The Korean Conference on Education (KCE2024)

The 2024 IAFOR Autumn Conference Series in Incheon

October 28 - November 1, 2024 | Incheon, South Korea & Online

OFFICIAL CONFERENCE PROCEEDINGS

ISSN: 2759-7563

Organised by The International Academic Forum (IAFOR) in partnership with the University of Utah Asia Campus, South Korea, the IAFOR Research Centre at the Osaka School of International Public Policy (OSIPP) at Osaka University, Japan, and IAFOR's Global Partners

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The Korean Conference on Education 2024

Official Conference Proceedings

ISSN: 2759-7563

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The International Academic Forum (IAFOR)
Sakae 1-16-26-201
Naka Ward, Nagoya, Aichi
Japan 460-0008
www.iafor.org

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The Development of a Measurement Instrument to Assess Student's Competence in Connecting the Multiple Representations in Chemistry on Acid-Base Titration

Prempree Duangpummet, King Mongkut's University of Technology Thonburi, Thailand
Duanghathai Kunwatthanaphan, King Mongkut's University of Technology Thonburi, Thailand
Warunee Khirirat, King Mongkut's University of Technology Thonburi, Thailand
Pirom Chenprakhon, Mahidol University, Thailand

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
The purpose of this research was to develop a measurement instrument to assess student's competence in connecting multiple representations in chemistry, specifically focusing on acid-base titration topics. The student's competency was categorized into three levels, ranging from Level 1, where students demonstrate a correct understanding of the concept of acid-base titration at the macroscopic, submicroscopic, and symbolic levels without connecting these levels, to Level 3, which indicates a complete and correct understanding of the concept and the ability to connect its relationships across all three levels of representation. The instrument comprised 11 items based on the defined competencies. Data were collected from 344 students in grades 11 and 12 at the high school level. The instrument was analyzed for reliability and validity using Rasch analysis. Results indicated that the standardized residual responses for the developed items met the criteria for local independence as defined by the Rasch model. When comparing the difficulties of items and students' abilities on the same scale, the discrimination of items and the reliability of items met the criteria. However, the Rasch analysis suggested the need for revisions of some questions in the instrument for further study. The measurement instrument could serve as a standardized test for assessing students' competence in connecting multiple representations in chemistry, specifically within the context of acid-base titration topics.

Keywords: Assessment, Acid-Base Titration, Multiple Representations in Chemistry, Rasch Model

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Introduction

Thailand aims to transform the school curriculum from a standards-based curriculum to a competency-based curriculum, which focuses on a person's ability to use their knowledge, skills, attitudes, and characteristics to work or solve problems to achieve a certain level of success. Competencies are the sum of knowledge, skills, attitudes, attributes, and other abilities that enable an individual or group to succeed at work. The competency curriculum focuses on the behavioral expressions of students' practices that can be measured and evaluated (Treadwell, 2011). The goal of a competency-based curriculum is therefore to prepare citizens for the 21st century.

Chemistry is the branch of science that studies the properties of substances and changes. The key competency that learners should gain from studying chemistry is understanding and connecting the relationships of multiple representations in chemistry. The multiple representations in chemistry include: (1) the macroscopic level, involving chemical phenomena that can be seen or observed in everyday life; (2) the submicroscopic level, involving phenomena at the atomic and molecular levels to understand various phenomena; and (3) the symbolic level, which are symbols that represent chemical elements or phenomena such as chemical formulas or chemical equations (Johnstone, 2000; Taber, 2013; Talanquer, 2019). Designing learning activities to promote learners with competency to understand and link the multiple representations in chemistry is therefore a challenging task for chemistry teachers around the world (de Berg, 2012; Li & Arshad, 2014; Tümay, 2016).

