptive learning systems, require the learner to successfully "pass" an activity without help (i.e., prove mastery) before moving on. However, keeping a learner in an activity until they can complete it without help means that at least for some portion of the time the learner is working in their ZAD (i.e., learning is not maximized). Vygotskyan theory would suggest providing the learner with more ongoing opportunities to work at their Point of Difficulty where the most learning can occur. A question to consider is whether or not different adaptivity schemes based on stretching each learner's ZPD to their Point of Difficulty may potentially produce more learning gains than strategies that require full mastery of every learning objective before moving on. A related exploration would include determining the optimal moment to move the learner on to more advanced material

(i.e., their next Point of Difficulty). While our study helped to shed light on these questions and others, it is only a beginning. More research in this area is needed.

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Foreign Languages and Internationalization: Analyzing of the Foreign Language Skills of Graduating Students at a Public University in Paraguay

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Abstract
The knowledge of foreign languages among final-year undergraduate students is important considering the local labor market's competitiveness and the opportunities for academic studies abroad. This research focuses on obtaining data that informs on the knowledge or lack of knowledge of foreign languages for accessing competitive job opportunities and the possible application for scholarships for study abroad by students at the Universidad Nacional de Asunción, Paraguay. The study followed a convergent mixed-methods triangulation design using a semi-structured questionnaire and qualitative interviews with final-year university students. The results show that while a majority of students report knowledge of foreign languages, a significant percentage report the opposite. Students associate foreign languages and their importance with issues related to work, improving the quality of their studies, access to knowledge in a foreign language, research and scholarship opportunities, as well as personal development. Internationalization in higher education has become a key indicator of quality for universities and other higher education institutions, so providing students with tools that enable greater participation in internationalization processes is of vital importance. Recommendations include the creation of a university language center.

Keywords: Foreign Languages, Internationalization, Higher Education

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1. Introduction

Paraguay is developing its national development plan and educational agenda based on international guidelines for its better insertion in the world (National Development Plan, 2014). Higher education in Paraguay is once again facing great challenges when implementing practices that aim at internalization and help students graduate with the necessary tools to face and solve problems in an internationalized and globalized world (CONES, 2017). In other words, "academic mobility is an important component of the global higher education landscape" (UNESCO, 2019).

In this way, the knowledge of foreign languages takes a major and determining role since students receive the same quality of higher education at the university but the study of foreign languages is not part of the curriculum (Altbach & Knight, 2007; Albach et al., 2019). The lack of such language skills separates those who despite having excellent academic backgrounds are at a disadvantage to students who have such skills hindering student and faculty mobility. The implementation of foreign languages in the curriculum is a key strategy for the internationalization of the tertiary curriculum and student mobility. Having students proficient in foreign languages provides the university with an important population of people who, in addition to being academically prepared, have the linguistic tools that make it possible to build bridges of communication with regional and international agents such as universities and companies (Vogel, 2001). The results translate into cooperation and bilateral relationships that strengthen the internationalization strategy as a means for knowledge production based on international collaboration (CRES, 2018). Foreign languages, such as English, offer greater labor adaptability, generate access to global best practices and promote international communication (EF, 2019). In summary, the knowledge of foreign languages is a key factor for the internationalization of higher education, being the "international dimension of higher education an intrinsic element of its quality" (UNESCO, 1998; p. 3). Thus, the objective of this research was to analyze the foreign language proficiency of university students in the last academic year of the degree programs offered at the Universidad Nacional de Asunción and its implications for taking advantage of academic opportunities abroad.

2. Methods

The study followed a QUAN-QUAL convergent triangulation mixed methods design (Creswell, 2017; Hernández Sampieri et al, 2014), using a semi-structured questionnaire, in order to have a broad scope to students in the last year of the careers offered at the UNA. The universe of the study includes students in the last year of the careers offered by the academic units of the UNA. The sample used in this work is from the pilot test conducted with 79 senior students who completed the questionnaire for validation.

In order to achieve the expected results, data collection techniques were implemented, including literature review and field work, through the application of semi-structured surveys. For the collection of quantitative data, a set of closed questions based on the Common European Framework of Reference for Languages (CEFR), which is the international standard that defines linguistic competence (Council of Europe, 2001, pp. 24-29), was used. This includes a self-assessment grid (SAG) that describes levels of language use at six levels (Glover, 2011). The closed-ended questions aim to determine the level of language knowledge and use, as well as the perceived usefulness of languages for the labor field and advanced studies by further adapting the questionnaire designed by Leslie and Russell

(2006). The questionnaires were administered through the Google form tool. The results were tabulated using MS Excel. The open-ended questions were analyzed by means of an inductive analysis based on the objectives of the study.

3. Results and Discussion

The descriptive results of the survey conducted with senior students at UNA are presented below. The general data show that the majority of university seniors report having some knowledge of foreign languages. However, with regard to prior foreign language knowledge, of the 79 respondents, a representative portion indicated having no knowledge of a non-native language, as can be seen in Figure 1, below. This result shows the deficiency of language teaching in undergraduate courses in universities in general and not only in UNA (Altbach & Knight 2007) despite the importance of foreign languages for the internationalization process (UNESCO, 1998; p. 3).

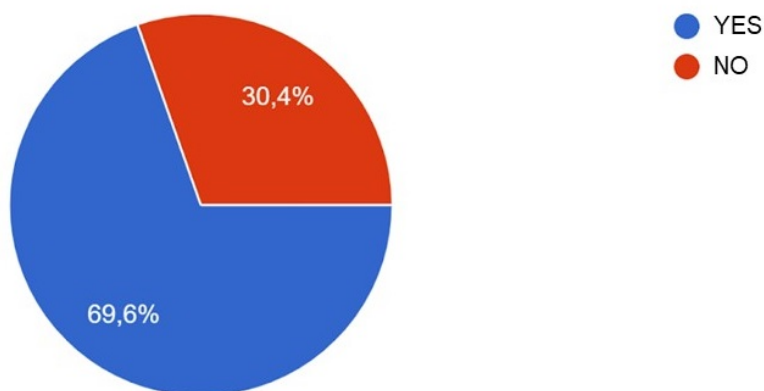Do you think that you have some knowledge of a foreign language?

Figure 1: Foreign Language Knowledge

Of the students who said they knew a foreign language, the majority assigned English as the most known language at all levels, from basic to fluency level. Portuguese has a high level of users, mainly at the lower levels: basic and intermediate, and although it is still highly represented at the other levels, the number of users of Portuguese is no longer so different from that of the other foreign languages (Figures 2 and 3, below).

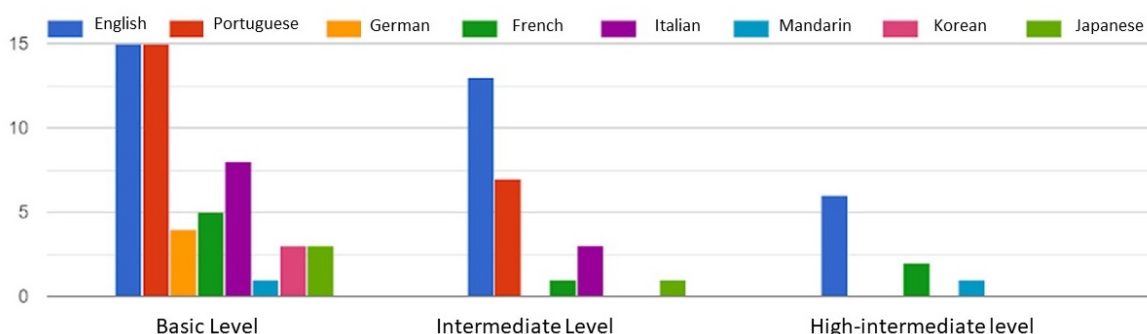Which foreign languages do you know and at what level?

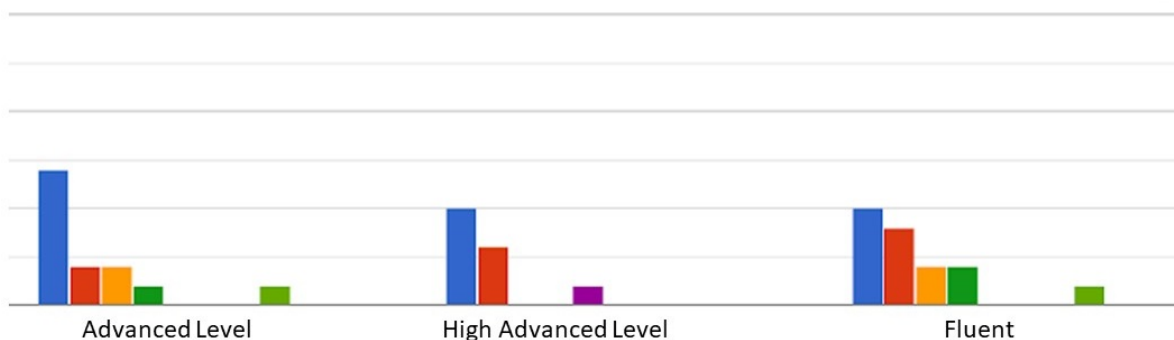Figure 2: Level of foreign language proficiency

Figure 3: Foreign language proficiency, advanced levels

In addition to the languages pre-selected on the form, students in the last period of the undergraduate programs also assigned the following languages, with one user each: Danish and Russian, plus an assignment to Latin, although it is not a living language.

In accordance with the Common Reference Levels (CRLs) we presented a self-assessment grid describing levels of language use at six levels - A1, A2, B1, B2,C1, and C2 - (Glover, 2011) and obtained the results evidenced in Figure 4, below:

Compare the boxes below and select the one you consider represents
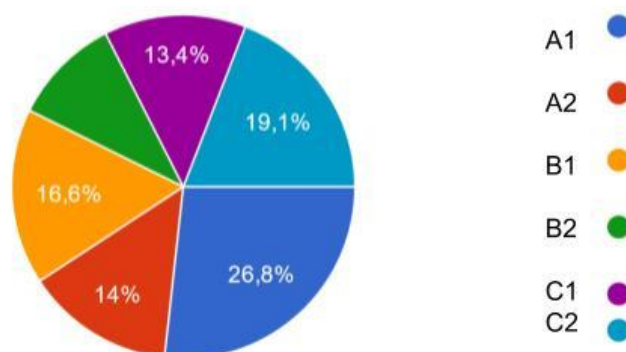the level of the language you know best:

Figure 4: Proficiency level according to CEFR

This information is relevant in the cross-referencing with the previous one, which shows the student's perception in relation to the level of mastery of a language. In this last figure, whose levels are framed by certain linguistic skills, it is noted that the mastery of advanced levels of a foreign language was declared in a more optimistic way with 18.2% and 23.6% affirming to have levels C1 and C2, respectively.

Still in relation to languages and with the first specific objective, we also asked students in the last year of undergraduate courses at UNA which language they would like to study and we obtained the following response (Figure 5):

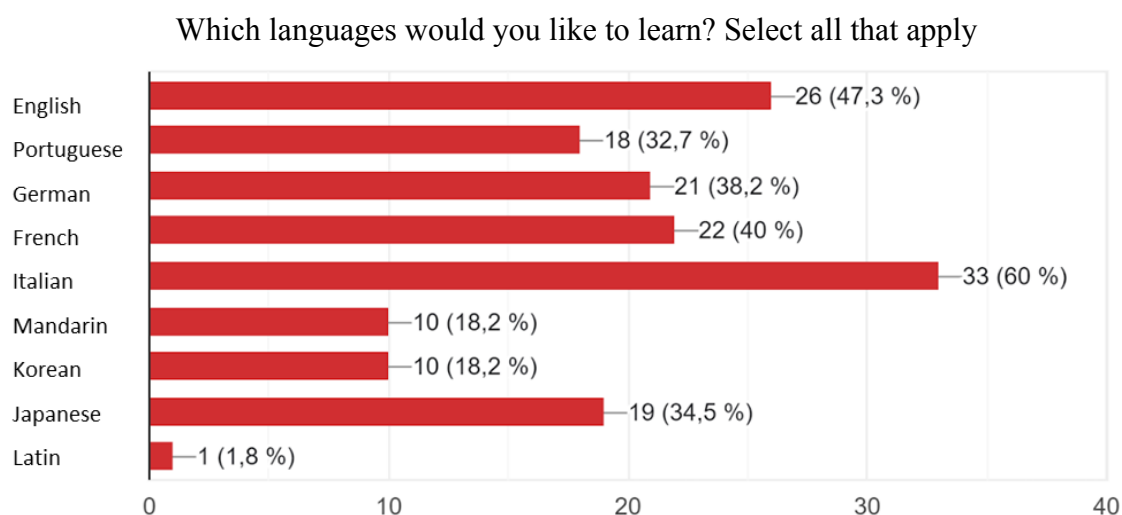Which languages would you like to learn? Select all that apply

Figure 5: Foreign languages desired by students

Considering that English and Portuguese are the languages most used by the students surveyed, see Figures 2 and 3, as desired or additional languages, Italian and Japanese stand out, followed by French and German, although English and Portuguese also have a good representation as additional languages.

Regarding the importance of learning languages, the students stated that it helps in the improvement of the labor field, access to international scientific literature, compliance with international quality standards, research, training abroad, personal development, access to foreign funding sources and obtaining scholarships.

Regarding the level of information that students have about foreign programs and agreements that require a language other than Spanish, fifty-five students answered the question about knowing any program or agreement that offers studies abroad in a language other than Spanish, most of them stating that they do not know any. The responses evidence the fact that yes, higher education in Paraguay faces great challenges when implementing the necessary tools to face and solve problems in an internationalized and globalized world (CONES, 2017), and that these challenges may be related to very basic aspects, such as the effective circulation of information and of the criteria and possibilities of access to international programs that are disclosed in the institutional pages of the UNA, as shown in Figure 6, which shows that most have never learned of the existence of a program or agreement for access to studies in non-Spanish-speaking foreign countries. Of those who have found out, it is clear from the data that most access the information through internal dissemination, a reasonable amount, although less than internal dissemination, through social networks and few through other means.

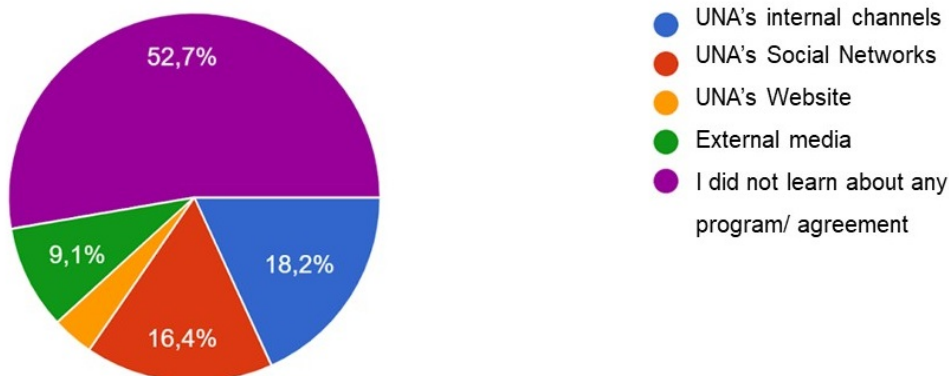How did you learn about the program/agreement?

Figure 6: Access to information

Of the students surveyed, if we take into account that most of them had never known about programs and agreements abroad, only 7% participated in student mobility activities abroad. Of those who participated in mobility programs, the main programs used were: BECAL-CPK, Washburn University, one for 4 months and another for one semester; International Summer University, Darmstadt, Germany, for 3 weeks; and Erasmus+, Greece, for 2 semesters. Responding to the way in which language learning can facilitate academic exchange, the students stated that it facilitates communication, more opportunities, training, better links and adaptation to the host country, as well as a better experience.

In relation to establishing the level of projection that the students of the last period of the UNA have in student mobility, it was seen that the level of intention to enroll in a program or study abroad agreement is relatively high (65.5%). Students who report the intention to study abroad expressed the intention to go to countries such as France, Japan, Brazil, United States, Australia, Ireland, United Kingdom and Germany. Students also expressed their knowledge of the language level required to apply for a study abroad program or agreement. While on the one hand, the majority reported knowing the necessary level to apply for a program abroad, on the other hand, a minority confirmed that they had the necessary level (Figure 7).

If you would like to apply,
do you think your foreign language proficiency level is sufficient?
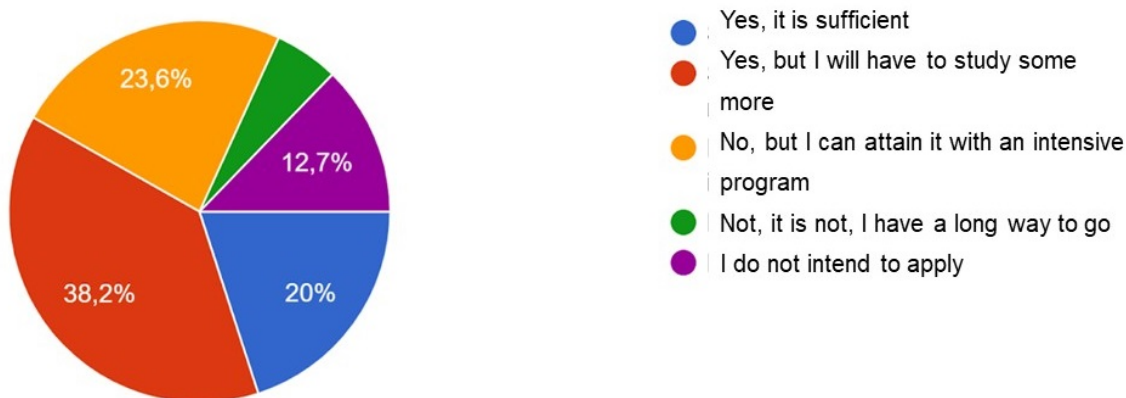

Figure 7: Language proficiency level

And finally, regarding how learning foreign languages can help with study abroad, students stated that it can provide them with a better education, new experiences, scholarships, opportunities abroad, cultural, work and business opportunities.

4. Conclusion

Considering the results, the research shows that the foreign languages most used or most required by students in the last period of undergraduate courses at UNA are English and Portuguese, with Portuguese having a greater prominence in the most basic levels, very similar to English, and then less than English in the more advanced levels. Among the most desired languages are, in addition to English and Portuguese, Italian, French, Japanese and German. In relation to the data from the open-ended questions, it can be extracted that the students associate foreign languages and their importance with aspects that focus on work, improving the quality of study, access to knowledge in a foreign language, research, obtaining scholarships and personal development.

It is also evident that there is a lack of information on the part of the students in relation to possible study abroad agreements, which represents a great challenge for the processes of internationalization of education. There is also evidence of a good participation in mobility programs, which could be a contradiction with the fact of not having adequate information, but it should be taken into account that many of those who responded that they knew about study abroad programs did it through internal disclosure of the University, which shows that the internal disclosure works well.

Finally, it was found that most of the students intend to enroll in a study abroad program or agreement, mainly from countries such as France, Japan, Brazil, United States, Australia, Ireland, United Kingdom and Germany. They also stated that they know the language level necessary to apply for the study programs, but most of them recognize that they do not have a sufficient language level. It is possible to relate the experience or the projection of exchange experience with the benefits that students assign to the exchange, which are cultural, access to academic literature in a foreign language, a better education and new experiences and work opportunities.

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The Perceptions and Experiences of Graduate Students:
Evidence From a Japanese National Research University

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Abstract
The study is devoted to exploring the perceptions and experiences of graduate students at a case Japanese national university through a comparison between graduate students in Humanities and Social Sciences and those in Sciences and Engineering. The data from the Students Experiences in the Research University (SERU) survey conducted at the case university from 16th November 2020 to 19th February 2021 was utilized in the study. The data analysis indicates that both academic resources and financial support of the case university provided in Sciences and Engineering were perceived as higher than those in Humanities and Social Sciences. Despite the perceptual disadvantages, the graduate students in Humanities and Social Sciences were more inclined to consider their institutions as diverse and inclusive for students with diverse backgrounds. The institutional climate of the case university was characterized as open and accommodating for minority students, including those who are international, female, disabled, LGBT, etc. Regarding their individual issues, the study found that graduate students in Humanities and Social Sciences were more prone to professional and mental issues and be less competent in their professional capabilities and achievements regarding applying research methods, sharing research findings, following best practices of integrity and reproducibility in scientific research, collaborating with other researchers and staff, and managing research projects to completion, which contributes to their greater concern about securing a job after graduation in the case university. Moreover, they were more likely to encounter mental issues, such as general anxiety and depression disorder, than those in Sciences and Engineering.