Another challenge is designing test instruments that can assess students' competency in chemistry. Most chemistry tests are multiple-choice or a two-tier diagnostic test (Karsli Baydere, 2021; Lu & Bi, 2016), however, many studies have designed measuring instruments that focus on the understanding and ability to translate between the multiple representations in chemistry. A two-tier multiple-choice diagnostic instrument was developed to assess secondary school students' ability to use the multiple representations in chemistry to explain different types of chemical reactions (Chandrasegaran et al., 2007). Berg (2012) designed a test in a mixed form of multiple-choice with short-answer questions on the topic of solution. Additionally, Irby et al. (2016) used a card sort task as a tool to measure the learner's ability to relate between the multiple representations in chemistry at various levels of education. Nonetheless, Popova and Jones (2021) stated that there is still a lack of effective tools to measure students' competency to translate between the multiple representations in different chemistry content. Therefore, measurement instruments that can assess learners' competency to translate between the multiple representations in chemistry must be further developed.

Acid-base titration is an important topic in upper secondary and university chemistry curricula that students are required to study. The topic also connects conceptual knowledge of chemical reactions to practical experiments in the laboratory. In terms of the experiment, titration is a method to find the concentration of an unknown solution by reacting with a standard solution which is known to be a certain concentration. The results of the experiment can be linked to conceptual knowledge of stoichiometry to calculate the concentration of an unknown solution. However, Sheppard (2006) indicated that secondary school students often struggle to learn acid-base titration because the content requires an understanding of many concepts in chemistry, and if students lack some pieces of knowledge, it will be difficult to understand the topic. This is in line with Nyachwaya (2016) which argued that students lack the competency to use submicroscopic and symbolic representations to explain the concept of titration which leads to a misconception about the content (Widarti et al., 2016).

A literature review on measuring learners' understanding of acid-base titration topics showed that there were many types of instruments, such as a multiple-choice measurement developed from learners' misconceptions (Demircioglu et al., 2005), concept maps (Yaman & Ayas, 2015), and a combination of concept maps with creative exercises (Ye et al., 2020). However, no research was found to focus on the development of a tool to measure learners' competency to translate between multiple representations, particularly in acid-base titration topics. The main objective of this research is therefore to develop a measurement instrument to assess students' competency to connect the multiple representations in chemistry on acid-base titration topics. The main research question is "How effective is the measurement instrument in assessing students' competency to connect multiple representations in chemistry on an acid-base titration topic?" The research framework is presented in Figure 1.

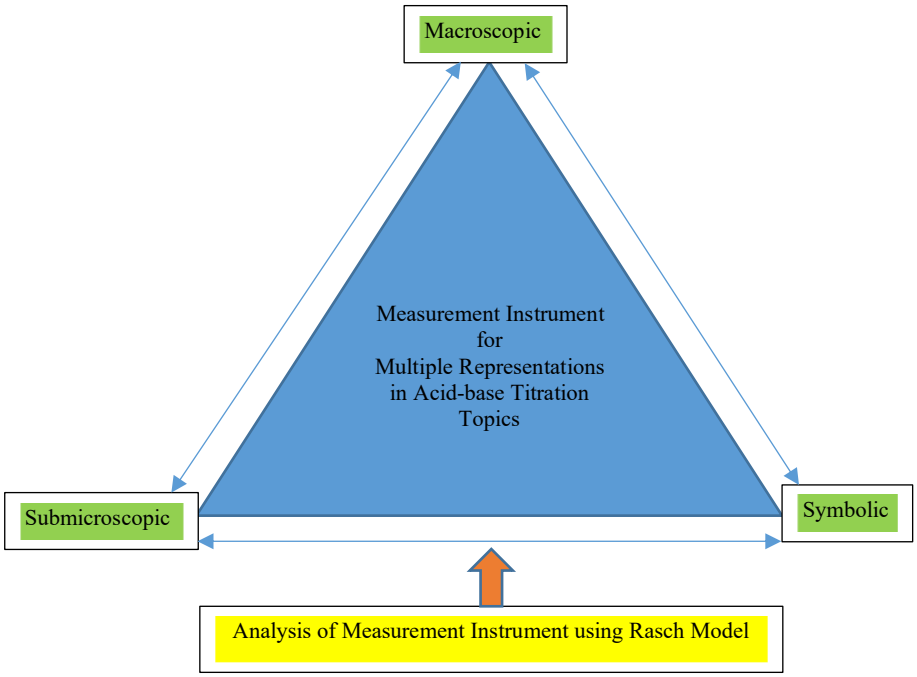


Figure 1: Research Framework

The Development of a Measurement Instrument

1. Defining the Competency Level

In this research, students' competence to connect multiple representations in chemistry on the acid-base titration topic is defined according to three levels (see Table 1) as follows:

Level 1: Students demonstrate a correct understanding of the concept of acid-base titration and representation at the macroscopic, submicroscopic, and symbolic levels, without connecting these levels.

Level 2: Students demonstrate a correct understanding of the acid-base titration concept and can connect its relationship to at least two levels of representations (macroscopic-submicroscopic, macroscopic-symbolic, and submicroscopic-symbolic).

Level 3: Students demonstrate a correct understanding of the acid-base titration concept and can connect its relationship in all three levels of representations (macroscopic-submicroscopic-symbolic).

Table 1: Defined the Competency Levels Related to Test Items

Level	Level Descriptions	Items
1	Students demonstrate a correct understanding of the concept of acid-base titration and representation at the macroscopic, submicroscopic, and symbolic levels, without making connections among these levels.	Q1, Q2, Q3, Q4
2	Students demonstrate a correct understanding of the acid-base titration concept and can connect its relationship to at least two levels of representations (macroscopic-submicroscopic, macroscopic-symbolic, and submicroscopic-symbolic).	Q5, Q6, Q7, Q8, Q9
3	Students demonstrate a correct understanding of the acid-base titration concept and can connect its relationship in all three levels of representations (macroscopic-submicroscopic-symbolic).	Q10, Q11

2. Development of Measurement Questions

18 questions were developed to begin with before all questions were tested for the index of item-objective congruence (IOC) based on the chemistry content and the level descriptions by three experts in chemistry education from university and high school levels. According to the IOC result, 11 items were chosen to develop the test in this study. There are four items aligned with level 1 (see Figure 2), five items aligned with level 2 (see Figure 3), and two items aligned with level 3 (see Figure 4).

3. Data Collection

The sample consisted of 344 high school students in a science-mathematics program that was obtained using purposive sampling. The students were required to hold prior knowledge about acid-base titration.

An experiment was conducted by dropping bromothymol blue into sample solutions, yielding the following results. (Given that the pH range for the color change of bromothymol blue is 6.0-7.6, where the color changes from yellow to blue). Which solution should have pH = 4.20, pH = 7.00, and pH = 10.50, respectively?

Figure 1 Figure 2 Figure 3

A. Figures 1, 2, and 3, respectively
B. Figures 3, 2, and 1, respectively
C. Figures 2, 1, and 3, respectively
D. Figures 3, 1, and 2, respectively

Figure 2: Example of Items Aligned With Level 1 (Macroscopic)