Keywords: Students' Experiences, Graduate Students, Japanese University

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Introduction

Since the 21st century, there has been a growing dual perspective on higher education that emphasizes developing "the whole person" as well as job training. Accordingly, a challenge that many academics in higher education institutions (HEIs) face is that the viewpoint of higher education as primarily career preparation is now widely held by policymakers and governing boards, resulting in increased pressure to shift the focus of higher education from pure research to applied research and to evaluate the teaching and research missions based on their returns on investment. Additionally, faculty members in the arts, humanities, and social sciences found themselves working in an environment where funding and attention are mostly directed toward STEM disciplines.

In addition, it is acknowledged that the degree attainment rate of graduate students in Humanities and Social Sciences is much lower than that of graduate students in Sciences and Engineering at Japanese higher education institutions (HEIs) (MEXT, 2019). Such a context, therefore, raises scholarly questions concerning how graduate students at Japanese universities perceive institutional practice from a microscopic perspective in this regard. Therefore, the study is devoted to exploring the perceptions and experiences of graduate students at a case Japanese national university through a comparison between graduate students in Humanities and Social Sciences and those in Sciences and Engineering.

Literature Review

Extensive literature investigating students' experiences has been conducted. Regarding the daily lives of students, a web survey conducted in 2020 revealed that many activities such as "club activities," "gatherings and activities with friends," and "event experiences," which students had expected from university life, were largely absent due to COVID-19 pandemic (Asakawa & Sakita, 2021). Moreover, studies have shown that reductions in part-time work hours due to the pandemic (Kobayashi, 2021; Matsumoto, 2022) and self-restraint measures due to the declaration of a state of emergency accompanying the spread of COVID-19 significantly impacted the daily lives of university students. Research on students' learning lives has also been conducted. A study analyzing the relationship between online class operations, which primarily consist of online classes, and students' sense of burden and learning motivation found that although online classes had received much criticism, they were positively evaluated by many students (Nakamura, 2022). Additionally, concerning mental well-being, it has become evident during the pandemic that university students continue to experience sustained depression, high-stress levels, and a decline in mental health (Nakao, 2021; Matsumoto, 2022). Furthermore, in addition to specific concerns, it has been noted that university students have uncertainties and anxieties about their future career plans (Ito et al., 2020).

Previous studies examining students' experiences generally fall into the following categories, their living conditions, satisfaction levels, and mental well-being of university students. A closer zoom into the individual variations according to students' attributes, such as their academic discipline, remains lacking.

Research Objectives and Data Collection

The study is devoted to exploring the perceptions and experiences of graduate students at a case Japanese national university through a comparison between graduate students in

Humanities and Social Sciences and those in Sciences and Engineering. The data from the Students Experiences in the Research University (SERU) survey conducted at the case university from 16th November 2020 to 19th February 2021 was utilized in the study. Based on the general principle concerning the discipline provided in HEIs, 27.9% of the participants were categorized as graduate students in Humanities and Social Sciences, including those from Management, Marketing, Economics, Education, Linguistics, International Public Policy, etc. In addition, 48.9% were identified as graduate students in Sciences and Engineering, comprising students from Agriculture, Architecture, Biomedical Sciences, Computer and Information Sciences, Engineering Sciences, and so forth. And 23.2% of the participants' majors were missing, thus, could not be defined.

Data Analysis

Perceptions of Host Institutions

To better explore the experiences of graduate students in case university, their perceptions of host institutions were investigated through a comparative approach between the graduate students in Humanities and Social Sciences and those in Sciences and Engineering, including their perceived academic support, financial support, and lastly organizational climate. The results of the data analysis are shown subsequently. Firstly, the academic support of graduate students was addressed from three main aspects, namely, advising, guidance, and institutional facilities and opportunities. According to Figure 1, graduate students in Sciences and Engineering tend to perceive a higher level of tangible advising from their institutions, especially regarding their research and networking establishment. In contrast, graduate students in Humanities and Social Sciences considered that the advising provided to them is more autonomous and freer, taking into account their individuality, in line with the instructions and pedagogy used specifically in the Humanities and Social Sciences fields. Regarding their perceived helpfulness of institutional guidance (Figure 2), without statistical significance though, the mean of graduate students in Sciences and Engineering is higher than those in Humanities and Social Sciences. Finally, except for instruction, graduate students in Sciences and Engineering were more likely to express a higher satisfaction regarding the facilities and opportunities at the case university (Figure 3).

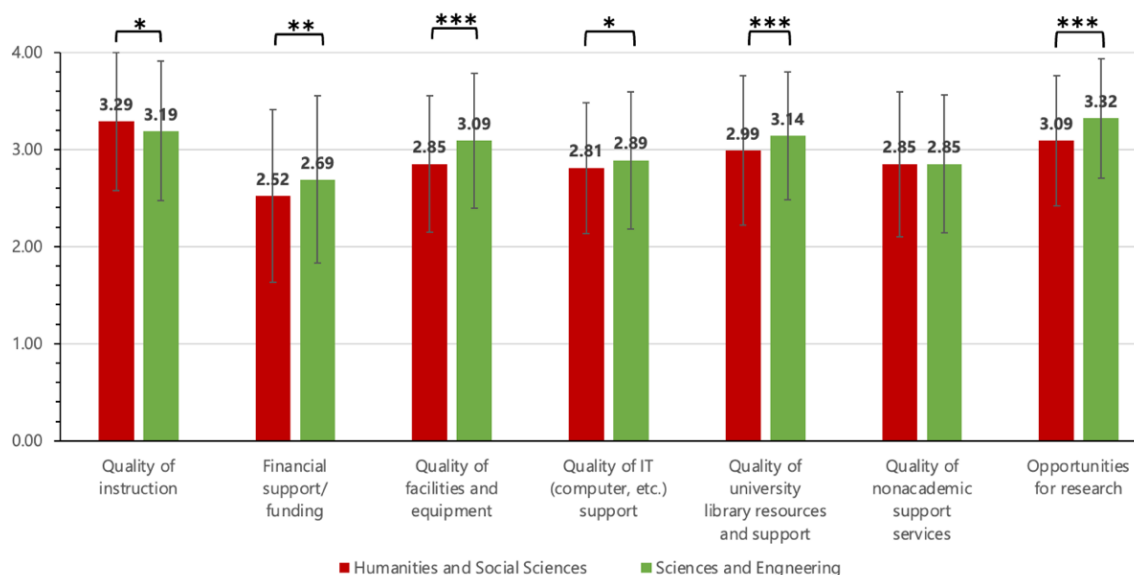Figure 1. Perceived advising of participants.
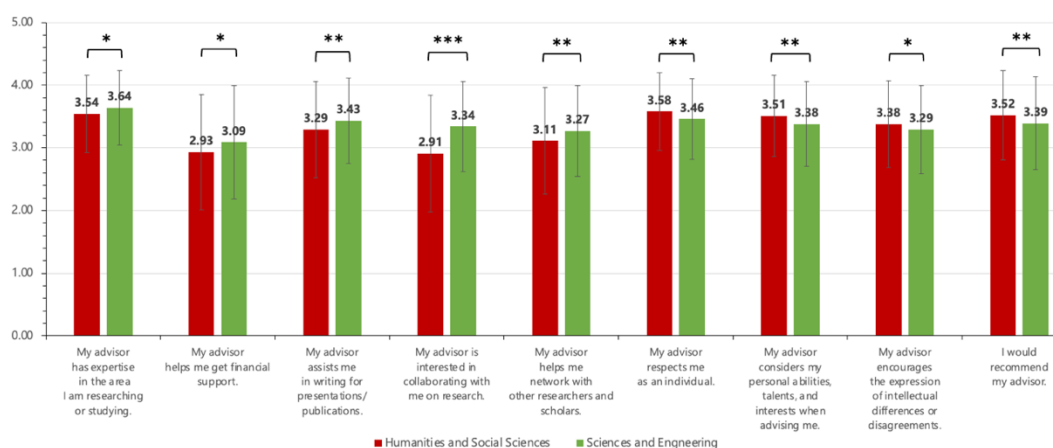
Note: *p<.05, **p<.01, ***p<.001

Figure 2. Perceived helpfulness of institutional guidance.
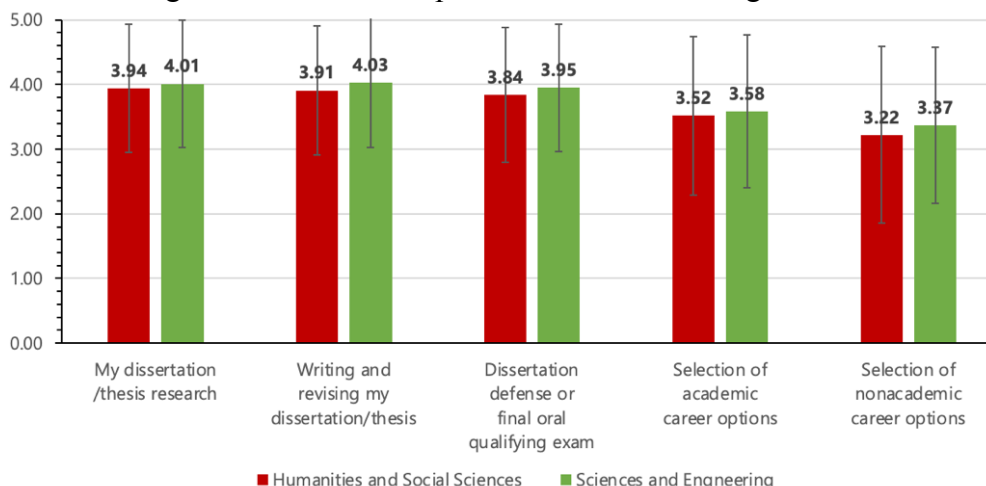
Note: *p<.05, **p<.01, ***p<.001

Figure 3. Participants' satisfaction with facilities and opportunities from their institutions.

Note: *p<.05, **p<.01, ***p<.001

Secondly, the financial support received by the participants was investigated. Figure 4 shows that graduate students in Sciences and Engineering were more inclined to be engaged with on-campus financial resources, such as universities or departmental fellowships or scholarships, and research assistants. Whereas the main financial resource of graduate students in Humanities and Social Sciences tend to be their personal savings and their other off-campus employment. In addition, it appears that comparatively graduate students in Sciences and Engineering were more likely to apply for loans to continue their studies in case university. Consequently, as noted, graduate students in Sciences and Engineering expressed slightly higher satisfaction with financial support from their institutions (Figure 5).

Figure 4. Financial support of the participants.
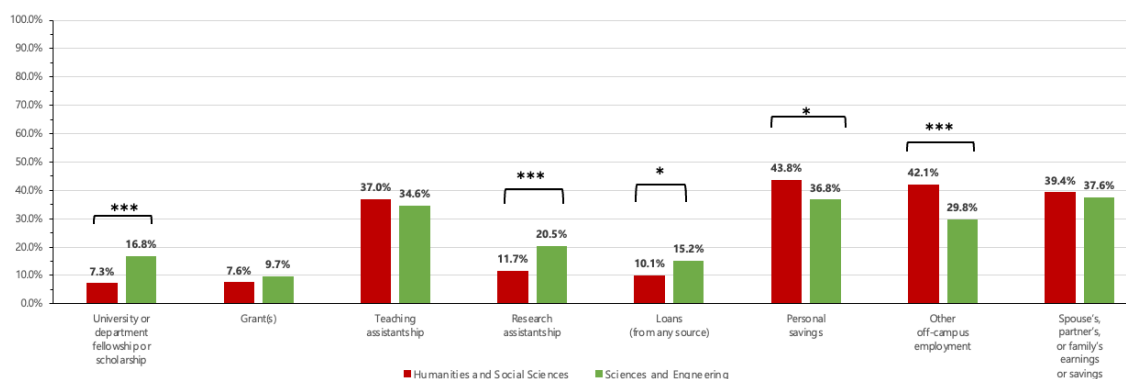
Figure 5. Satisfaction of the participants with their financial support.
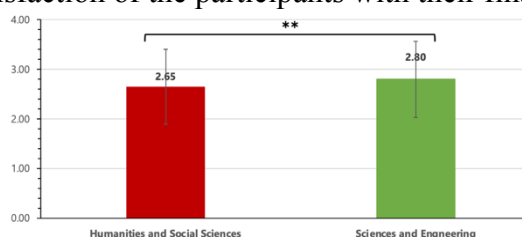
Finally, the participants' perceptions of their organizational climate were asked. Data analysis suggests that compared with those in Sciences and Engineering, graduate students in Humanities and Social Sciences were more aware of the equality and accommodation of their institutions, covering gender, race, and political beliefs (Figure 6).

Figure 6. The agreement of the participants with their organizational climate.
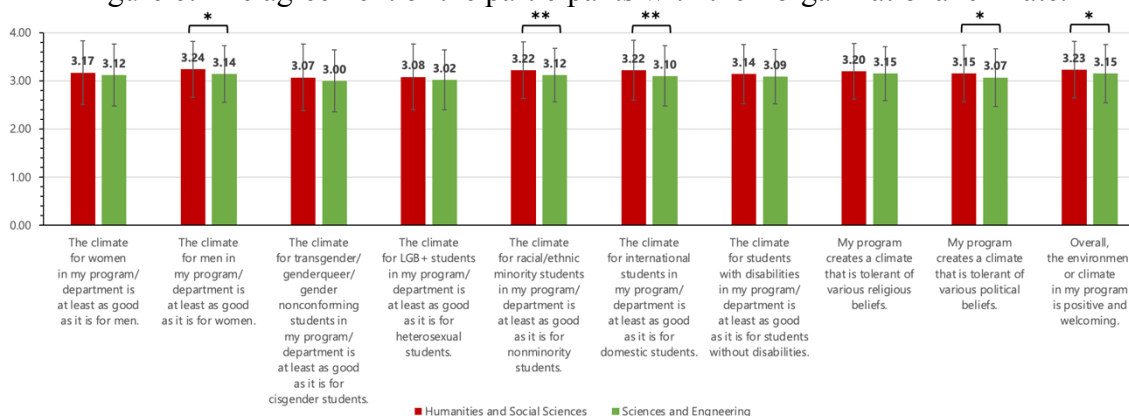
Perceptions of Individual Issues

In addition to their perceptions related to their institutions, the study further investigates their cognitions and feelings at an individual level. We found that except for the ability of "identifying a novel research question", graduate students in Sciences and Engineering were more confident with their research competency in various aspects, comprising those in applying research methods, sharing research findings, following best practices of integrity

and reproducibility in scientific research, collaborating with other researchers and staff, and managing a research project to completion (Figure 7). In a related vein, more graduate students in Humanities and Social Sciences shared their concerns about securing a job after graduation, as shown in Figure 8. Finally, a higher level of mental problems faced by graduate students in Humanities and Social Sciences, such as anxiety and depression disorder, were observed (Figure 9).

Figure 7. Competency in relation to research within the fields/discipline.
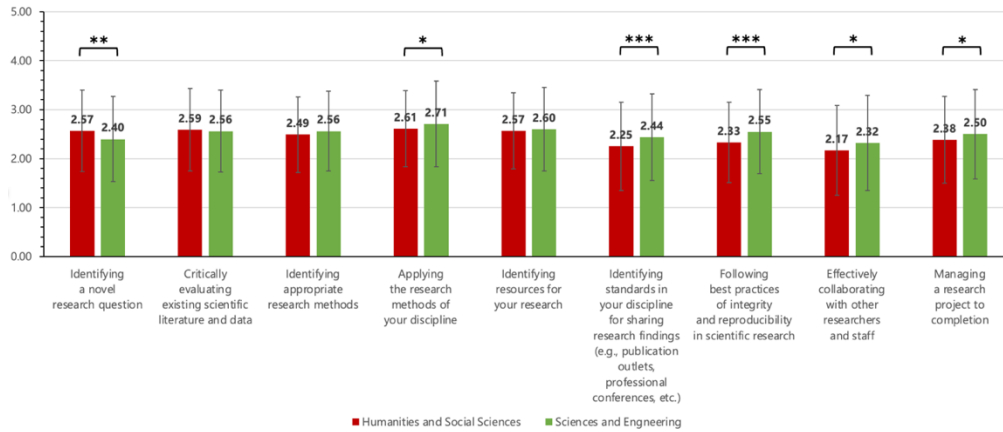
Note: *p<.05, **p<.01, ***p<.001

Figure 8. The concern of the employment.
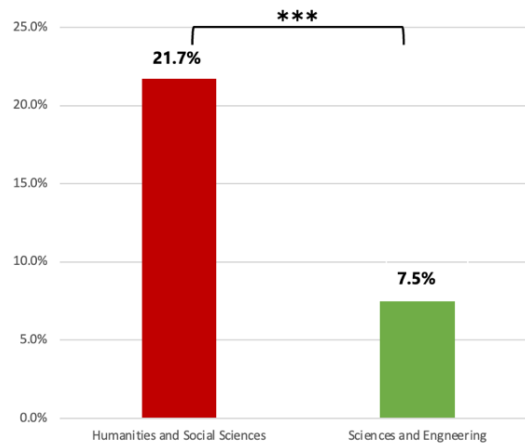
Note: *p<.05, **p<.01, ***p<.001

Figure 9. Mental issues encountered by the participants.
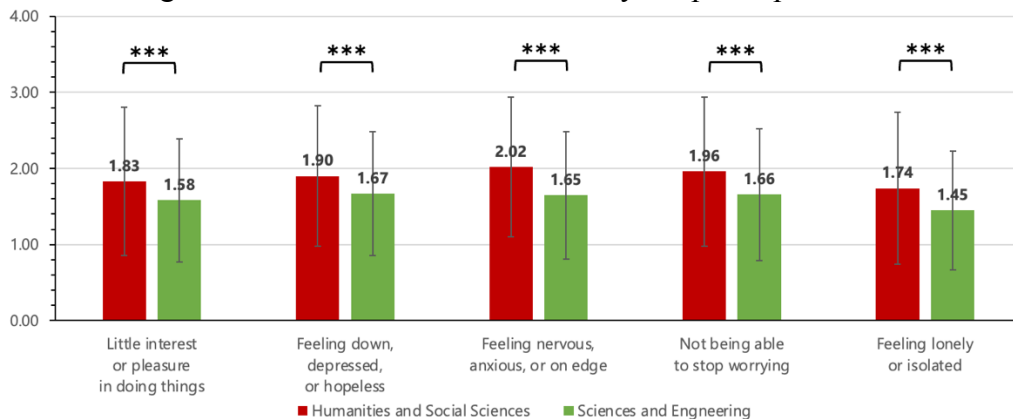
Note: *p<.05, **p<.01, ***p<.001

Given the acknowledged differences in the degree attainment rate of graduate students in Humanities and Social Sciences and those in Sciences and Engineering, the study is the first attempt in this regard, addressing the different perceptions and experiences of graduate students by disciplines. Despite the usage of the data from a case university, the study found that graduate students in Sciences and Engineering generally had better learning and research experience at both institutional and individual levels. For example, they have a higher level of recognition and satisfaction with academic (e.g., advising, guidance, facilities, and opportunities) and financial support (e.g., scholarships and research assistantships) provided by their institutions than graduate students in Humanities and Social Sciences. With the introduction of neoliberalism-based new public management in Japanese HEIs, Japanese national universities were forced to be incorporated in 2004, which led to a reduction in annual management expense grants. In order to ensure the financial resources of each university, Japanese national universities gradually focused more on the collaboration between universities and industries, and thus, placed more emphasis on the majors in Sciences and Engineering disciplines (Umeki, 1995; Taniguti, 2015). This explains why the overall resources and support for graduate students in Sciences and Engineering were considered better than those provided in Humanities and Social Sciences. This should be of concern, which may further lead to the two dichotomies of the two fields, thus, deteriorating the distinctiveness of the two cultures in higher education as suggested by C.P. Snow (2012).

Regarding the organizational climate, the data analysis, however, reveals that graduate students in Humanities and Social Sciences tend to depict their institutions as a more accommodating and welcoming environment for students with diverse backgrounds. This can be attributed to the fact that the proportion of international students in Humanities and Social Sciences is much higher than those in Sciences and Engineering at the graduate level. Moreover, comparatively, students in Humanities and Social Sciences were more inclined to interact with students from different countries and thus, establish international networks (Kishita, 2004). Students in the Humanities and Social Sciences, therefore, tend to perceive their institutions as more equal and open-minded regardless of students' backgrounds. Alternatively, unlike students in Sciences and Engineering who spend a lot of time in the lab, students in Humanities and Social Sciences have more time to interact with their peers, which indirectly contributes to their perception of a more welcoming and friendly organizational climate regarding their institutions.

In addition, at an individual level, overwhelming differences in professional and mental issues encountered by graduate students from different disciplines were observed. Comparatively, graduate students in Humanities and Social Sciences considered themselves less competent regarding their professional knowledge and skills, which leads to significant anxiety and concern about their future employment. It is undeniable that the lack of a sense of self-efficacy can cause mental issues in individuals. This finding echoes Finnie et al. (2016), asserting that the study in Non-STEM fields may not be able to bring students financial wealth or professional advancement. This is in contrast to what was reported by a recent study (Yogyakarta & Al-Ansi, 2021), suggesting that Social Sciences students were less anxious about their future careers than those specialized in Medical and Natural Sciences majors.

Conclusion

The main findings of the study can be summarized as follows. Firstly, graduate students' perceptions of their host institutions were examined. According to the data analysis, the study

indicates that both academic resources and financial support of the case university provided in Sciences and Engineering were perceived as higher than those in Humanities and Social Sciences. Specifically, graduate students in Sciences and Engineering were more likely to experience better advising regarding their scientific activities, networking, and collaboration. In addition, graduate students in Sciences and Engineering were also found more satisfied with the tangible factors (e.g., academic writing, research network, and computer and library resources) and less satisfied with intangible factors (e.g., autonomy and encouragement) in their programs. Lastly, they were less likely to have financial concerns since the provision of scholarships and salary through being a research assistant in their affiliated programs seemed quite adequate. Despite the perceptual disadvantages, interestingly, the graduate students in Humanities and Social Sciences were more inclined to consider their institutions as diverse and inclusive for students with diverse backgrounds. The institutional climate of the case university was characterized as open and accommodating for minority students, including those who are international, female, disabled, LGBT, etc.

In terms of the perceptions in relation to their individual issues, overwhelmingly, the study found that graduate students in Humanities and Social Sciences tend to face more professional and mental issues. For example, they were more prone to be less competent in their professional capabilities and achievements regarding applying research methods, sharing research findings, following best practices of integrity and reproducibility in scientific research, collaborating with other researchers and staff, and managing a research project to completion, which contributes to their greater concern about securing a job after graduation in the case university. Moreover, they were reported as more likely to encounter mental issues, such as general anxiety and depression disorder, than those in Sciences and Engineering. In general, they were more likely to have little interest in doing things and feel depressed, lonely, and isolated.

Implications and Limitations

The findings drawn from our study portrayed comparatively bleak experiences of graduate students in the Humanities and Social Sciences at the case Japanese national university. Undoubtedly, their academic and life experiences are closely intertwined with their degree attainment. A negative studying experience generally leads to a lack of interest in academic life, which in turn affects their further endeavor to strive for educational degrees. Having said this, the study offers the following theoretical and practical recommendations for researchers and university administrators.

Extensive previous studies regarding the experiences of graduate students in Japan were conducted. The established literature, however, often took all students as a whole unit, and seldom addresses the characteristics of graduate students with diverse backgrounds. The scholarly focus of our study is placed on their disciplines though, given their distinctive experiences as revealed previously, the study calls for special attention to each distinguished individual university student. In addition, as the selection of discipline is always closely associated with students' gender, a future study, therefore, should be carried out to detect whether student experiences revealed above were influenced by their gender.

A significant difference in experiences between graduate students in Humanities and Social Sciences and those in Sciences and Engineering was identified in our study. To create a more equal and accommodating academic environment and to combat the professional and mental issues encountered by graduate students in Humanities and Social Sciences, special and

specific interventions in terms of institutional configuration, including academic resources, financial support, and mental consultants/mentors, should be provided. Those are integral to establishing a legitimate, impartial, and attractive university environment, especially for those who are specialized in the Humanities and Social Sciences disciplines.

Several limitations of the study should be acknowledged. Firstly, the study's emphasis on disciplinary variation may impede a more in-depth analysis of whether observed differences are attributable to the variation in academic disciplines or to gender disparities among students. Additionally, the study lacks an exploration of other participant characteristics, including nationality, academic rank, and social class, beyond academic discipline. Furthermore, the study overlooks the potential interrelation between students' perceptions of their host institution and their personal issues. Finally, considering the significant impact of the COVID-19 pandemic, it is imperative to further investigate the moderating effects of the pandemic's mechanisms.

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L2 Acquisition of the Word Order of a Mandarin Attributive-Head Construction May Not Be Affected by L1 or Word Frequency

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Abstract

Word order can be a difficult dimension for L2 learners to acquire, especially for learners whose L1 exhibits a different order pattern. For example, previous research reported difficulty in the acquisition of Mandarin [Attributive-Head] constructions for Thai learners with [Head-Attributive] constructions, and has attributed the difficulty to negative L1-to-L2 transfer. However, whether this difficulty is truly L1-specific remains unknown, since research often focused on a single demographic. Adopting a corpus-based comparative approach, this study investigates whether there is a differential difficulty experienced by L1-Thai and L1-English learners whose pattern violates and follows the Mandarin [Acquisition-Head] order respectively, and also whether difficulty may be further modulated by word frequency of the Mandarin attributive. Mandarin attributives were selected and grouped into pre-established frequency bands A and B in descending order of word frequency, with 70 attributives in each band. Learner data was extracted from the Global Chinese Interlanguage Texts Corpus containing sentences with the attributives written by L1-Thai and L1-English learners. Sentences were coded as correct and incorrect based only on erroneous word order by two independent L1-Mandarin raters. A total of 2042 sentences were analyzed. Results showed no effect of L1 or frequency, nor any further interaction. This finding may provide evidence for universality in the difficulty of Mandarin [Attributive-Head] word order, instead of L1-specific negative transfer.

Keywords: Attributive, Word Frequency, L2 Acquisition, Cross-Linguistic Comparison

Introduction

Attributives are words or phrases that modify a head noun and provide additional information about the noun they modify, such as its size, color, shape, or other characteristics. Attributives can be adjectives, nouns, or phrases that function as adjectives. For example, in English, a noun can be used as an attributive to modify another noun, such as "a *car* factory" or "a *stone* wall". In Mandarin Chinese, classifiers can additionally function as attributives to modify nouns, such as *"yī gè rén" (one person)*, where *"gè"* is a mandatory sortal classifier that functions as an attributive to describe *"rén"* (person); in addition, Mandarin adjectives in pre-nominal position require a modification marker *"de"*, such as *"měi lì de rén" (beautiful person)*, where the omission of *de* would result in an ungrammatical construction.

Cross-Linguistic Characteristics and Differences in Attributive-Head Word Order

One relevant characteristic for the current purposes is the issue of word order in attributive-head constructions. In many languages, attributives are placed before the noun they modify. For example, this is the case for both English and Mandarin as exemplified above. However, in some languages, such as Thai and some other Southeast Asian languages, attributives usually come after the noun they modify. Examples in Thai include (cf. Reid & Savetamalya, 1997):

1. baan　　jaj
   house　　big　　　　("big house")
2. rooŋriən　　nii
   school　　　this　　("this school")

Differential word order patterns have posed a theoretical challenge for identifying universal word order typologies as well as pinpointing explanatory variables in predicting word orders in a language. In Thai, the situation is further complexified by intra-linguistic inconsistencies where constructions do not always follow the head-attributive order, such as quantified noun phrases that specify a time, a distance or a measurement:

3. saam　　khraŋ
   three　　time　　　　("three times")
4. haa　　meet
   five　　meters　　　("five meters")

Such cross-linguistic differences as well as intra-linguistic inconsistencies have been proposed to underlie L1-specific difficulties in the acquisition of L2 attributive-head constructions. Bai (2014) found that L1-Thai learners of L2-Mandarin exhibited frequent misorder of attributives, both in the single-attributive case (with only one attributive before the head noun, e.g. *"zuo bian de fang zi" (lit: **left** house; trans: the house on the **left**)*), or multiple-attributive case (with more than one attributive before the head noun governed by order constraints, e.g. *"zuo bian de di er ge fang zi (lit: **left second** house; trans: the **second** house on the **left**)*). A recent study by Kitikanan & Dandamrongrak (2018) identified L2 experience as a major factor predicting the correct use of attributive word order in the multiple-attributive case, where L1-Thai learners with more experience with the target language exhibited fewer errors than learners with less experience.

However, a common shortcoming of the above studies is that they only focused on a single demographic, and whether the difficulty is truly L1-specific is unknown. To investigate this, a comparative approach is needed where data is collected for demographics whose L1's that either follow or violate the attributive-head word order. This study aims to investigate this by comparing the use of Mandarin attributive head constructions by L1-Thai (which violates the word order) and L1-English (which follows the word order) learners respectively.

The Role of Word Frequency in the Acquisition of Word Order

The previous section reported L2 experience as a contributing factor to the correct use of L2 attributive-head word order. This suggests that the frequency of exposure, or word frequency of attributive as a possible proxy, may be a predictor of correct word order use. In studying naturalistic speech, it has been found that children tend to use certain syntactic constructions only with certain lexical items. The ability to abstract the use of the construction across different lexical contexts to a fully productive state develops only gradually over time (e.g. Tomasello, 1992; Wilson, 2003). Crucially, the lexical items that bootstrapped the syntactic use were more familiar items that children had more input of. This provided early evidence that the quantity of input might modulate the acquisition of syntactic constructions. Studies in controlled experimental contexts are also aligned with this hypothesis. In studies of English word order acquisition, it was observed that older children (indicative of more natural English exposure) had increased reliance on the canonical word order schema (e.g. English SVO order) than younger children (Bates et al., 1994).

On the contrary, some studies have suggested that high word frequency might not be needed in the formation of certain syntactic structures. This is proposed in line with the "poverty of the stimulus" arguments, and has been demonstrated in empirical studies of the acquisition of structures like constituency and recursion (Crain & Nakayama, 1987). Furthermore, a review by Lieven (2010) has also pointed out some arguments against a *pure* word frequency account (i.e. frequency effects may further interact with other factors). For example, Lieven points out that child acquisition of the English TENSE forms (e.g. base verb GO) is not based on how frequently the children heard each of the forms *per se* (e.g. *go* vs *went* vs *gone*), but on how frequently the children associates each form in a form-meaning mapping. This is evidenced by the fact that younger children use each TENSE forms with limited semantic meanings *in addition to* limited syntactic frames (such that *gone* is only used in wh- question form and associated with the meaning of *disappearance*). Only when children are exposed with enough form-meaning mappings (and not raw frequencies of each tense form of GO) did they acquire the flexibility of using different tenses as a property of the base verb.

The evidence against a pure frequency account may have an important bearing on the present study, as the function of the pre-nominal attributive in Mandarin is largely inherently semantic. This means that raw input frequencies of the attributive may not be enough for learners to generalize the constructions on a syntactic level, as learners may need exposure to form-meaning mappings of the entire attributive-head unit as a whole. In such a case, word frequency (of the attributive alone) may not play a large role in the acquisition of L2 Mandarin attributive-word order. Thus, the issue of word frequency as a predictor of L2 attributive-head word order is an unsolved question which this study aims to investigate.

In summary, our current study sets out to answer two questions: 1. Do L1-Thai and L1-English learners of Mandarin (whose L1 violates/follows the Mandarin attributive-head word order) exhibit differential error rates of Mandarin attributive-word constructions based only on

erroneous order? 2. Does word frequency of the target attributive play a role in predicting error rates (such that more frequent attributives will elicit fewer errors)?

Methods

Mandarin attributives were selected and categorized into pre-established frequency bands A to B in descending order of word frequency (Liu & Ma, 2010), resulting in a total of 70 attributives in each band. Example attributives for each Band are listed in Table 1 below.

Band A	**Band B**
安静 [quiet]	爱国 [patriotic]
安全 [safe]	便利 [convenient]
白色 [white]	残酷 [cruel]
北边 [North]	诚实 [honest]
大部分 [most]	充足 [plentiful]

Table 1: Example attributives from each frequency band

Learner data was extracted from the Global Chinese Interlanguage Texts Corpus, which contains written, spoken, and video data by foreign learners of Chinese in 111 different countries and regions that total more than 115 million words. Sentences with the target attributives in pre-nominal form (in the case of correct usage) written by L1-Korean and L1-English (American) learners were analyzed. Two native Mandarin speakers independently reported the error rates based only on erroneous attributive-head word order. Accuracy was binary-coded (1 for correct, 0 for incorrect). Results yielded an 89% inter-rater reliability. Only target sentences for which the raters agreed on the error status were included in subsequent analysis. This yielded a total of 2042 target sentences.

Results and Discussion

Figure 1 shows the overall group results. General observations reveal comparable error rates on Mandarin attributive-head word order for L1-English and L1-Thai learners on both high-frequency and low-frequency attributives.
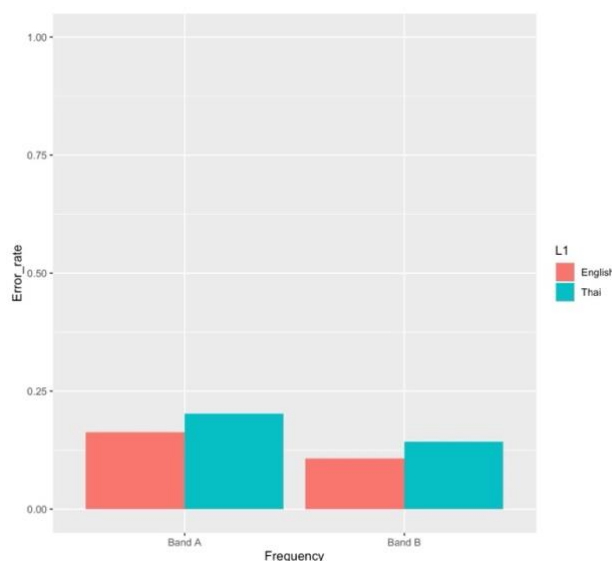

Figure 1: Proportion of overall errors L1-English and L1-Thai learners

A 2 (L1: Thai vs English) x 2 (Frequency: High vs Low) independent-measures ANOVA was performed on learner accuracy which confirmed the observations. Results showed no main effect of L1 [$F(1,2038) = 1.78$, $p = 0.18$], suggesting that the error rates did not differ between L1-English and L1-Thai learners averaged over both frequency bands of attributives. Results also showed no main effect of Frequency [$F(1,2038) = 0.08$, $p = 0.78$], suggesting that the error rates also did not differ between high-frequency and low-frequency attributives averaged over both learner groups. Finally, there is no L1xFrequency interaction [$F(1,2038) = 0.45$, $p = 0.5$], suggesting that the lack of group effect was not because of differential modulation of either factor.

Overall, this shows that perhaps contrary to the results reported in the literature, the difficulty in acquiring word order for an L2 attributive-head construction may be a universal phenomenon rather than an L1-specific phenomenon. At the same time, familiarity with attributives, as indexed by word frequency, does not seem to predict error rates of word order, showing that attributive word frequency *per se* may not be enough for learners to generalize the use of the construction to all lexical contexts (a possible alternative explanation, however, would be that the construction has been abstracted by both groups of learners and are not associated with high- or low-frequency attributives).

Conclusion

The present study aimed to extend existing research in two directions, first by taking a comparative approach to test the L1-specificity of the acquisition difficulty of Mandarin attributive-head word order reported in the literature; second by testing whether frequency effects reported for the acquisition of other syntactic structures extends to the acquisition of L2 attributive-head word order. The current findings provide initial evidence for universality in the difficulty of Mandarin [Attributive-Head] word order, instead of L1-specific negative transfer. However, it is conceded that the scope of comparison in the current study is still limited – i.e. the lack of an effect specifically between L1-Thai and L1-English learners may not be easily generalizable to other languages, because results may be confounded by factors like the difference in overall linguistic similarity between Thai-Mandarin vs Thai-English. Further research is needed with the analysis of a more representative demographic selection to ascertain the possible universality proposed by the current study.

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People, Plants, and the Planet: The Design and Impact of a Climate Change Curriculum to Support Plant Based Eating in U.S. Adolescents

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Abstract

This study aimed to examine the impact of climate change curriculum on 5th-grade students' food choice and sustainability considerations. Insight into the drivers of food choice and sustainability considerations that were most salient among 5th-grade students were gleaned through interviews to assist in designing and implementing a school curriculum entitled *People, Plants, and the Planet* (PPP). Six modules on climate change and sustainable food behaviors were developed that focused on food systems and plant-based eating. A cluster randomized controlled study design was implemented to evaluate its effectiveness at improving climate change knowledge, attitudes, self-efficacy, and behaviors. Four New Jersey schools in three counties participated. Three NJ schools were randomly assigned to the intervention, while the other school was assigned to the control. Within the intervention schools, one classroom was randomly assigned the full intervention (educational curriculum + cafeteria changes), and another was assigned to a half intervention (only cafeteria changes). The control group had a delayed intervention, receiving the intervention after the study was completed. To evaluate impact, participants (n=111) completed pre- and post-test surveys. An adaptive version of the Theory of Planned Behavior was used as the theoretical underpinning of the survey. At the post-test, the full-intervention group (n=48) had significantly higher mean scores in climate change and plant-based eating knowledge compared to the half-intervention (n=46) and control groups (n=17). This curriculum shows promise in being able to help shift food choices towards more plant-based foods in the context of climate change mitigation among adolescents.

Keywords: Food Choice, Adolescent Health, Diet, Dietary Intake, Environment, Climate Change, Climate Change Curriculum, K-12, School Nutrition

Introduction

Adolescents (10-19 years) have the poorest quality diets among all age groups in the United States (U.S. Department of Agriculture & U.S. Department of Health and Human Services, 2020), a problem which has significant implications for health over the life course. More than 40% of children and adolescents in the U.S. are overweight or obese (U.S. Department of Agriculture & U.S. Department of Health and Human Services, 2020), putting them at increased risk of both immediate (e.g., high blood pressure, cholesterol, fasting blood glucose) and long-term chronic health risks (e.g., heart disease, diabetes). Racial and ethnic disparities in obesity are marked, with significantly higher rates for Hispanic (25.6%) and non-Hispanic Black (24.2%) children and adolescents compared to 16.1% in non-Hispanic White counterparts (Fryar et al., 2021). While the causes of obesity are multifaceted, a key contributor is dietary intake (e.g., low intake of fruits, vegetables, and whole grains and overconsumption of energy-dense food of low nutritional quality) (Centers for Disease Control and Prevention, 2022).

Plant-based diets—diets consisting mainly of "minimally processed fruits, vegetables, whole grains, legumes [and] nuts and seeds" (Ostfeld, 2017)—hold the potential to deliver significant benefits both to the health of individual persons and to the wellbeing of non-human living things which depend on a relatively stable climate on Planet Earth. In the United States, higher adherence to a plant-based diet has been associated with a 19% reduction in cardiovascular disease mortality and an 11% reduction in all-cause mortality (Kim et al., 2019). Additional health benefits of a plant-based diet include lower risk of hypertension, high cholesterol, and overweight/obesity (Turner-McGrievy, 2017). Increasing adolescents' consumption of plant-based foods, therefore, represents a prime diet-centered strategy for significantly improving health over their lifespan. Shifting adolescents' food choices towards plant-based diets could reduce the long-term risk of chronic disease (McManus K. D., 2020). Diets higher in plant foods are also, other things being equal, better for the environment. Globally, food production is responsible for over 25% of all greenhouse gas emissions (GHGE) (Ritchie, Rosado & Roser, 2022). The production of animal agricultural products, including meat, dairy, and eggs, consumes significantly greater amounts of energy, water, land, and other resources than does the production of plant foods (Mekonnen & Gerbens-Leenes, 2020; Hedenus et al., 2014). GHGEs for livestock agriculture are correspondingly greater than those for crop agriculture. Thus, avoiding climate change's worst impacts requires reducing animal product consumption in favor of plant-based proteins (Scarborough et al., 2014). The average American adult who consumes meat is responsible for approximately twice as many dietary GHGEs as the average person who consumes a vegan diet (Tilman & Clark, 2014; Chai et al., 2019).