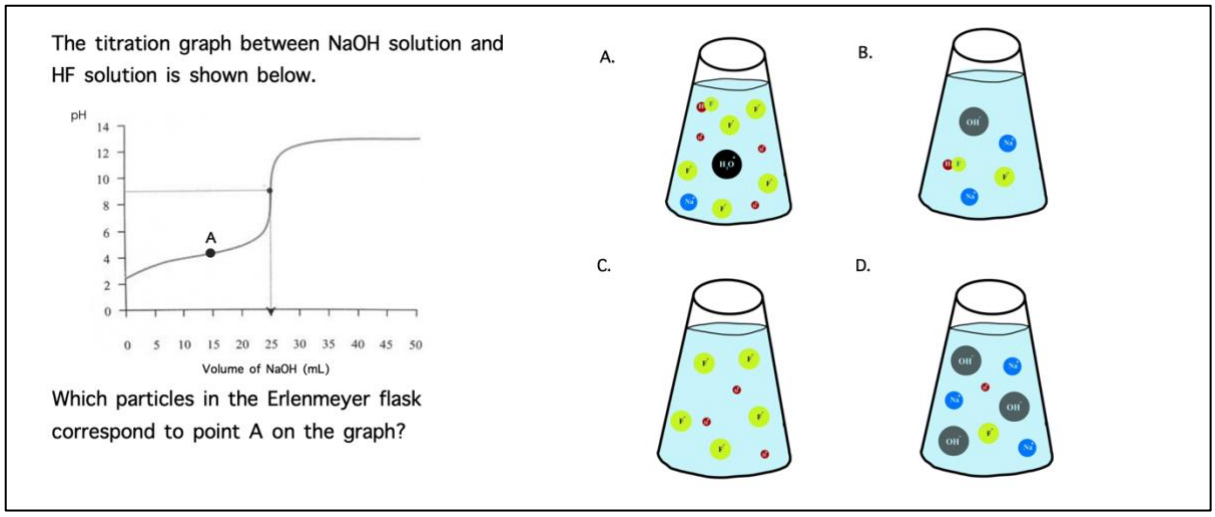
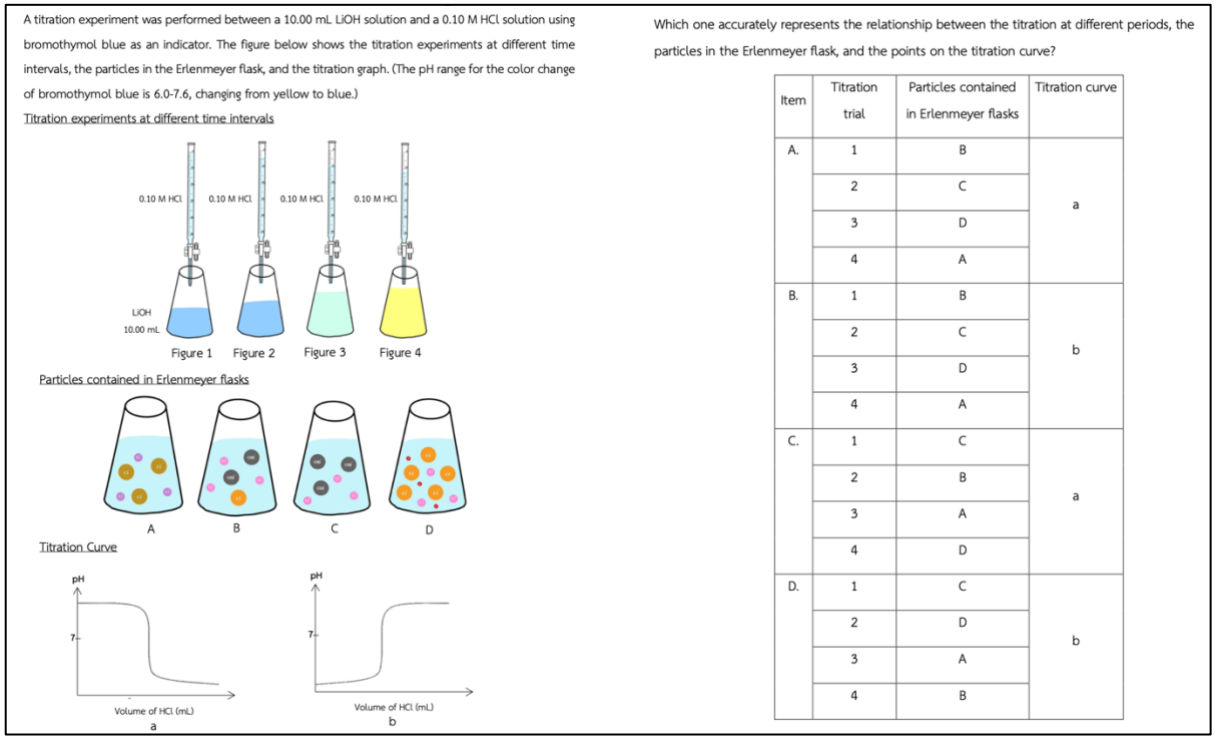