Adolescents today are deeply concerned about environmental and social justice issues, especially those related to climate change (Parker & Igielnik, 2020; *Climate Change Ranks Highest as Vital Issue of our Time – Generation Z Survey*, 2019). Given the strong relationship of plant-based diets to both human health and sustainability, there is an opportunity to harness the connection and passion adolescents have for sustainability to increase consumption of plant-based foods (i.e., fruits, vegetables, whole grains). A curriculum on food and its impact on planetary and human health would be well-positioned to give adolescents information about the sustainability of food. The purpose of such an educational intervention would be to equip adolescents with knowledge needed to choose foods that are both healthier for humans and better for the environment. There is ample evidence in the literature indicating that nutrition education, particularly when grounded in

theories of behavior, integrated into the existing curriculum, and designed to incorporate feedback from students, teachers, and administrators, can lead to positive changes in the dietary practices of young people, including increased consumption of plant-based food and decreased consumption of animal food products (Meiklejohn et al., 2016). In 2020, New Jersey became the first state to require public schools to include climate change education in the K-12 curriculum (State of New Jersey, 2020). This requirement has created a need for new and expanded environmental education curricula that can be used by New Jersey educators across the state. Within school-based nutrition education, however, teaching about healthy food and eating in ways that also center the health of the planet is a still-emerging area of educational practice.

The *People, Plants, and the Planet* curriculum was implemented in three schools across New Jersey. These schools represented three different geographical and economical areas in the state; urban low-income, urban middle-income, and rural middle income. One additional school served as a full control school. The purpose of this pilot study was to assess whether the new curriculum would be successful at improving 5th-grade students' knowledge, attitudes, self-efficacy, and behaviors around climate change and plant-based eating.

Methods

Description of Intervention

Prior to the development of the educational intervention for this study, a systematic narrative review was conducted to identify peer-reviewed studies that examined educational interventions and curricula that teach about climate change and/or sustainability with the intension of shaping adolescent knowledge, attitudes and/or behaviors related to food. Out of 6,639 publications considered, nineteen were positively identified as peer-reviewed studies that quantitatively assessed the effectiveness of an educational interventions to encourage healthy eating through the lens of sustainability and climate change. Thirteen of these studies found that curricula highlighting the relationship between environmental sustainability and healthy, plant-based foods resulted in either increased knowledge about good nutrition, or increased consumption of plant-based foods (Antón-Peset et al., 2012; Bersamin et al., 2019; Brain et al., 2015; Cornelius et al., 2014; Costarelli et al., 2022; Eugenio-Gozalbo et al., 2022; Evans et al., 2012; Figueroa-Piña et al., 2021; Jones et al., 2012; Jones et al., 2017; Jones, 2020; Sellman & Bogner, 2013; Prescott et al., 2019). Six studies found no such positive relationship between the intervention and any predicted outcome. Successful interventions tended to share a few attributes, including mixing substantive academic content with engaging activities, creating curricula comprised of, at most, 5-10 separate lessons, and explicitly linking lessons about sustainable food systems to students' dietary choices, rather than relying on students to make this connection on their own (Brain et al., 2015; Prescott et al., 2019).

Building on prior work, the project team developed a curriculum titled *People, Plants, and the Planet* (PPP). PPP consisted of six modules (Table 1), each of which focused on a different aspect of the relationship between food systems, climate change, and plant-based food choices. Each module included two 35-minute lessons that were delivered on separate days of a designated week. The first lesson in each module featured a 10-minute instructional video and associated teacher-led activities. The second lesson in each module centered on an expanded activity to explore and apply concepts from the previous lesson more fully. The entire curriculum was designed to be delivered over the course of six weeks (one module per

week). Lessons were aligned to the N.J.'s Student Learning Standards for Climate Change Education (State of New Jersey, 2020) as well as the Next Generation Science Standards (Achieve, 2013) and were taught by a team of 10 undergraduate, trained students from Rutgers University.

Module	Key concepts introduced in first lesson	Extended activity for second lesson
The greenhouse effect and things people use	Greenhouse gases trap heat on earth; human activities can lead to more greenhouse gases in the atmosphere	Students brainstorm how different foods are related to the production of pollution, including greenhouse gases
Food systems, resources, and outputs	Food systems require inputs and produce outputs. Greenhouse gases can be an output of food systems.	Students brainstorm what inputs and outputs are part of the production of five different food products, including fruit salad and cooked hamburger
Changes to the land from food production	On-farm production of animal-based foods requires more land than plant-based foods—resulting in greater GHGE	Students create visual aids, like posters, to communicate the relationship between increased land consumption and GHGE
Food and the other greenhouse gases	Growing crops and raising animals for food produce other greenhouse gases—not just CO_2	Students conduct an experiment to demonstrate the potency of different greenhouse gases
Greenhouse gases after food leaves the farm	Stages of food systems other than production—like processing and distribution—also produce greenhouse gases	Students brainstorm differences in greenhouse gas outputs post-farmgate for two different foods
Carbon footprint	GHGE related to an activity, thing, or person can be captured in a single number	Students use a carbon footprint calculator to evaluate animal-based vs. plant-based meal menus

Table 1: Module Content

Study Setting and Participants

This study received Institutional Review Board approval at the authors' university prior to recruitment of participants. In each of the three intervention schools, there was a randomly assigned full intervention class and a randomly assigned half intervention class. The full intervention classes received the six modules and were exposed to cafeteria changes to promote food waste reduction and student consumption of plant-based foods. The half intervention classes were exposed to cafeteria changes but did not receive any of the educational lessons until after the study was completed. The urban low-income school district participated as a control school which did not receive any of the interventions (educational lessons or cafeteria changes). The cafeteria changes were based off the Smarter Lunchrooms Movement, a research-based program created by Cornell University's Center for Behavioral Economics in Child Nutrition Program in 2009 that promotes eight main strategies to encourage student selection of healthier foods in school cafeterias (Mumby et al., 2018). Some of the strategies include cutting fruits instead of serving whole to allow for easier consumption and intentional placement and advertisement of foods (Mumby et al., 2018). One additional class from the fourth school was utilized a full control sample; these adolescents did not receive any interventions.

Data Collection

The Theory of Planned Behavior was used to develop the evaluation survey. Multiple-choice knowledge questions were based on objectives for each lesson and were reviewed for construct validity. Questions related to climate change and plant-based eating attitudes, self-efficacy, and behavioral intentions used a five-point Likert scale (See appendix for assessment). The 50-question survey included 18 multiple choice questions assessing student knowledge about climate change and plant-based eating, and 32 Likert scale questions: Attitudes (7), Self-Efficacy (5), Behavioral Intentions (6), Perceived Behavioral Control (5), and Climate Friendly Behaviors (9). A $20 Amazon gift card was provided as an incentive to complete both the pre- and post-test surveys.

There was a total of 126 5th-grade students from the four schools that met the inclusion criteria to participate in this study. In attempt to have participants that were evenly distributed across different geographical areas in NJ, 32% of these students were from a coastal area of NJ, 28% were from a rural area, and 40% were from an urban area (Table 2). Most students in the costal and urban schools identified as Hispanic. Most students in the rural school identified as White. Approximately 8% of all the students within the four schools identified as Black and 4% identified as Asian (Table 2).

School	Town in New Jersey	Experimental or Full Control	Total Numbers of 5th-Grade Students	Race[1]
School A	Long Branch (Coastal)	Experimental	40	White: 24.7% Black: 7.8% Hispanic: 65.3% Asian: 0.3%
School B	Newton (Rural)	Experimental	35	White: 48.9% Black: 8.8% Hispanic: 35.0% Asian: 2.1%
School C	Paterson (Urban)	Experimental	26	White: 4.3% Black: 5.6% Hispanic: 89.2% Asian: 0.9%
School D	Paterson (Urban)	Full Control	25	White: 0.8% Black: 9.1% Hispanic: 89.4% Asian: 0.6%

[1]2021-2022 enrollment data from the N.J. Department of Education representative of the entire school, reported by the districts

Table 2: Demographics

Data Analysis

Data analysis was conducted primarily using IBM SPSS (Chicago, IL, version 28). Descriptive statistics of all study outcomes stratified by treatment group (control, half-intervention and full-intervention) were analyzed. Analysis of Covariance (ANCOVA) controlling for baseline scores examined significant differences at post-test of all study outcome variables (i.e., knowledge, attitudes, self-efficacy, behavioral intentions, perceived behavioral control, engagement with climate friendly behaviors) among the intervention (half

and full) and control groups. Partial eta-squared indicated small ($\eta2 = 0.01$), medium ($\eta2 = 0.06$) and large ($\eta2 = 0.14$) effect sizes of significant ANCOVA findings (Table 3).

Results

Of the 126 students, 118 received parental consent to participate, and only 111 students completed both the pre- and post-test surveys. The final analytical sample was 111 participants with 94 in the experimental group and 17 in the full control group. Within the experimental group, 48 received the full intervention, and 46 received the half intervention.

Internal consistency reliability of study outcome variables as determined by Cronbach alpha coefficients ranged from poor to good (Table 3) with knowledge ($\alpha = 0.42$) and attitude ($\alpha = 0.35$) scales performing poorly. Examination of between group differences of study outcomes controlling for baseline scores revealed significant differences in climate change and plant-based eating knowledge scores (Table 3). That is, at post-test the full-intervention group had significantly higher mean scores in knowledge compared to the half-intervention and control groups with a large effect size ($\eta2 = 0.29$). No other survey outcomes had significant mean score differences among treatment groups at post-test.

Measure (total possible score range)	# Items	Cronbach's α	Control Group (n=17)		Half Intervention Group (n=46)		Full Intervention Group (n=48)		ANCOVA between group differences over time [a]		
N = 111			Baseline Mean±SD	Post Mean±SD	Baseline Mean±SD	Post Mean±SD	Baseline Mean±SD	Post Mean±SD	F	P	Partial Eta-Squared
Knowledge (0 to 100)[b]	18	.418	43.14±18.38	35.29±17.34	45.17±14.23	46.38±15.01	42.59±14.82	60.19±21.08	21.856	<.001	.290
Attitudes (0 to 7)[c]	6	.350	3.42±0.44	3.31±0.58	3.39±0.90	3.40±0.50	3.40±0.48	3.44 ±0.47	1.38	.256	.025
Self-Efficacy (0 to 5)[d]	5	.717	3.24±0.75	3.17±0.59	3.57±0.84	3.41±0.69	3.41±0.66	3.47±0.65	1.987	.142	.036
Behavioral Intentions (0 to 6)[e]	6	.812	3.11±0.72	3.29±0.73	3.43±0.89	3.04±0.93	3.20±0.75	3.22±0.70	1.461	.237	.027
Perceived Behavioral Control (0 to 5)[f]	5	.633	2.88±0.53	3.11±0.69	3.16±0.74	2.99±0.73	2.94±0.69	3.10±0.65	1.458	.237	.027
Engagement with Climate-Friendly Behaviors (0 to 9)[g]	9	.831	3.06±0.88	3.20±0.64	2.89±0.98	2.72±0.90	2.619±0.63	2.85±0.74	1.364	.260	.025

Note: For Partial Eta-Squared, $\eta^2 = 0.01, 0.06,$ and 0.14 indicates small, medium and large effect sizes, respectively.
[a] Analysis of Covariance controlling for baseline scores with Bonferroni correction.
[b] Higher scores indicate greater knowledge on climate change and food waste concepts.
[c] Higher scores indicate positive attitudes towards climate-friendly behaviors.
[d] Higher scores indicate greater confidence towards adopting climate-friendly behaviors.
[e] Higher scores indicate greater intentions towards adopting climate-friendly behaviors.
[f] Higher scores indicate greater perceived ease of control over adopting climate-friendly behaviors.
[g] Higher scores indicate greater frequency with engaging in climate-friendly behaviors.

Table 3: Assessment Outcomes

Conclusion

This pilot study aimed to assess whether an environmental education curriculum, that focuses on the planetary and human health benefits of increasing plant-based food choices, would be successful at increasing 5th-grade students' knowledge about the relationship between climate

change and plant-based foods, attitudes toward climate change and plant-based eating, and actual food consumption decisions. There is ample evidence to indicate nutrition education, when grounded in theories of behavior, integrated into curriculum can lead to positive changes in young people (Meiklejohn et al., 2016). There is currently a climate change education mandate for K-12 schools in New Jersey (State of New Jersey, 2020); however, there are a limited number of curriculums that have been proven to have a successful impact on students. The *People, Plants, and the Plane*t curriculum takes a step at filling this gap by providing a full curriculum that has been piloted in classrooms and resulted in a positive knowledge outcome. Results from the pre-intervention survey and the post-intervention survey indicate that students' knowledge significantly increased because of the multi-modal curriculum. These findings are consistent with previous studies that have found success in improving students' knowledge by teaching climate change lessons through the lens of food systems. (Brain et al., 2015; Prescott et al., 2019).

While there was no change in attitude, self-efficacy, behavioral intentions, perceived behavioral control, and climate friendly behaviors, the findings may have been impacted by several limitations. The student surveys used to represent the findings used self-reported data only. Self-reported data may be affected by personal biases, such as social desirability. Additionally, this study followed students over a short period of time. A longer follow-up study that follows the students over several years can show the long-term impacts of this curriculum and would provide additional insight into the effects of this educational intervention. Furthermore, while adolescence is a period in development when they begin to have more autonomy over their food choice, they still rely heavily on food choices that are being made in the home. This study was limited to reaching students in the classroom rather than including an at-home component to the intervention. Future studies may benefit by including an at-home component and following the students for a longer time to assess the intervention's long-term impacts. In conclusion, this study addressed the need for an impactful climate change education curriculum. This curriculum's impact is represented by the significant increase in knowledge found among the study participants. The results of this study may be beneficial to educators and policymakers who are involved in climate change education for U.S. adolescents. Moreover, as more states begin to require climate change curriculum be taught in schools, this curriculum can be used to meet the needs of educators with the potential to address curriculum requirements while simultaneously influencing students to make better food choices.

Acknowledgements

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Attention in Digital Training Events:
A Conceptual Approach to Increase and Sustain Attention List of Abbreviations

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Abstract

As a result of the Covid-19 pandemic, digital training events faced the issue that their sessions were no longer take place in physically present. Consequently, participants showed a lower attention span during digital training events. Distractions from social media and smartphones are significantly greater in the digital space respectively at home. Due to the evolution into a more and more digital world, the question was addressed: Which success factors for digital training event design lead to high participant attentiveness? Which conceptual key elements, methodologies, and didactic concepts are required for training event design to reach a high and long attention span of participants? This article offers academic and business-relevant added value. That analysis was conducted with 6 structured expert interviews from the fields of digital event management and adult education. It shows that especially the attention span of participants is an essential factor to understand and retain learning content. In particular, the moderator of the event is responsible for structuring the organization of the event, its methods and its participants in a way that attention is on a high level. Not only the technical skills also the handling and attitude towards digital media are crucial for the success of a digital training event and has already been shown in other studies. Diversified stimuli help to enhance the attention of the participants. In addition, interaction with focused and surprising forms of presentation, enhances the attention of the participants. This aspect has already been confirmed in other studies. This paper shows the measures that lead to an improvement of attention in the digital space are presented beyond the previous studies.

Keywords: Attention, Digital Training, Implications

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Introduction

This work deals with participant's attentiveness during digital training events, especially with success factors in training design and structure. Based on the theoretical framework of these topics, the aim is to create conceptual implications for training event organizers regarding the structure, didactics, and design of training in order to enhance and sustain attention.

The following chapter is intended as an introduction to the work, starting with the problem statement. On this basis, the paper's objective and the research questions are derived, followed by an outline of the applied methodology and the thesis structure.

Problem Statement

Training events are a standard tool to educate and develop technical competencies or soft skills, promote behavior, and transfer knowledge in schools, universities, companies, and academies (Brexendorf et al., 2012). In sales and marketing, training events are tools for educating customers on the appropriate application, sales, or maintenance of products and services (Dombrowski et al., 2020). As a reaction to the global spread of COVID-19, which was declared a pandemic disease in March 2020 by the World Health Organization, most countries introduced various public restrictions. The safety measures include a ban on gatherings, events, trainings, and meetings (Bundesregierung, 2020; World Health Organization, 2020). Hence, event and training organizers were restricted in realizing their events. Furthermore, the number of people working remotely from home grew through the government's contact restrictions from 39% to 61% (Timm, 2020). Thus, the whole work- and communication culture, as well as structure, changed due to these regulations (Timm, 2020).

Digital substitutions replaced face-to-face trainings even during the ban. Online webinars and online trainings are widespread replacement measures for live meetings and events (Fischer, 2020). On the one hand, these kinds of digital alternatives help to reach the initial goals and strengthen a company's overall image. Digital training events are a more sustainable and environment-friendly solution than classical live training (Vogel & Thomas, 2020). Furthermore, online availability prevents less relevant travel activities and positively influences the participant's time resource management. The location-independent availability also increases the overall reach of trainings and results in an increased number of participants (Myriam, 2018). In addition, digitization and the megatrend of connectivity are driving the development of digital communication formats (Dams, 2013). They are not only changing communication, the target group of trainings and events is also developing. The digital natives[1] are now adults, and some are already in professional life as relevant target groups. They are fully-fledged consumers and must be included as a target group. Hence, organizers of trainings must adapt to their needs and expectations (Dams, 2013). However, on the other hand, in practice, the immediate need for digitization caused that in many cases, face-to-face events are transferred identically to a digital versions. With the result that the objectives and contents of the events are not successfully communicated to the participants as originally desired. Digital conducted trainings inevitably lead not only to advantages but also always carry the risk that participants take on a passive and consumption-oriented position (Lehner, 2019).

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[1] Describes the generation, which grew up in the digital age and is familiar with modern technologies from youth. In contrast to the previous generation, the digital immigrants, who discovered these modern technologies in adulthood (Prensky, 2001).

Moreover, digital training events compete with all digitally available business and leisure tools regarding the participant's attention. Figure 1 illustrates the leading distractions for employees working from home, which consist of social media, binge-watching, news media, and online shopping. Social media was the leading distraction for 61,6% of the employees working from home during COVID-19 (Mahipal, 2020).

The participant's attention span is much shorter at online events, and the distraction possibilities are much greater than at physical events (Knieriem & Luppold, 2021). Hence the digital training event design, including the didactical structure and methodology, plays a crucial role for the participant's attentiveness and consequently the training event's success (Mahipal, 2020). Attention is one essential basis of learning (Smallwood et al., 2007).
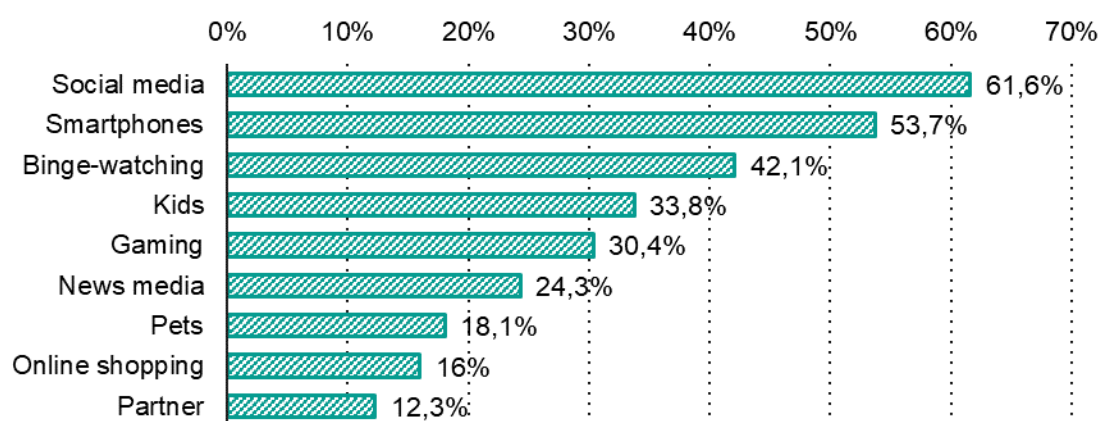

Figure 1: Leading distractions while working from home
Source: Modelled after Mahipal, 2020

Research Objective and Questions

This paper aims to identify conceptual success factors for high participant attentiveness in digital training events. In the context of this work, success factors for digital training design accumulate the didactical structure, methodology and the style of lecturing. Hence, this study attempts to examine the following research questions in more detail:

– Which success factors for digital training event design lead to high participant attentiveness?
– Which conceptual key elements, methodologies, and didactic concepts are required for training event design to reach a high and long attention span of participants?

Research Methodology

Based on the research questions, this thesis's scientific-theoretical approach is a qualitative research approach due to the open research question to gain scientific findings. The difference between a qualitative and a quantitative approach is that the quantitative approach, in contrast, focuses on measuring the characteristics of variables and their statistical analysis. Furthermore, this empirical study's research objective is application-oriented, focusing on digital training (Döring & Bortz, 2016).

Prior to the research and evaluation design and the data collection and analysis, quality criteria for qualitative research and a literature review are elaborated as the foundation for the study.

The investigation in the context of this work is aligned with an accumulated set of quality criteria for qualitative research comprising the seven criteria according to Steinke (1999) and the eight criteria of Tracy (2010). Both have conceptualized criteria for a standard evaluation of qualitative research. Hence, the following factors are considered in this work:

Criteria one defines the relevance of the topic, which points out the significance, relevance, and timeliness of the topic and is illustrated in the context of the problem statement (Steinke, 1999; Tracy, 2010).

The second quality standard refers to the accuracy and the intersubjective comprehensibility of the study (Steinke, 1999; Tracy, 2010). This concerns how third parties can reconstruct and evaluate the research process. For that purpose, one can rely on three approaches: The comprehensive documentation of the research process, the interpretation of the contents in groups, or the application of codified procedures. The first approach is used in this work, and all research steps are documented extensively and comprehensibly. The parts of the research to be documented are (Steinke, 1999; Tracy, 2010):
  - The preliminary knowledge about the research subject,
  - The study design and the research context,
  - The transcription rules,
  - The data,
  - The evaluation method,
  - The information sources,
  - The challenges and decisions during the research process,
  - The quality criteria that the work should meet,
  - The reflection on the own subjectivity.

The third criterion refers to the limitations and the resonance of the work as well as the reflective subjectivity of the researcher. The researcher should self-reflect on his position, and relationships between the researcher and interview partner should be evaluated. Moreover, the overall limitations of the research and the conditions by which the results can be generalized and transferred are pointed out (Steinke, 1999; Tracy, 2010).

Criteria four is devoted to the credibility and traceability of the research, where the whole study approach is illustrated in detail. This involves verifying whether the procedure and the choice of the method are appropriate. Similarly, it is crucial for this criterion whether the selected cases and transcription rules have been chosen reasonably. Lastly, the individual methodological decisions and the selection of evaluation criteria are reviewed (Steinke, 1999; Tracy, 2010).

The following quality criterion assesses the empirical validity of the formulated hypotheses. This research's importance is attributed to the sufficient textual support of all conclusions and hypotheses (Steinke, 1999).

The final component is coherence, which determines whether the research results are self-consistent and achieve the initially stated targets (Steinke, 1999; Tracy, 2010).

Definition and Selection of Experts

Based on the current state of research, this study of gathering expert knowledge was designed. Hardly any specific educational or event study on the attention range during digital

training events has been published. Hence, the primary aim of this survey is to obtain meaningful findings for the research questions. The scientific foundation of this empirical study is based on the second principle of the qualitative research paradigm: the relative theoretical openness to form new theories (Döring & Bortz, 2016). In this context, the grounded theory methodology described by Glaser and Strauss (2010) is applied, aiming to approach theoretically unexplored or poorly explored objects in an unbiased manner. As a result, subject-related theories or new theories can be derived (Döring & Bortz, 2016).

According to Döring and Bortz (2016), the definition and recruitment of experts are a challenge, as there is no unique definition of experts in the research literature. Nonetheless, Gläser and Laudel (2010) classify experts as individuals with particular knowledge and abilities due to their specific functions or experience. They are not the research object but have exceptional knowledge of the research subject due to their particular context (Gläser & Laudel, 2010). Hence, the selection of experts can only be made considering the research objective. It is determined that only persons are interviewed who have appropriate know-how in the research field with the ability to provide the knowledge without preparation as authentic as possible and who put aside the intention of self-representation (Gläser & Laudel, 2010; Scholl, 2015).

The quality of the study and its results rely on the experts' qualifications and the information provided. Therefore, since the selection of experts is one of the relevant quality criteria of this study, the requirements for the experts must be defined in advance (Gläser & Laudel, 2010). Hence, one can refer to Gläser and Laudel (2010), who suggest four questions for the expert selection:
1. Who has the required information?
2. Who will be the most able person to provide accurate information?
3. Who will be the most willing persons to provide precise information?
4. Who will be available to provide the information?

As part of the qualitative research, two different groups of experts, each with three people, were interviewed. As experts, persons were considered who are able, willing, and available to provide knowledge in the context of this research. Thereby, a distinction is made between digital event organizers and adult learning specialists. It is assumed that the organizer of training or adult learning events represents the interests of the planner as well as the needs of the participant. The selected experts are expected to be able to provide information about the development of digital training events as well as the attention spans of attendees based on their experience or their current role. An additional interest group for this research could be the attendees themselves. However, these will not be considered for this study due to the limited scope of work. The complete list of experts and information on their position, professional experience, and industry can be found in Figure 2.

The selection of experts for the interviews followed the first principle of grounded theory methodology (theoretical sampling), which states that samples shall be comparable to each other in order to achieve multiple and significant samples. For confidentiality reasons, the identities of the interviewees are anonymized. (Glaser & Strauss, 2010).

Expert	Function / Title	Work experience	Industry
E1	Senior Account Manager	11+ Years	Digital Events & Training
E2	Head of Media Production	20+ Years	Digital Events
E3	Adult Learning & Media Coach	17+ Years	Adult Learning
E4	Project Manager	7+ Years	Digital Events
E5	Professor for academic didactics	12+ Years	Adult Learning/University
E6	Adult Learning Specialist	28+ Years	Adult Learning

Figure 2: Overview of experts

Practical Implications for High Attentiveness During Digital Training Events

The most crucial driver for attention is the host-speaker of the digital training event. According to Berridge (2007), the role of the speaker is classified in the Service Ecology and Design. As the host-speaker is steering the participant's attention, one speaker must take over a moderating role in the training. If there is only one speaker, then this speaker must also take a moderating role besides the general role of delivering content. The moderating role helps the recipient to follow the training and balances actively between the variety of stimuli, media, formats, tools, and content.

Moreover, as a moderator, it is required to have a high perceptual sensitivity to recognize whether participants can follow the content or not. Hence, it is recommended that either the speaker has moderating skills or a second speaker with a moderating role is acquired as support. Sustaining attention during a digital training event also requires that every speaker has sufficient rhetorical camera skills. This implies that speakers actively use their body language and facial expressions. Moreover, the speaker must look into the camera to build digital eye contact. Lastly, the voice and way of the presentation should be audible for the target audience regarding grammar, sentence structure, and vocabulary. Therefore, to execute a successful digital training, it is highly recommended that speakers do rehearsals and speakers training up-front.

Information Design is equally important to the speaker's role, which focuses on the training's content, preparation, duration, and dramaturgy. First, the content must focus on the topic claimed as the training subject. Secondly, according to target group relevance, one must reduce the content to a minimum. Lastly, the more the content is up to date, individualized, and customized to the audience, the higher the participant's attentiveness will be. Therefore, a repetition of content should be avoided. Contents should always target to provide value-added information for the recipient. Brown and Aoki (2018) concluded that content is one key driver of attention and should be visually attractive, memorable, delightful, catchy, and concise. Besides relevant content, the content must be structured and planned in smaller segments and a good mix of input times, relaxation times, and self-study times. Zureck (2021) demonstrates that purely informational content can effectively be provided to learners in advance through videos. This approach allows educators more time for direct engagement with learners, ensuring that sessions remain interactive and avoid becoming tedious.

Hence, a clear pre-communicated agenda and a precisely planned content flow are required. Successful pre-communication can increase the curiosity for the event and reduce the bouncing rate. For the content, the same rule as for the speaker applies. A rehearsal of presentation and flow is one key success driver. Additionally, one must consider that the

maximum length of a digital training event should last 4 hours. As the attention span of participants is relatively short, one must consider break times and variation of stimuli in order to reactivate the participant's attention. Zureck (2021) reveals in previous research that the use of a diverse range of teaching tools positively influences the attention of digital learners. This methodological variety acts as a catalyst for re-engaging the learner. Being required to adapt to new formats and setups serves as a kind of 'wake-up call', revitalizing their learning experience.

Therefore, Interaction and Sensorial Design is summarized in the scope of digital training events and comprises the participant's activation through interaction and stimuli variation. Due to the short attention span of participants and the high number of screen-related and non-screen distractions as well as side activities, it is recommended to reactivate the participants regularly. Activations help to achieve participant's attentiveness and can be conducted by many different approaches, which are examined in the following: Participants can be activated through actively addressing and communicating with them, through discussions, involvement in the content, or collaboration tasks in order to work with other participants. In addition, participants can be activated through surprising and unexpected situations or stimuli of the senses. Participants can also be activated through the variation of the manner of presentation, the formats, the media used, the camera setting, or the number of speakers.

Moreover, activation can also be implemented through digital tools, like chat-functionalities, polling tools, or gamification and collaboration tools. To increase attention during a digital training event, one can use some of the prior listed activation and interaction methods to stimulate senses, but one should be aware that digital events might not succeed if purely based on interaction. Therefore, the relevance and role of the content, as well as the moderating activities of the speaker, should not be underestimated.

Environmental Design in digital training events comprises the technical setup of participants and speakers as well as the environmental design of the speakers' background. For high attentiveness and high participants engagement during digital training events, the technical equipment used by the participant is crucial. Hence, it is recommended to do prior connectivity and technical queries or tests with the customers. Moreover, the usability of the offline and online technologies and tools must fit the abilities and technical equipment of the target audience. Moreover, the speaker's technical setup should achieve a high-quality video camera resolution with excellent illumination, clear microphone voice, and a fast network connection. Lastly, the surroundings of the speaker should be supportive to the training message and not distracting from the speaker. For example, in technical training, it is recommended to have a technical surrounding with the products included. Surroundings can also be created via Greenscreens or virtual backgrounds or by using a professional studio for the event.

Lastly, Visual Design is directly connected to environmental design and refers to the visual layout of the speaker's surroundings, the digital room, and the content layout. The environmental design was elaborated in the previous paragraph in detail. The content must be designed impressively, easy to understand, visually attractive, and individualized to the target group in order to sustain attention to the presentation. In addition, the digital room should be designed supportive to the trainings overall objective and the host's corporate design. E.g., by implementing a company logo into the virtual backgrounds.

As a result of this empirical study, the researcher has developed an example digital trainingevent schedule with a corresponding attention curve based on the conceptual recommendation. The curve can be described as a descending wave model and is visualized in figure 3.
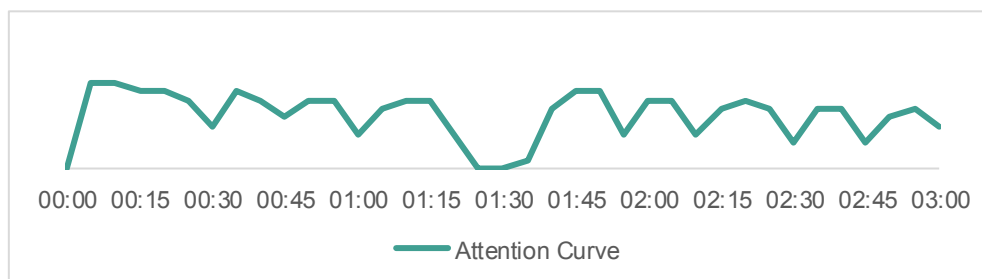

Figure 3: Attention curve in digital training events

The peak, in the beginning, is caused by the pre-communication, the unique, customized, and relevant contents, and the exciting start. Afterwards, the attention shrinks due to human attentiveness and distractions. With the help of different activation and variation techniques, the host-speaker can temporarily steer and increase attention. Therefore, he can vary between content, perspectives, speakers, breaks, collaboration, media, interaction, and surprises. For example, the drop after 25 min can be turned through a second speaker and a panel discussion of both. The second drop can be turned by starting a question-and-answer with the participants to create interaction between speakers and listeners. The third drop can be turned by a change of perspective and a live demonstration on a virtual whiteboard. The followed attention drop is turned by giving the participants a break. The event continues with different activation techniques to turn the attention drops through interaction and changes. The whole event should not last longer than 3 hours.

The results of the study and the recommendations derived show high similarities with the general recommendations from the adult learning industry. Hence, the digital training event must be designed in relation to event and adult learning methodologies. One approach for enabling variation during trainings can be implemented with storytelling. Through storytelling elements in digital training event, one can plan interactions as well as variations precisely in the whole scope of the training, as storytelling allows the integration of stimuli in one concept. Moreover, storytelling is, as described in 2.2.3, brain-friendly communication accumulating pictorial, motion-based, descriptive, and illustrative patterns which are familiar to the target audience. Hence, the researcher recommends the implementation of a storytelling-approach comprising the recommendations of the study in order to conduct digital training events with high attentiveness.

Another important practical implication based on the theoretical principles is the AIDA model According to this model, attention funnels need to be built in order to transform attention into interest during the learning process. The expert testimonies confirm the relevance of attention attraction in the first segments of a digital training for sustaining attention during the course of the event.

Conclusion

This work aimed to determine conceptual approaches for digital training events in order to reach a high level of attention and a long attention span of the participants.

It was possible to answer the research questions based on the structured literature research and the expert interviews. The results of the empirical study indicate that the relocation of events to the digital space offers a range of opportunities and risks for organizers, speakers, and participants. These include, for instance, the increased accessibility of digital training events. However, emotions and body language are challenging to convey in the digital space. The findings show that the reduced attention span and the learning environment of the participants are one of the greatest challenges in digital training. In addition, content that works excellently in face-to-face events tends to fail in the digital space. Speakers lose the participant's attention due to the way the content is presented and the way it is designed. Attention is the essential factor in the learning process to understand and memorize content. Ergo, participant's high and long-lasting attention is an indicator for successful digital training events. In this connection, an important point to note is that the host of the event, i.e., the speaker, is essentially responsible for steering the participant's attention. For this purpose, the speaker must not only prepare and rehearse properly, but the speaker must also analyze the relevance of his content and reduce it to the essentials. Content must be presented in an aesthetical and pleasing manner and offer diversity in order to maintain attention. Diversity of stimuli is the central factor in the digital event. Considering that participants in digital training events are susceptible to screen-related and offline distractions, varied stimuli and surprises, as well as participant involvement, must be pursued. This can be done through interaction and activation. Apart from the didactic competencies, the technical environment and the usability for the participant must be assured.

Therefore, didactically, special emphasis must be placed on variety, excitement, and highlights, as well as a shorter duration. Understanding of and adaptation to the target group are required. Content must be reduced and simplified, a mix of different methods and various tools for maintaining communication help participants to learn. From an event conceptual point of view, storytelling in particular could be identified as a central element and success factor. Storytelling helps to convey content in a simple way and ensures attention and participation. Knowledge is thus conveyed on an emotional level.

Lastly, as one Expert stated, "It's the teacher's baby". The success of a digital event lies in the moderator's ability and commitment to manage the participant's attention. In conclusion, however, it is always important to remember that even the most diverse and interactive storytelling-based event will fail if the participant does not show up or other more important off- or online happenings occur. Furthermore, the exit of a digital training event is just one click away compared to face-to-face training events.

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Rewriting of the Indian Curricula: Its Effect on the Spirit of Inquiry and Scientific Temper

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Abstract

The ever-evolving socio-political dynamics of society, right from the early civilizations to the Anthropocene era, have heavily influenced the knowledge base of humans, and consequently, the systems of education as they have existed from time to time. The systems of education have evolved on two major lines firstly, the change in teaching pedagogy, evaluation mechanisms, levels of hierarchy, etc., and secondly, the transformation in components of the syllabi and the overall curriculum. Whereas the first line of evolution is heartily welcome to expand the horizons of academics and evolve the knowledge base of the new-age students, the second line of reform has been very alarming, thus controversial and widely debated. India has lately been subject to tweaking important aspects of the standardized NCERT syllabi under the garb of so-called reform, where significant historical and scientific facts have been taken down from the textbooks. This, exercise is not new to India, as across the years various regimes have carried it out in order to serve their narratives, however, this time especially post-2019, it has become graver and prominent. Accordingly, this paper shall throw light on such tweaks ever since the 1960's to the recent 'rationalizing' of the syllabus. It shall intricately analyze the effect of such educational remodelling on society at large and on social justice in specific, and how it may also lead to India while otherwise gaining dominance, fostering a hub of ignorance in-house for its upcoming generations.

Keywords: Anthropocene Era, Pedagogy, Narratives, Rationalizing, Remodelling

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1. Introduction

India, a land steeped in rich cultural heritage, has a vibrant history of imparting knowledge and education dating back to ancient times. Traditionally the educational system of India was separately reserved for the upper strata of the society and but the societal evolution filled this gap and today this system of education is accessible to all regardless of class, caste or any other factor.

The educational system of India dates back to 5000 BC that was the "*Gurukula*" system. It was based on the model of the "*Guru-Shishya Parampara*" In this system of education the *shishya* (student) would reach out to his *guru* (teacher) for admission and once accepted then the student has to stay their leaving his family and assist the teacher in the household chores and also help in daily activities of survival like cooking etc. and at the same time he would be learning practical aspects of science, mathematics, metaphysics and philosophy, such type of educational system was solely focused on increasing the human value and at the same time making the students learn applying their knowledge to solve the real world problems.

By the 1830 this Gurukula system started to decline with the advent of the British empire, there has been a wave of massive transformation that the country has witnessed over the years regarding its educational system starting from gurukuls then shifting to modern schools highly influenced by the British culture of educational system and as per the basis of Lord McCaulay's dream model for Indian education where Mathematics and Science were give much of the focus and philosophy, ethics, moral values and metaphysics were sidelined.

India's educational realm is presently experiencing a metamorphosis in the aftermath of the COVID-19 pandemic, wherein a conspicuous trend towards the utilization of online learning platforms has emerged across diverse locales. This paradigm shift signifies a departure from conventional pedagogical approaches, heralding an era of digitalized learning solutions. The embracement of online education reflects a profound resilience and adaptability within India's educational fabric, navigating unprecedented disruptions with aplomb. This transition underscores a resolute commitment towards ensuring seamless continuity and ubiquitous access to learning opportunities nationwide. Thus, the adoption of online education heralds a transformative stride towards educational equity and innovation.

Through this paper the researchers tend to analyse how the history has been distorted in the name of Indianization whereas the main agenda is to run a political ideology.

1.1 Present Situation of Indian Education System

As per the 2020 amendments to India's policy of Right to Education Act, for the children between age 3-18 free ad compulsory education is ensured by the central government, presently 26% of the entire Indian population falls within the primary education sector that amounts to 1.39 billion and at the same time 18% of the population falls within secondary and higher educational system that amounts to nearly 500 million.

The present literacy rate as per National Statistical Commission is 77.7% for the year 2017-2018. Kerala, an Indian state has the highest literacy rate of 94% while Bihar has the lowest 61.80%. In India the educational system including schools, colleges, syllabus and other academically related entities are governed by Ministry of Education and Skill Development and Entrepreneurship and its various branches.