Figure 3: Example of Items Aligned With Level 2 (Submicroscopic-Symbolic)



Item	Titration trial	Particles contained in Erlenmeyer flasks	Titration curve
A.	1	B	a
	2	C	
	3	D	
	4	A	
B.	1	B	b
	2	C	
	3	D	
	4	A	
C.	1	C	a
	2	B	
	3	A	
	4	D	
D.	1	C	b
	2	D	
	3	A	
	4	B	

Figure 4: Example of Items Aligned With Level 3 (Macroscopic-Submicroscopic-Symbolic)

4. Analysis of Measurement Instrument

The raw data was used to analyze the validity and reliability of the measurement instrument based on the Rasch model by Winsteps 5.6.3 software. Rasch analysis is a psychometric model used to analyze data from assessments, particularly multiple-choice tests or questionnaires, based on item response theory. Rasch analysis helps refine test items and ensure their reliability. It measures both a person's ability and item difficulty on a common scale (logit scale).

Results and Discussion

The Rasch model was used to analyze the raw data of 344 students' scores to estimate the difficulty of the items and the student's abilities on the same scale. The fundamental

requirement for the Rasch model is unidimensionality, in which all items forming the test should measure only a single construct. In this paper, the unidimensionality was tested by the principal component analysis of contrast loadings of residuals. The variance explained 17.9%, indicating that the developed instrument was not unidimensional. Considering Figure 5, the standardized residual contrast plot (contrast loading) is within the range of -0.4 to +0.4 (Lu & Bi, 2016; Wang, Chi, Luo, Yang & Huang, 2017), indicating that most of the items were within the range. Four items beyond the range included A-Q4, B-Q2, a-Q1, and b-Q11 which had to be considered again. However, since all the items were below 0.7, the responses for the items developed thus met the criteria for local independence as defined by the Rasch model (Lu & Bi, 2016).