2. Echoes of Erudition: A Chronological Odyssey Through Indian Education

Through the epochs of time, it is seen that there has been a rich mosaic of Indian education. From the revered sanctuaries of olden wisdom to the avenues of contemporary ingenuity, this narrative unfurls, etching its legacy with each passing era. Amidst the labyrinth of historical vicissitudes, India's educational journey has confronted diverse trials, yet persistently evolved, sculpted by the harmonious dance of tradition and advancement. Today, it stands as a symbol of unwavering commitment to intellectual exploration and the opulence of cultural heritage.

2.1 Guru Shishya Parampara

The roots of the Indian education system can be traced back to ancient times which started with the existence of *Ashrams* and *Gurukuls.* Those centres of learning helped in developing a perfect bond between teachers and students where the delivery of the knowledge was mainly orally and then that knowledge was made to apply in real life to say that this system od education provided a holistic development where the focus was on subjects like mathematics, philosophy, astronomy, linguistics and many more.

2.2 Buddhist and Jain Influence

The influences of the Buddhist and Jain had very significant role in shaping India's history, when Buddhism and Jainism spread there was establishment of the Monastic centres that was seen as the hub of spiritual learning offering teachings in philosophy spirituality and literatures and it was only at that time when he two greatest education institutions of India was established that is Nalanda and Taxila where sent ripples across the world making India the world leaders in advanced learnings.

2.3 Medieval Change and Revival in History of Education in India

This era was seen when India was invaded and that seriously turned around the educational system and the culture that was being existing in India, but at the same time India witnessed arrivals of greatest Islamic scholars like Mirza Mazhar Jan-i-Janan, Ibn Sina and many more that ushered the integration the Persian and the Arabic teaching that glorified the educational culture that was existing in India. This period brought in the concept of *mardarsas* , credits to be given to Mughals and the preservation of the Islamic knowledge was held by the Mughals.

2.4 Colonial Influence and Modernization in History of Education in India

Due to the decline of the Mughal empire and the advent of British colonies this was the major transformative phase in the educational history of India which to the introduction of a formal educational system and terminology *syllabus* was coined this time. This was the period that also witnessed huge clashes between the ideology of the traditional Indian education system and Western ideas and here the former was marginalized. Under the sway of British educational paradigms, India's academic landscape was shaped, aligning with Lord McCaulay's vision. This model prioritized Mathematics and Science, relegating philosophy, ethics, moral teachings, and metaphysics to the sidelines.

2.5 Post Independence Progress in Histroy of Education in India

After the independence in 1947, there was a significant turnaround in the Indian educational system. Policies were framed accordingly for providing access to education to all and the focus was given to primary education. During this period there was the establishment of leading educational institutes like Indian Institute of Technology, All India Institute of Medical Sciences etc.

3. Pinnacle Pedagogical Titans: Leading School Education Organizations in India

3.1 Ministry of Education (MoE)

It is a ministry under the government of India which overlooks the entire education system of the schools, it has two wings under it namely Department of School Education and Literacy, which deals with the education related entities of primary, secondary and higher secondary education, adult education and the literacy and another is the Department of Higher education that deals with university level education, technical educations and the central government scholarships.

This ministry has been existing since 1947, Late Rajiv Gandhi, the former Prime Minister of India changed the name from MoE to Ministry of Human Resource and Development (MHRD), while the NDA government in 2020 made its name again from MHRD to MoE. Currently the structure of the department is as that it is divided into eight bureaus which overhauls the entire look of country educational system.

3.2 Indian Certificate of Secondary Education (ICSE)

The examination administered ensures the fair representation of affiliated schools across various states or territories. The UK's National Admissions and Accreditation agency, UCAS (Universities and College Admission Services), acknowledges ICSE (Indian Certificate of Secondary Education) on par with the Higher School qualification of the University of Scotland, according to available citations.

ICSE is renowned for its extensive curriculum, with a primary emphasis on the English language and a wide array of subjects spanning language, arts, commerce, and science. Instruction in ICSE is exclusively conducted in English, enabling students to develop a strong command of the language and literature starting from kindergarten. This proficiency aids students in mastering concise English writing, facilitating success in competitive exams as well as language assessments like IELTS, TOEFL, among others.

3.3 Central Board of Secondary Education (CBSE)

The Central Board of Secondary Education (CBSE) is a governmental body overseeing the education system in India, both in public and private institutions. It was founded in 1929 with the aim of fostering collaboration among states and promoting uniformity in secondary education standards. With over 27,000 schools across India and 240 schools in 28 foreign nations under its affiliation, CBSE ensures adherence to the National Council of Educational Research and Training (NCERT) curriculum, particularly from grades 9 to 12. Nidhi Chhibber, an IAS officer, currently serves as the Chairperson of CBSE.

3.4 The Quintessential Companion: N.C.E.R.T - A Cornerstone of Education in Indian Schools

National Council for Education and Research (N.C.E.R.T) was setup by the government of India in 1961 as an autonomous organization whose main function are to advise and assist the formulation and the implementation of policies in the field of education including the National Curriculum Framework. It is also the literary, scientific and charitable societies under the society registrations act.

The structure of the N.C.E.R.T includes a 19-member committee includes various personalities from different fields like Infosys Chairperson Sudha Murthy and Singer Shankar Mahadevan to name a few.

Since the books are the primary, secondary and higher secondary school students are also published by N.C.E.R.T and the content inside it also is decided by the body which ultimately is decided by the central government. It becomes very important that this body is free from any political vendetta and is not influenced by any *ideology* instead, it presents an accurate portrayal of history, offers precise insights into the present, and paints a pragmatic vision of the future.

Post 2014 this has not been the scenario, heavy and big changes have been made by the government which is directly related to "distorting the history" and not showing the future generations the correct part of the history rather making them fall for the trap of their ideology and political vendetta which is setting a dangerous trend.

4. The Furore

The following are some of the leading newspaper clippings that shows what has happened in the country in the name of imposing political ideology/vendetta via changing syllabus.
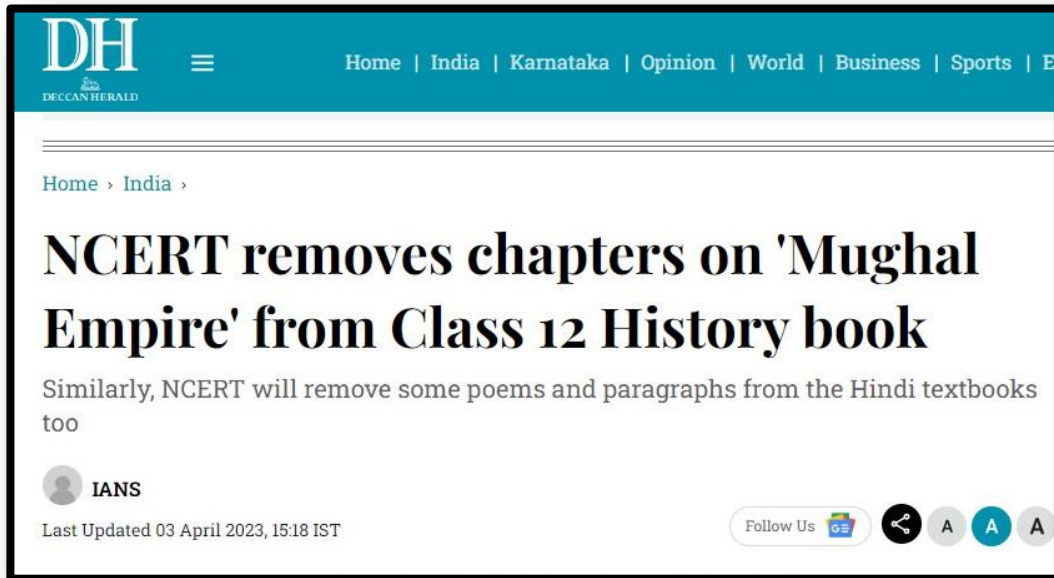

Figure1. The Print criticising the changes.

Figure 2. The Deccan Herald talking about the removal of key chapter from N.C.E.R.T

Figure 3. The Print talking about how N.C.E.R.T books are being rationalized.

5. Chronicles of Transformation: The Epochs of Political Retribution: A Gist

The following represent a gist in the form of pictorial representation of the tweaks done by government and N.C.E.R.T.

Post 2014: Three revisions/reviews in textbooks. The latest comes before the fifth proposed revision of the National Education Framework.

2017: NCERT updated 182 textbooks. Topics like Swachh Bharat, Digital India, 'Beti Bachao Beti Padhao', demonetisation and GST added to books

2018-19: Contents were added in history textbooks regarding knowledge, traditions and practices of India including portions on Vikram Samvat (the Hindu calendar), metallurgy, Shivaji Maharaj, Paika revolt, Subhash Chandra Bose, Swami Vivekananda, Ranjeet Singh, Rani Avantibai Lodhi and Sri Aurobindo Ghose was also added. A chapter on Maharana Pratap was also added to Class 7 syllabus.

2019: NCERT makes key deletions, particularly in history textbooks. A chapter on violent caste conflicts dropped from Class 9 textbooks. Along with chapters on the colonial history of cricket and a chapter titled 'Peasants and Farmers'. Chapters on nationalism in Indo-China, on the rise of cities, and on 'novels, society and history, were dropped from Class 10 NCERT books.

2022: Atal Bihari Vajpayee's statements against communal violence in Gujarat dropped, chronology of Godhra violence cut out, quotes by Nehru, Ambedkar dropped, history of Naxalite movements cut short. The discussion box on-farm laws dropped. Discussion on history of caste oppression, justifications of caste in Vedas, dangers of communal politics cut short. Portions relating to Mughal rule cut short and details about courts and administrative systems were omitted. History of other Islamic rulers including Mamluks, Khaljis, Delhi Sultanate cut short by various pages.

2022: CBSE drops poems of Faiz Ahmed Faiz from chapter on 'Religion, Communalism and Politics – Communalism, Secular State' from NCERT Class 10 Pol Science books. Political cartoons about communal politics, a chapter on 'Central Islamic Lands' and impact of globalization on agriculture were dropped from other senior secondary textbooks.

While the government has claimed that the 'rationalisation' process is meant to reduce the workload of students, critics claim that the cuts have majorly been made in the social science books. While authorities have said the deletions have been made based on repetitions, critics claim that the move is politically motivated.

Figure 4. The India Today showing the timeline of changes.

6. Governmental and Ncert Alterations: Manipulating History to Enforce Political Agendas and Ideology

In the ever-evolving landscape of education, the winds of change are sweeping through curricula worldwide, ushering in a new era of drastic changes in the Indian curricula. In the dubious guise of educational evolution, the purported changes in curricula reveal a concerning agenda that extends beyond the realm of genuine academic improvement. The alterations, ostensibly aimed at preparing students for the challenges of the coming age, are

increasingly reminiscent of calculated political maneuvers rather than a sincere commitment to fostering intellectual growth.

A glaring issue in the so-called transformation is the deceptive emphasis on holistic development. While advocates argue for a more comprehensive approach, one cannot help but question the ulterior motives behind this shift. Is it truly about nurturing well-rounded individuals, or is it a veiled attempt to infiltrate ideological agendas into the education system? The nebulous nature of these changes raises skepticism about the sincerity of those steering the educational ship.

The pervasive integration of technology appears more as a surreptitious means of pushing a tech-centric narrative rather than genuinely preparing students for a technologically driven world. The rush to introduce coding and digital literacy at an early age seems less about empowering students and more about creating a generation that is adept at conforming to a predetermined technological landscape. The subtle promotion of specific technological tools and platforms under the guise of educational progress raises concerns about the underlying political motivations steering these decisions.

Furthermore, the purported emphasis on creativity and critical thinking feels disingenuous when scrutinized under the shadow of political influence. Are these changes truly geared towards cultivating independent thought, or are they designed to mold young minds in alignment with specific political ideologies? The lack of transparency in the decision-making processes behind these curriculum alterations leaves room for skepticism regarding the true intentions of those orchestrating the changes.

The ostensibly commendable focus on inclusivity and diversity also warrants scrutiny. Is the inclusion of diverse perspectives genuinely aimed at fostering understanding and appreciation, or is it a thinly veiled attempt to manipulate historical narratives for political gains? The danger lies in the potential weaponization of education as a tool for political propaganda, subtly shaping the minds of the next generation to conform to a particular political narrative.

6.1 Start of Changes in Ncert

With the advent of the NDA government post-2014, a discernible paradigm shift unfolded in the educational realm, particularly within the pages of textbooks that underwent a tripartite overhaul. The meticulous revision of 182 textbooks under the aegis of NCERT bore the imprint of a distinct ideological leaning, characterized by a conspicuous endeavor toward what critics decry as "saffronization" in 2017.

This revision, while ostensibly aimed at contemporizing educational content, manifested a selective amnesia, particularly concerning historical narratives and socio-political nuances. A disconcerting omission surfaced as the topic detailing the sagacious efforts of the father of the nation, Mahatma Gandhi, in fostering unity between the Hindu and Muslim communities found itself expurgated. This deliberate truncation subtly underscored a reconfiguration of historical events through a particular ideological lens.

Equally disconcerting was the expunging of references to the RSS ban and the intricate tapestry of events surrounding the Gujarat riots. This conspicuous absence raises questions about the revision's true intent — a veiled attempt, perhaps, to shape a narrative devoid of

certain historical complexities or controversies, thereby portraying a sanitized version of India's socio-political landscape.

Furthermore, a discerning eye cannot ignore the deliberate erasure of major social movements and protests that, historically speaking, catalyzed India's transformative journey into its present form. The conspicuous omission of these seminal moments in the educational narrative prompts critical reflection on the motivations steering such editorial decisions.

In essence, the extensive revisions to educational textbooks post-2014, ostensibly to bring them in line with contemporary discourse, bear the marks of a nuanced and deliberate sculpting of historical and socio-political narratives. This calculated endeavor, often criticized as a form of ideological engineering or "saffronization," prompts a discerning inquiry into the implications of shaping educational content through a particular political and ideological prism. As the pages of textbooks undergo successive revisions, it remains imperative to safeguard the integrity of historical truths and diverse perspectives, ensuring that education remains a beacon of enlightenment rather than a canvas for ideological impositions.

6.2 The Tweaks Done by Ncert

In 2018-19, India's knowledge in varied field along with different traditions and practices were glorified including Vikram Samvat, metallurgy, Shivaji Maharaj, Paika revolt, Subhash Chandra Bose, Swami Vivekananda, and others. The deliberate removal of important chapters from history textbooks is a concerning trend that goes beyond normal scholarly review. This omission of narratives surrounding violent caste conflicts, the colonial history of cricket, the socio-economic dynamics encapsulated in 'Peasants and Farmers,' the burgeoning nationalism in Indo-China, the transformative saga of urbanization in the rise of cities, and the intricate interplay of 'novels, society, and history' embodies a calculated assault on the multifaceted and rich historical discourse.

The annals of 2022 witnessed a disturbing sequel to this narrative manipulation, marked by the deletion of crucial facets that form the bedrock of India's socio-political tapestry. Among the expunged elements are the insightful expressions against communal violence articulated by Atal Bihari Vajpayee, the profound quotes attributed to luminary figures like Nehru and Ambedkar, the chronicles of Naxalite movements that left an indelible mark on the nation's landscape, and the excision of the painful historical narrative delineating the oppression embedded in the caste structure.

This meticulous sculpting of historical content underscores a concerning narrative engineering, fostering an environment where certain perspectives are subjugated or expunged altogether. The erasure of these chapters not only alters the educational landscape but also raises profound concerns about the preservation of a comprehensive historical consciousness. The deliberate omissions seem to weave a story that threatens to dilute the vibrancy and complexity inherent in India's multifaceted history. As the ink dries on these redacted pages, an imperative for educators and scholars emerges – to champion the integrity of historical truths, safeguarding the narrative from the perils of selective editing and ideological imposition.

6.3 The Act of 'Rationalization' – 2023

The profound disruptions ushered in by the COVID-19 pandemic cast an unprecedented shadow upon the academic realm, compelling a collective pause and bequeathing formidable challenges to the educational landscape. In response to this transformative juncture, an ambitious policy christened NEP-2020 emerged, seeking to recalibrate the contours of education strategy.

Underneath the surface of NEP-2020, there was a significant adjustment happening in the way we approach education. This shift took the shape of a National Curriculum Framework (NCF) for Secondary Education. This recalibration assumes the guise of a subtle tweaking of the syllabus embedded in the standard NCERT books, omnipresent across the scholastic circles of India. Ostensibly christened as 'rationalization,' this process endeavors to alleviate the burdens borne by students, affording them a more enriching comprehension of fundamental concepts and an elevated learning experience.

Yet, a discerning scrutiny of this ostensibly benevolent process unravels a reality incongruent with its professed objectives. While draped in the rhetoric of easing the academic strain on students and fortifying their foundational knowledge, the meticulous alterations within the syllabus paint a different narrative. The intricacies of this recalibration, if carefully observed, reveal a nuanced transformation that extends beyond mere rationalization, prompting contemplation on the true motivations steering this ostensibly benevolent educational reform. As the pendulum of educational policy swings, the discerning eye must pierce through the veil of rhetoric to fathom the authentic repercussions of this educational recalibration on the students and the broader academic landscape.

6.4 Details of Rationalized Contents

Chapter named, Kings and Chronicles; the Mughal Courts (C. 16th and 17th C.) has been removed completely from the book "Themes in World History" of Class 11 NCERT. Additionally, Central Islamic Lands, Confrontation of Culture, and Industrial Revolution has been ***removed completely*** from the book "Themes in World History" of Class 11. Substantial parts of Chapters named The Delhi Sultans and The Mughal Empires has been removed from the book "Our Past-II" of Class 7. Another chapter, "Social Institutions: Continuity and change, first twelve lines in the second paragraph, "Other interventions…end of colonial period" leading to omission of history relating to even colonial past. This furthers to the historical perspective loss, cultural disconnect, distorted worldview and impact on critical thinking.

Chapter named Era of One-Party dominance has been removed from the book "Politics in India since Independence" of Class 12th. This not only defeats the entire purpose of historical knowledge but also creates a gap of political awareness, provides incomplete political education and also impacts civic engagement. 'Rise of popular movements' has been removed completely from the book "Politics in India since Independence". Similarly, "Democracy and diversity in Indian Politics" where the mention of Gujarat riots was there was omitted from Class 12th NCERT. This directly undermines the movements and deprives the students to analyze the past movements and how different courses of movements impacted the current state of society in India today. Cogently, this also raises questions on how democratic the nation remains by removing such pertinent chapters of history just to align with the political narratives of the reigning party.

Moreover, as the controversy goes, the line "We begin…Secularization" has been removed, another brazen attempt at eliminates the secular constitutional ideals from the curriculum, hence directly trying to channelize the society in this direction.

The tweaks are not confined to the national level history, rather changes in chapters relating international history has also been omitted. 'Cold war and US hegemony' has been completely removed. This showcases a clear political links and the deliberate efforts to white-wash the history altogether.

Finally, the tweaks aren't limited to social, cultural and historical. Even the economics was not left untouched. Chapter named poverty has been removed completely from the book "Indian Economic Development" of Class 11. This clearly shows an attempt to veil the impoverished state of the nation. Poverty being one of the major factors undermining the development, if removed indicates to a definite attempt at blindfolding the students and in turn the society at large from such an enormous indicator of the society.

The removal of these chapters and content from NCERT textbooks raises concerns about the potential manipulation of educational material for political purposes. A comprehensive and unbiased education system is vital for nurturing informed citizens capable of critical thinking. These alterations risk distorting the historical narrative, disconnecting students from crucial aspects of their cultural heritage, and limiting their understanding of complex socio-economic realities. It is essential to safeguard the integrity of the education system and ensure that students receive a well-rounded and impartial education that prepares them for active and informed citizenship.

In conclusion, the changes in educational curricula, touted as progressive and forward-thinking, raise alarm bells when viewed through a critical lens. The veneer of academic improvement appears to conceal a more insidious agenda, with political motivations lurking beneath the surface. As stakeholders in education, it is imperative to question the authenticity of these changes and remain vigilant against the potential misuse of the educational system for political propagandas rather than genuine intellectual advancement.

7. Distorting Syllabi: A Political Vendetta

In the hallowed halls of academia, where knowledge is expected to be impartial and comprehensive, a disconcerting trend is emerging. The careful observer can discern the insidious shaping of educational syllabi to align with the narratives of political influences within the government. This deliberate molding raises profound concerns about the preservation of historical accuracy and the impact it may have on the analytical development of upcoming generations.

At first glance, it becomes evident that critical pieces of information are being brazenly omitted from educational curricula. This omission is not a benign oversight but a calculated move that directly influences the mindset of young minds. The deliberate exclusion of certain historical events, ideas, and acts raises questions about the transparency and integrity of the educational system. The essence of education lies in its commitment to presenting an unbiased and comprehensive view of history, allowing students to develop a nuanced understanding of the world. When this commitment is compromised to cater to political ideologies, it becomes a dangerous pathway to a form of intellectual dictatorship. The act of

selectively curating information to suit a particular narrative undermines the very foundation of education as a tool for critical thinking and independent analysis.

Historical information, whether positive or negative, must be preserved intact, irrespective of its political significance. The annals of history serve as a repository of lessons, allowing societies to learn from both triumphs and mistakes. When certain aspects are deliberately omitted, distorted, or erased, it not only skews the narrative but also risks repeating the errors of the past.

One of the primary dangers in this trend is the potential suppression of dissenting voices and alternative perspectives. Education should foster an environment where students are exposed to a diverse range of ideas, encouraging them to think critically and form their own opinions. However, when educational materials are curated to eliminate dissent or inconvenient truths, it stifles intellectual growth and promotes a narrow worldview.

The implications of such manipulation extend beyond the classroom. A society that is selectively educated is susceptible to manipulation, as individuals may lack the tools to critically evaluate information and discern truth from propaganda. In the long run, this poses a severe threat to the foundations of democracy, which relies on an informed and engaged citizenry.

It is crucial to recognize the importance of historical accuracy and resist the temptation to rewrite or sanitize the past for political expediency. Embracing the complexity of history, with all its nuances and contradictions, is essential for fostering a society that values intellectual honesty and critical thinking.

In conclusion, the current trend of molding educational syllabi to align with political narratives is a cause for deep concern. It jeopardizes the foundational principles of education, threatens the development of critical thinking skills in future generations, and poses a significant risk to the fabric of democratic societies. Preserving the integrity of historical information is not just an academic concern but a safeguard against the encroachment of intellectual authoritarianism. It is imperative to uphold the sanctity of education as a beacon of truth and enlightenment, free from the shadows of political manipulation.

Conclusion

In conclusion, the deliberate alterations and distortions in the Indian educational curricula, ostensibly under the banner of reform and rationalization, reveal a disconcerting trend that goes beyond genuine academic improvement. The historical and ideological manipulations observed in the syllabi, particularly since the post-2019 period, raise serious concerns about the integrity of the education system and its potential impact on the spirit of inquiry and scientific temper. The evolution of the Indian education system, from ancient Gurukula traditions to the present, has witnessed significant transformations. However, the recent tweaks to the National Council of Educational Research and Training (NCERT) syllabi, marked by omissions of crucial historical events and socio-political nuances, present a threat to the spirit of inquiry. By selectively curating information to align with political ideologies, the education system risks becoming a tool for intellectual manipulation rather than fostering critical thinking.

The removal of chapters related to significant historical and political moments, as well as the deliberate erasure of diverse perspectives, raises red flags about the potential suppression of dissent and the promotion of a narrow worldview. Such alterations not only compromise the educational landscape but also pose a serious threat to the foundations of democracy by hindering the development of an informed and engaged citizenry.

In essence, the tampering of educational content for political purposes undermines the very essence of education as a pathway to enlightenment and critical understanding. As we navigate through these challenging times, it becomes imperative to uphold the sanctity of historical accuracy, resist the rewriting of the past for political expediency, and ensure that education remains a beacon of truth, fostering the spirit of inquiry and scientific temper essential for the progress of society.

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Retrenchment in Higher Education

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Abstract

The covid19 pandemic along with changing attitudes has forced many rural public universities to retrench faculty and staff. As enrollments decrease, institutions of higher learning must adapt and change to the changing demographics. Retrenchment is only one alternative to dealing with declining enrollment. Retrenchment needs to be balanced with long-term strategic considerations. As the retrenchment process is conducted, there is a need to review several alternative actions and decisions. Other cost reduction considerations include subsidies to athletics; repair/replacement; and technological infrastructure. Formal and informal communications to faculty, staff, students, and community must be maintained and possibly expanded. Most importantly, the continued education of the students should be completed in as normal a manner as possible.

Introduction

The covid19 pandemic along with changing attitudes has forced many rural public universities to retrench faculty and staff. Salehi, et al, (2023) found that the COVID-19 pandemic forced many higher education institutions to swiftly shift to immediate online instruction (ERI) with little preparation. Fortunately for Bemidji State University, the Accountancy program was fully online before the COVID-19 pandemic.

Matczak, et al, (2023) report students tend to discard online education as they see significant limitations of class administration; online education can result in shift of education related to revenue-production; and the change to the online system influenced an increase in social separation and learning transformations. Bughrara, et al, (2023) determined that several learning adjustments occurred as a result of the COVID-19 pandemic, such as video conferencing tools, that can be exploited in a post-pandemic world.

As enrollments decrease, rural institutions of higher learning must adapt and change to the changing demographics. Collier (2023) focused on the instructor experiences. Hassan (2023) chronicled the anxiety of online students. Kharel, et al, (2022), studied the preparing instruction for public helpers to fight COVID 19. Wu, et al, discussed how higher education may have over-expanded during weakening enrollments. Naidoo, V., (2024) attributed declining foreign enrollment in higher education in the U.S. to the COVID-19 pandemic.

Can, et al, (2020) were compelled to focus their thought on college students from rural areas. Furthermore, Cain, et al, (2020) advocate student affairs offices need to consider the uniqueness and requirements of rural students. The diverse social circumstances of rural students need to be recognized, Cain, et al, 2020. With focused consideration on rural students, Cain, et al, (2020) propose the declining enrollment rates within higher education may be mitigated increasing recruitment efforts on rural students.

Retrenchment

According to du (2023), one of the disastrous outcomes of the COVID-19 pandemic was laid-off employees. Clark (2023), discusses the relationship among retrenchment, the courts, and occupation law. Retrenchment results in decreased growth and adaptation related to unemployment, accordinng to Social Policy & Administration, (2022). Retrenchment are key shocks to the jobs of many rural households; and the search fop alternative employment opportunities can be ineffective, Rantso and Ralitjeleng-Mahlelebe (2023). Retrenchment is related to substantive equality by Palmer (2021).

In seminal educational retrenchment, Hawkins (1991) finds the loss of previous educational gains. According to Wong (1998), educational retrenchment adversely effects research, and there is difficulty in relating principles to practice. TES, Magazine (2004) states quality is the foremost loss of reductions caused by retrenchment of instructors and staff in higher education. Duffy, M. (2005) argues retrenchment versus reform in the U.S.

Retrenchment needs to be balanced with long-term strategic considerations. Colley (2023) discusses strategic retrenchment from a global perspective. Strategic retrenchment requires perspective, balance, and policies, according to Simon (2016). Brands (2015) proposes intermittent discriminating retrenchment can be effective in safeguarding the long-term viability of retrenchment strategy. Putra (2023). concludes that retrenchment must align with

prevailing circumstances and strategy. Haynes (2015) argues the degree of an institution's retrenchment policy needs to be balanced with strategic importance of the region and to the institution's declining enrollment in determining when and how retrenchment will be implemented. Grogan, et al, (2020) discuss how strategy should enhance responsibility related to retrenchment.

Alternatives to Retrenchment

Retrenchment is only one alternative to dealing with declining enrollment. Chien-Tsung Lu, et al, (2023) discloses the realistic strategies of flexibility presented during the pandemic time, which includes survival strategies beyond COVID-19 including student protection, faculty and staff retrenchment, innovation, and long-term strategic plans. Neff (2019) that social media, artificial intelligence, and alumni recommendations can be used to reverse stave off declining enrollments in higher education. Hsu, et al, (2024) advocate the development of career parts for students to overcome declining enrollments.

As the retrenchment process is conducted, there is a need to review several alternative actions and decisions. Wolf (2020) recognizes that retrenchment is not a "one-size-fits-all" massive strategy; there are degrees, ranging from faculty and staff retrenchment, redistribution of resource, and cutting back and/or complete elimination of specific programs. Stansfield, et al, (2018) advocate the necessity of having a post-retrenchment strategy to ensure future growth and success. The attempt to deliver fiscal stability through retrenchment must not reduce critical assets and capabilities, according to Collington, R. (2022). Wright (2020) goes so far as to characterize retrenchment as "folly," if not implemented with proper strategy.

Other cost reduction considerations include subsidies to athletics; repair/replacement; and technological infrastructure. Cheslock and Knight (2015) discuss conflicting revenues, surging expenditures, and subsequent subsidies as being unbalanced and that increasing financial strain of intercollegiate athletics is placing on higher education and students. Delaney and Kearney (2022) found significant declines in direct subsidies and student fees, but no significant change for indirect subsidies. Hoffer and Pincin (2016) demonstrate that additional athletic revenue increases expenditures for coaches 7.5 times more than direct expenditures for student-athletes.

Sargeant and Berkowitz (2014) illustrations that the Rutgers athletics department received nearly $47 million in subsidies from the university's allocations fund to make up for a shortfall in the approximately $79 million athletics budget during the 2012-13 season; it's an increase of about 68% from subsidy the athletics department received in 2012. According to Gillum, et al, (2010) student fees and university subsidies are bolstering athletic program expenses at the nation's top sports colleges; these subsidies to college athletics have reached that level amid a continuing crisis in higher education funding.

In addition, Gillum, et al, (2010) at some of the schools where athletics is most heavily subsidized, faculty salaries have descended, state-funded financial aid is decreasing significantly, and students are facing significant tuition and fee increases. According to Blumenstyk (2014), of all higher education expenditures (research, teaching, administrators' salaries, luxury facilities), expenses are increasing rapidest is in intercollegiate athletic programs. Berkowitz, et al, (2013) find at a time of severe funds in higher education, athletics departments are continuing to receive subsidies in the form of student fees, school or state support.

Alternatives and/or combinations with retrenchment include repairs and/or replacements and technological infrastructure. The Executive (2002) discusses both a plan of action to save jobs from retrenchment and how to finance repair of school buildings. Wolf, A. (2006) reports on discretionary reductions due to retrenchment. Lang (2007) states that industry is marred by retrenchment and regrowth and that these are reflected in changes to technology.

Communications

Retrenchment requires both formal and informal communications to faculty, staff, students, and community. Not only must the retrenchment communication be maintained regularly, but the communication may also possibly need to be expanded. Slagle, et al, (2021) examined a public university's experiences managing the Covid-19 pandemic crisis while simultaneously navigating financial challenges that had been building over time; they found that the university used instructing and advising information within its messages from its top administrator but fell short of incorporating empathy for its stakeholders in its initial responses.

Stansfield, et al, (2018) suggest that communications across various types of retrenchment. In Focus (2006) reported on academic labor in U.S. higher education, including retrenchment and restructuring and communications: they found increased tuition, fees, academic workload, and by reducing the compensation for faculty staff.

Baker, et al, (2001) comment on the value of communication with employees during organizational retrenchment: specifically related to higher education financial performance and employee entitlements.

Summary and Conclusion

Formal and informal communications to faculty, staff, students, and community must be maintained and possibly expanded. Retrenchment needs to be balanced with long-term strategic considerations. Most importantly, the continued education of the students should be completed in as normal a manner as possible.

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Game Based Learning for Raising Environmental Consciousness

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Abstract
This paper presents the results of the European Project GENTLY. Within the framework of the project an educational board game with a complementary digital version has been collaboratively designed, developed and tested with young people across Europe. A multidisciplinary approach with experts from seven European countries has been followed with the goal to raise young people's knowledge and awareness of climate change issues and green deal practices. The target group were young people, including a dedicated concept for addressing the visually impaired. Game-based learning (GBL) can empower young people, make them aware of environmental threats and train them on practices for energy efficiency. This paper presents the methodology followed, the results achieved and the lessons learned from the testing and piloting of the developed environmental game. The feedback received was encouraging and in their majority the participating persons recognised that awareness on the environmental issues and motivation to act against the adverse effects of climate change is significantly increased through the game.

Keywords: Gamification, Game-Based Learning, Serious Games, Environment, Sustainability, Climate Change

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Introduction

The project GENTLY has started with the goal to raise awareness especially from the young generation around the environmental deterioration and the climate change. The European Green Deal, which has been formulated from the European Commission (2019) has set als objective towards the first climate-neutral landmass by 2050. Furthermore GENTLY focuses on three out of seventeen sustainability goals that have been defined by the United Nations (2015) namely goal number 4 'Education', goal number 12 'Sustainable consumption and Production patterns' and goal number 13 'Taking urgent action to compact climate change and its impacts'.

The young generation will be affected the most by the next decades from the consequences of environmental deterioration. That includes several environmental challenges to face such as the overpopulation which increased the demand on diminishing resources,, the accumulation of waste which trigger health risks for the humans, the ocean and air pollution which destroys ecosystems, the global warming with disastrous consequences for our planet and the loss of biodiversity which can potentially lead to a breakdown of our ecosystem.

The current research focused on bringing young people closer to the problems, statistical data and possible adverse measures for understanding all these challenges and taking actions in the future to adapt and encounter all the adverse effects. The method chosen is based on game based learning , as it is advocated as a non-formal education method which can simplify complicated contents, enhance retention of knowledge and motivate individuals to act based on their knowledge. Sousa et al. (2023) by making a systematic review of board games report on their huge potential both on psychological and cognitive level by supporting individuals in the learning process. Games for raising the level of knowledge in all educational levels are reported increasingly in the literature, where also the positive effects of using them are highlighted. Kurisu et al. (2021) report on the development and testing of board games with university students in Japan while in northern Taiwan Liu and Chen (2013) reported positive effects on learning with card games at the 5th grade of elementary school.

GENTLY has worked on the concept, development and pilot testing on a board game for the youth with the aim to raise their environmental awareness. Special focus has been also placed on how to adapt it for the visually impaired so as to make it accessible to as much as possible young people.

Methodology

Our efforts have been started by conducting an initial online survey for reaching out to young people in European countries.The designed questionnaires have been delivered to all seven countries of the participating partners (Germany, Lithuania, Spain, Hungary, Greece and Cyprus) and were addressed to young people around the following topics:
- knowledge and awareness of young people on environmental issues,
- how environmental pollution impacts their life locally, nationally, and in the international level,
- how they relate to climate change in different contexts,
- how to best engage and participate in actions to tackle this problem locally and internationally,
- how they relate to green deal practices,
- how they can use the EU practices for maximizing the energy efficiency,

- the role of youth education and of different educational means in tackling environmental pollution.

Scope of the survey was to create an image of the knowledge of the youth around environmental issues and policies, use the results as an input for the game and also tackle their expectations and needs. We have designed 3 questionnaires targeted to young people, young workers and young people with visual impairments. All of them have been translated into the native language of the seven countries (Germany, Lithuania, Hungary, Spain, Romania, Greece and Cyprus) where they have been delivered. Data has been collected anonymously.

Mavroudi et al. (2022) by reporting the effect that card games can have conclude that they can significantly foster constructive discussions and improve awareness among the persons playing. As the main scope of the GENTLY project was to inform and educate, the selected format has been decided to be a game with informative cards. The content of the cards was around environmental issues and problems faced in Europe.

Figure 1: Board Game

After the first research phase the game itself has been designed in a collaborative way with all partners and following a participatory approach. Ampatzidou and Gugerell (2019) consider participatory approaches suitable for lowering the risk of games failing due to blind spots and misinterpretations by the game designers. Mildner and Mueller (2016) show four different ways in which stakeholders can be involved in the game design process (1) as users, (2) as testers, (3) as informants, and (4) as design partners fully incorporated in a co-design process. In our case young people have been invited to use and play the game as testers giving feedback on how it can be improved. The same applied by testing the adapted form of the game with visually impaired people, where a school of blinds and an association of blinds has been contacted and invited in a special presentation event in order to provide useful suggestions. The final form that the game has taken is depicted in Figure 1.

The pawns developed for the game have a distinguished shape so that they can be even used by visually impaired persons. The material used is recyclable in accordance with the scope of the project. Pawns and dice used are presented in Figure 2.

Figure 2: Game Pawns

The game has been produced in three different formats: as an analogue board game, a digital version which can be played on the computer and a special version adapted for the visually impaired. The representation of countries within the project team in all corners of Europe facilitated the selection of relevant topics that are actual and of interest for each country.

The cards developed reflect environmental problems as well as green practices at the seven respective countries from where the project's partners were coming . They give information on how environmental pollution impacts everyday life on a local and national level, how they relate to climate change in different contexts, present actions and solutions to tackle the problem locally and internationally and relate to green deal practices. Young people from the seven participating countries have tested the game and given their feedback so as to revise and take into consideration suggestions on the design, implementation and rules. The game and its rules has been translated from english into spanish, lithuanian, romanian, greek, hungarian and german in order to reach as many young people as possible locally.

Digital Environmental Game

For transfering the game on its digital twin we selected to work with UNITY. Unity is a cross-platform game engine supporting a variety of platforms and giving the possibility to users to create both 2D and 3D environments.

The game created is a multiplayer game, allowing up to 4 persons to play simultaneously. Users after downloading and installing the game on their computer enter a virtual space where they can play it, applying the developed rules and playing with the cards as they are at their analogue version. It is available for Windows, Apple and Linux operating systems.

Impressions both from the virtual space and the game itself are given at Figures 3 and 4.

Figure 3: Virtual space for playing the Game

Figure 4: Digital GENTLY game

Accessibility and Inclusion for the Visually Impaired

Adapting the game for the needs of the visually impaired has been one of our priorities as we believe that inclusion and accessibility is important in order to include as many as possible. Physical game accessibility has been a research issue in the last years by many researchers. Heron et al. (2018) give a distinctive analysis on their eighteen month project concerning several so-called "hobbyist" board games and on how they can be adapted to be accessible for different kinds of impairments. Adaptations according to the respective impairment can widen the target audience of a board game and make them enjoyable also from people with impairments. A more in depth analysis targeted specifically to visually impaired persons is conducted from the Karolinska Royal Institute of Technology from Blomqvist and Jakabovivs (2023).

For making the game satisfactory for the needs of the visually impaired we have taken into consideration both the recommendations of these studies as well as from a school of blinds

and a blind association, which have been contacted. Suggestions that have been made were implemented to their big extent, the game was presented and subsequently received positive feedback. The needed adaptations that have to be made were the following:

A. Clear forms at the shape of the pawns. Game components need to have distinct shapes, textures and sizes to make them easily to identify by touch. Concerning the pawns it has been decided from the beginning of the project to give shapes that are clearly identifiable even by blinds. The material used to produce them was according to the scope of the project recyclable.

B. A larger, high contrast dice has been used with clear, tactile markings.

Figure 5: Tactile Dices

C. As the players need to be as much as possible autonomous by playing, it is needed to incorporate Braille on cards, game boards, and other written materials, such as the rules of the game. .Important details are needed to be conveyed through tactile information such as embossed symbols or textures. In our case both cards and rules were printed in Braille in an adapted suitable size.
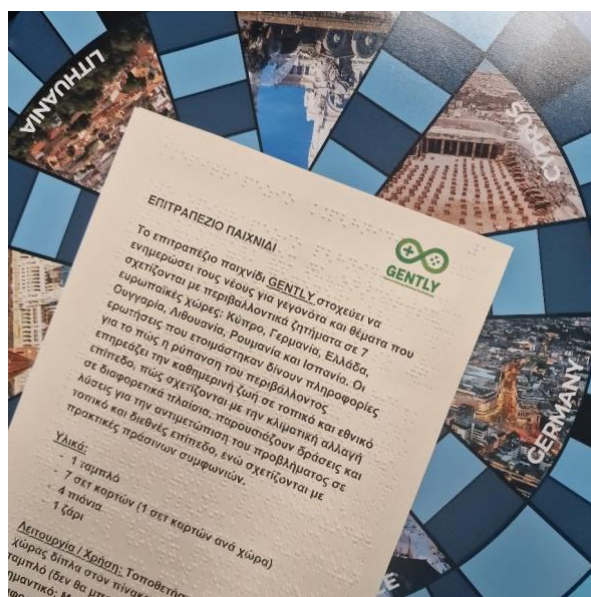
Figure 6: The rules of the game printed also in Braille

The game was tested with teachers of a school for visually impaired, facilitators, students, and guests. According to the feedback received it was playable and easy to understand and play with. The interactions were smooth and participants enjoyed both the content and insights it offered in relation to environmental challenges and climate change.

Lessons Learnt

By developing the game we have followed the principles of iterative game design and a participatory approach by involving users in order to make it more enjoyable and friendly to young people. The improvements made were related to the rules, time needed to accomplish a successful game round, the design of pawns, dice and cards especially in respect to inclusion and accessibility for visually impaired.

Playtesting at the early stages of developing the game from an initial small group of test users has helped a lot to assess the interactions, evaluate the fun factor of the game, observe the emotional responses and make necessary adaptations. At the later final stages the refinements were related mostly on the coherence and grade of difficulty of the set of questions as well as the general flow of the game.

Conclusion

The feedback received from the training and evaluation events as well as from the dissemination activities was in the majority positive and enthusiastic. Young people had fun, reported that they learnt new things and were eager to play it with their friends and families. This feedback was applied also for the digital one as well as the version dedicated to the visually impaired.

Based on our experience from developing and testing the GENTLY game our conclusion is that non-formal learning through the developed game promotes energy efficiency practice, provides motivation for everyday practices and volunteering, educates the youth and makes available information and insights on green practices that can be used both at the everyday life as well as in working spaces. At the same time fosters an understanding of environmental

danger and empower them to become active citizens. Used not only in educational settings but as an entertainment it can achieve significant effects and support life-long learning.

Acknowledgement

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Developing Guidelines for the Use of Generative AI in Education and Research-Toward Acceptance of Ethical Behavior by Students

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Abstract

The advent of generative artificial intelligence (AI) has created confusion in education and research. Generative AI will force a review of lesson design in educational settings, and the future of education will necessarily include dramatic changes. Accordingly, many educational institutions have begun formulating operational policies for generative AI in educational and research activities. To address these newly emerging issues, Sendai University formulated guidelines for students and faculty to indicate policies for using generative AI in education and research. These guidelines provide operational policies regarding events that may occur when using generative AI. If the text output by AI is copied and parsed as a report or paper, it may be considered plagiarism. Report assignments are intended to develop the ability to understand and generate objective and logical texts; however, the use of AI must not impede the development of that ability. It is necessary to confirm whether the information output from AI is correct, and when confirming information, it is necessary to do so based on multiple information sources. Care must be taken not to input personal information, private information, or confidential information into AI systems. This study examines the degree of student acceptance of these guidelines.

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1. Introduction

1.1 The Social Context Surrounding Generative AI

The emergence of generative AI, such as ChatGPT, Stable Diffusion XL, and Bard, may have brought about a major social turning point, requiring fundamental rethinking of the concept of creative activity, including the processes involved in human creative activity, attribution of created works, and handling of data required for creation. This means that it is necessary to design an architecture that will allow people to continue to be the main actors in economic, social, educational and research activities in the future.

Generative AI has high potential, and its capabilities continue to evolve on a daily basis. For example, ChatGPT-4 has been reported to produce passing-level answers to all US Certified Public Accountant (CPA), Certified Management Accountant (CMA), Certified Internal Auditor (CIA) and Certified Tax Accountant (EA) exams (Jolly, 2023).

Although generative AI can produce highly accurate answers to standardized knowledge-based examinations, it cannot provide accurate answers to non-standardized questions at present. This is because such AI only generates and outputs a certain level of "plausible sentences" based on probability theory from a vast amount of data collected by large-scale language models (LLMs).

Additionally, it has been indicated that if there is bias in the data used for learning, the resulting output may also be biased (Angwin, Larson, Mattu & Kirchner, 2016). Critical thinking is required to make appropriate judgements regarding the biases produced by such learning algorithms.

Furthermore, great care must be taken with the input of personal and sensitive information; although it is stated that no user-specific data are stored in ChatGPT, all conversations between ChatGPT and the user are stored, and these data could be used to improve the language model (OpenAI, 2023). If personal or sensitive information is entered, the risk of such sensitive information being viewed by the development engineers of generative AI cannot be excluded.

As of August 2023, the number of unique users of ChatGPT is reported to be 180.5 million (Tong, 2023). The global AI market value is expected to reach approximately USD 2 trillion by 2030, compared with approximately USD 208 billion in 2023 (Thormundsson, 2023). Thus, despite the expanding market, social institutions related to AI have not been sufficiently responsive to the need to address the associated issues, although the need for such initiatives has been identified.

1.2 Trends in the Field of Education and Research Into Generative AI

Generative AI has caused confusion in education and research. Generative AI will force a review of lesson design in the field of education and will dramatically change the nature of education in the future. Accordingly, many educational institutions have begun to formulate policies for the use of generative AI in education and research activities.

Regarding international university initiatives, the Center for Computing & Data Sciences at the University of Boston requires that credit be given for any use of generative AI, as well as an appendix detailing the entire interaction with the AI and explaining why it was used

(Welker, 2023). Monash University requires students to be briefed on its policy for the assessment of reports produced using generative AI to support responsible and ethical use of generative AI, and to strictly control any conduct that constitutes academic dishonesty (Monash University, 2023). In addition, Southern California University recommends the exploratory use of AI, subject to adequate consideration of research ethics in accordance with the guidelines set by the university (University of Southern California, 2023). In Japan, the Ministry of Education, Culture, Sports, Science, and Technology has begun compiling reference materials for handling generative AI in schools (Ministry of Education, Culture, Sports, Science and Technology, Special Committee on Digital Learning Infrastructure, 2023).

2. Development of the Generative AI Operating Rules for Students

2.1. Methods of Validation

Given these pressing educational issues, Sendai University formulated guidelines in July 2023 to indicate the rules of use for students when using generative AI in their learning and research activities; they made the guidelines available not only to students but also to the general public. An overview of Sendai University's guidelines is provided below ("Content of the Guidelines for the Use of Generative AI by Sendai University"):

1) *You must not copy the text output by the AI directly into reports, papers, etc. Some assignments may be regarded as plagiarism, which is a form of cheating.*
2) *You must submit your own work for report assignments and dissertations; AI-generated texts cannot be considered your work.*
3) *Universities are places of learning where students develop the ability to comprehend and produce objective and logical texts, and the use of AI should not inhibit your thinking.*
4) *Always check the information output from the AI to ensure that it is correct. It is recommended that information is verified from multiple sources.*
5) *Take care not to enter personal, private, and confidential information into the AI.*

Based on Sendai University's Guidelines for the Use of Generative AI, this study evaluated whether students have the knowledge and attitudes required to effectively use generative AI and appropriately deal with problems such as fraud, information leakage, and generated misinformation. Specifically, a questionnaire was administered to the students to answer the following research questions:

1) What kind of generative AI do students use and to what extent do they use it?
2) Are there gender differences in its use?
3) Do students use generative AI after reading the Sendai University guidelines?
4) For what learning purposes are they using generative AI?
5) Do they try to not input personal, private, or confidential information when using generative AI?
6) Do they use opt-out settings to prevent the data they input from being used for machine learning by the AI?

By asking these questions, it is possible to assess students' level of commitment to the appropriate use of generative AI in learning and research activities. If they are not fully committed to any of these issues, measures could be taken to address them, which would help ensure the credibility of student learning and research.

3. Survey Methodology

In this study, students affiliated with Sendai University were surveyed using a questionnaire to determine trends in the use of generative AI and students' attitudes toward the Guidelines for the Use of Generative AI. The questionnaire was administered between December 12 to 22, 2023. It was completed using Google Forms via Sendai University's learning portal. Participants were first- to fourth-year students at Sendai University. A total of 152 participants responded to the survey, of whom 149 provided valid responses. Answers were provided to 33 questions using a 7-point Likert scale, with free-text, single-choice, and multiple-choice methods interwoven, as appropriate. This survey was conducted in accordance with the ethical code of Sendai University; no personal information of the participants was collected, and no questions that imposed on the individual's privacy were asked.

Item	Contents
Purpose of the survey	Determine trends in the use of generative AI and attitudes towards the Sendai University Guidelines
Period of implementation	12–22 December 2023
Survey method	Web-based questionnaire using Google Forms
Participants	First- to fourth-year Sendai University students Number of responses: 152 Valid responses: 149
Answer format	7-point Likert scale, free-text, single-choice, multiple-choice
Number of questions	33

Table 1: Summary of Survey Implementation

4. Analysis of Questionnaire Data

4.1. Experience of Using Generative AI and Whether the Guidance was Read

The students were asked whether they had read the guidelines on the use of generative AI. Of the participants, 71.81% had not yet read the guidelines. When asked about their experience of using generative AI, 29.53% of the students had used it, while 70.47% of the students had not yet used it.

	Answer	Count	(%)
Gender	Male	98	65.77
	Female	49	32.89
	No answer	2	1.34
Read guidelines	Haven't read it	107	71.81
	Read it	42	28.19
Experience of use	Never used	105	70.47
	Have ever used	44	29.53
			n＝149

Table 2: Gender of Participants and their Experience of Using Generative AI and whether they had Read the Guidance

An analysis was conducted to determine whether there were gender differences in the use of the generated AI. There were 98 (65.77%) male students, 49 (32.89%) female students, and 2 students who did not respond. A Mann-Whitney U test revealed that female students were significantly more likely to use generative AI, with female students averaging 1.62 times per week of use and male students 1 time per week (p < 0.01).

	count	mean	std	median	p-value
Female	13	1.61538	1.043908	1	0.0015
Male	31	1	0	1	
					n=44

Table 3: Frequency of use of Generative AI by Gender

Particular consideration needs to be given to whether students using generative AI are doing so in accordance with the university's guidelines for its use; these results could be used to determine future policies for teaching and raising awareness. Therefore, we analyzed the relationship between whether students had read the university's usage guidelines and their experience using generative AI. The results showed that 40.91% of the students who had experience using generative AI said that they had read the guidelines, whereas 59.09% said they had not. A chi-square test indicated the difference was significant ($\chi^2(1) = 4.14$, p = 0.0419). This result indicates that approximately 60% of students who use generative AI do so without following the university's guidelines. The percentage of students who had never read the guidelines was high (77.14%) among those who had never used generative AI; therefore, it is necessary to take measures to address this lack of knowledge. However, it is also necessary to provide guidance and awareness-raising activities for students who have not read the guidelines despite using generative AI.

			Read guidelines			
			Haven't read it		Read it	
		Total	Count	(%)	Count	(%)
Experience of use	Never used	105	81	77.14	24	22.86
	Have ever used	44	26	59.09	18	40.91

n=149

Table 4: Use of Generative AI and Whether the Guidelines were Read

## 4.2. Type of Generative AI Used and Intended Use

Students with experience in using generative AI were asked a series of questions relating to the AI they used. The results showed that the most common system was OpenAI's ChatGPT-3.5, which is available free of charge. This was followed by Microsoft 365 Copilot, which is bundled with Microsoft Office, and Google's Bard, but they received only a tenth of the number of responses for ChatGPT-3.5. There were no reports of the use of image-generation AI such as Stable Diffusion XL, although this may be related to the nature of the physical education university.
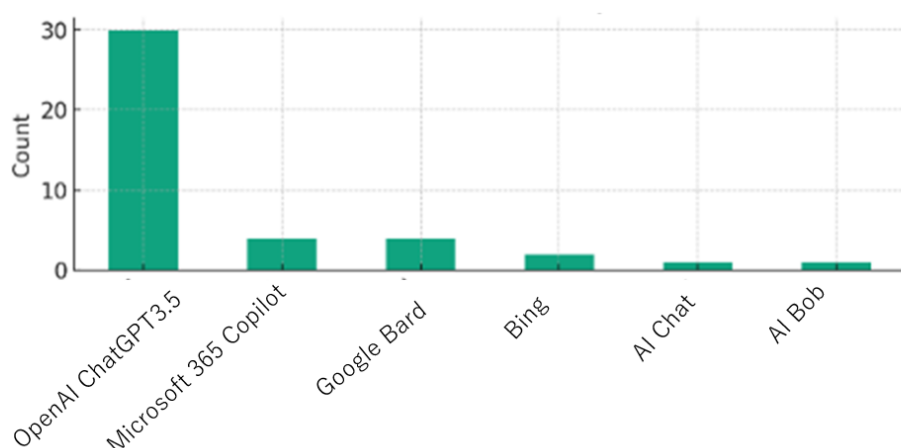
N＝149

Figure 1: Types of Generative AI Used

Next, the students were asked about their use of AI. The largest number of respondents used AI to prepare class assignments and reports, followed by translation of foreign language documents and language learning.
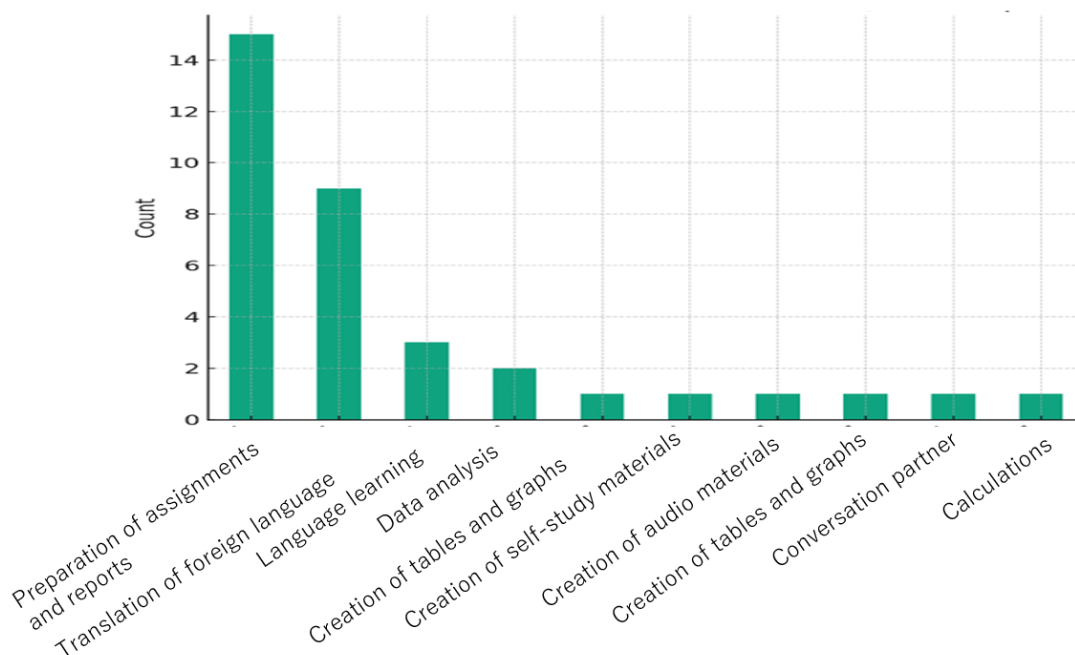
N＝149

Figure 2: Description of Uses of Generative AI

Students with experience in using generative AI were asked whether they had used generative AI to prepare assignments and reports at university. The results showed that 34.09% of the students used generative AI to write assignments and reports. Furthermore, 4.55% of students reported that they copied text output using generative AI when preparing assignments and reports. This is clearly cheating and requires guidance and awareness to prevent such behavior. Furthermore, teachers should be required to submit assignments and reports that cannot be answered by AI, to prevent such acts.

Next, the students were asked whether the results output by the generative AI were correct and whether they checked the facts. The results showed that 75% of the students fact-checked the results, while 25% neglected to do so.

Students were then asked whether they had ever entered personal, private, or confidential information when using generative AI. The results showed that 13.64% of students stated that they had entered personal information. To a lesser extent, 6.82% of students had entered privacy information and 2.27% had entered confidential information.

	Answer	Count	(%)
Experience of use	Not used	29	65.91
for reports	Used	15	34.09
Copying	Copied	42	95.45
Experience	Not copied	2	4.55
	Not checked	11	25
Checking facts	Checked	33	75
Entering personal	Not Entered	38	86.36
data	Entered	6	13.64
Entering privacy	Not Entered	41	93.18
data	Entered	3	6.82
Entering	Not Entered	43	97.73
confidential data	Entered	1	2.27

n=44

Table 5: Use of Generative AI for Learning and Input of
Personal Data and Other Information

Personal, private, and confidential information is not only information related to individual students, but also information about other students and the university; therefore, it is necessary to instruct and raise awareness among students not to enter such information. As a measure to consider information that the user does not want others to know or to make public, an opt-out setting is necessary to prevent the input data from being used for subsequent machine learning.

	Answer	Count	(%)
Knowledge of			
machine learning	Knew	93	62.42
	Did not know	56	37.58
Opt-out experience	Not experienced	28	63.64
	Did not know	15	34.09
	Experienced	1	2.27

N＝149

Table 6: Machine Learning and Opt-Out Setting

Therefore, students with experience in using generative AI were asked whether they knew that generative AI was machine learning of the input data. The results showed that 37.58% of the students did not know that generative AI is machine learning data. They were further asked about their awareness of opt-out settings for the machine learning of input data and whether they had ever set an opt-out setting. The results showed that only 2.27% of the students had ever set an opt-out setting; 63.64% had not and 34.09% were unaware that opt-out settings could be set by themselves.

5. Discussion

In addition to summarizing the results obtained from the analysis in the previous section, this section considers future student guidance and awareness-raising activities regarding the use of generative AI at universities. Approximately 60% of the students who used AI did not follow university guidelines. This means that some students may use AI in a manner that deviates from the university's policy on the use of generative AI. Therefore, there is an urgent need to provide guidance and educational activities for students who have not read these guidelines.

Data input to the generative AI is used to improve the accuracy of the AI. Furthermore, there is a risk that the data can be read by "others," namely the developers of the AI tool. If such actions are undertaken, privacy will be violated. Therefore, it is necessary to raise awareness of opt-out settings to prevent machine learning of input data, as well as to instruct and raise awareness of the actual opt-out settings.

Among the student users of generative AI, 34.09% used AI for assignments and reports. Generative AI is not a convenient assignment and reporting tool, and its use should be based on the risk that what is entered and generated as outcome will not be accurate. As such, the following question should be asked: "Why was the document generated?" The current technology for generative AI does not allow the generation of accurate documents. Currently, the technology of generative AI does not provide a self-checking function for determining whether the output is accurate. It is necessary to instruct and raise awareness regarding the use of AI with sufficient consideration of the risk of inaccuracy.

Teachers should provide assignments and reports that cannot be completed using generative AI. That is, AI may have become the catalyst for teachers to acquire the ability to conduct authentic assessments without relying on conventional assessment methods involving assignments and reports.

6. Conclusion

To highlight issues in the operation of generative AI in education and research at universities, this study conducted a survey and analysis of trends in the use of generative AI, awareness of usage guidelines, and attitudes and behaviors toward the appropriate use of generative AI among students. The results of the analysis indicated that only a minority of students use AI based on the university's policy for the use of AI, and that appropriate intervention is needed for such students.

Possible interventions include instructional, educational and regulatory approaches. However, regulatory approaches should be discouraged whenever possible. This is because students' free use of generative AI has the potential to encourage their independent use, leading to deeper learning and creative thinking. To enable these outcomes, they must use generative AI spontaneously and normatively. An intervention approach that makes this possible would be guiding and enlightening. Further research is required to develop effective instructional and educational measures for this purpose.

Furthermore, in university education, one of the roles of teachers has been to transfer knowledge. However, the emergence of generative AI may force faculty members to rethink this responsibility. Thus, it will be necessary to redefine the nature of education for new

university faculty members after the birth of generative AI. It is also necessary to continue examining this philosophical issue.

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