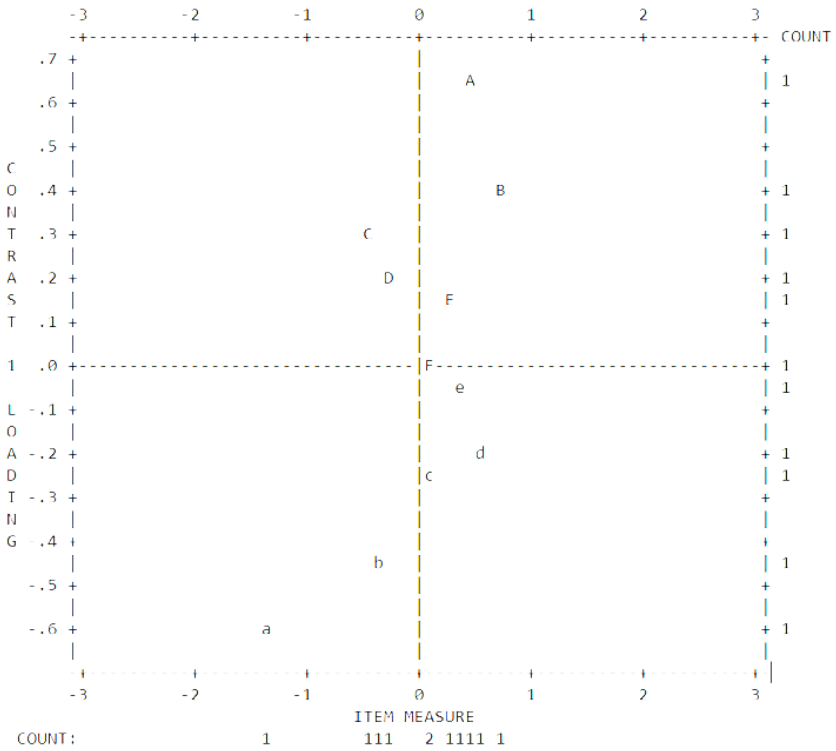


Figure 5: The Standardized Residual Contrast Plot

Table 2 presents the measure of 11 items in this instrument that relate to item difficulty. The item difficulties measured in the Rasch range from -1.35 logit to 0.69 logit, with low logit indicating an easier item than one with high logit. Another statistic of Rasch analysis is item fit, which shows how well the item aligns with the expectations of the Rasch model. There are outfit and infit of the mean square residual (MNSQ) and outfit and infit of the standardized mean square residual (ZSTD). From the analysis, it was found that outfit and infit MNSQ were within the range of 0.6 to 1.4, which ensures the items are suitable to be measured (Bond & Fox, 2007). In addition, the outfit and infit ZSTD was also in the range of -2 to +2 (Bond & Fox, 2007; Wei et al., 2012). According to the literature, if the outfit and infit MNSQ are within the range, the outfit and infit ZSTD can be disregarded (Linacre, 2018). It can therefore be concluded that all items are accepted to be a good fit according to the Rasch model. PTMEA CORR. refers to the correlation between the student scores and the person measure (score in logit). From the analysis, all the PTMEA CORR. values are positive and not close to zero, indicating that there are acceptable (Bond, 2015).

Table 2: Item Fit Statistics

Item	Measure	Model S.E.	Infit		Outfit		PTMEA corr.
			MNSQ	ZSTD	MNSQ	ZSTD	
Q2	0.69	0.14	1.12	1.66	1.21	1.87	0.20
Q9	0.51	0.13	1.09	1.45	1.21	2.06	0.23
Q4	0.43	0.13	0.87	-2.15	0.80	-2.36	0.47
Q3	0.38	0.13	1.03	0.59	1.09	1.03	0.30
Q10	0.25	0.12	0.97	-0.60	0.95	-0.62	0.39
Q6	0.10	0.12	0.92	-1.55	0.91	-1.30	0.43
Q8	0.09	0.12	0.94	-1.32	0.96	-0.54	0.42
Q7	-0.29	0.12	0.96	-0.95	0.92	-1.41	0.42
Q11	-0.36	0.12	0.97	-0.74	0.96	-0.69	0.41
Q5	-0.47	0.12	1.09	2.14	1.11	2.00	0.29
Q1	-1.35	0.12	1.02	0.4	1.00	0.09	0.37

Figure 6 shows the Person-Item Map or the Wright map, which is a visual representation of item difficulties and person abilities on the same scale called logit scale. An individual's abilities are plotted on the left side of the Person-Item Map, and the item difficulty consisting of 11 items is plotted on the right side. The Person-Item Map shows the locations of an individual's abilities and item difficulty in the same logit scale that the range of measure shown in the graph is -3 to 3 logit. On the left side, the '#' symbol represents 6 students, and the symbol '.' represents 1 to 5 students. On the right side, the items' difficulty is arranged from easy to difficult from bottom to top. The Wright map indicates that Q2 is the most difficult item in this instrument, while Q1 is the easiest item. According to the map, the individual's ability (on the left) estimates are located lower than the item's difficulty (on the right) indicating that some items are difficult for participants. Considering the gap between a person's abilities and the item map, there are two big gaps between Q1 and Q5, and Q6-Q8 and Q7 which means no test items can classify students' abilities within this range. The model suggests that more items should be developed to address the gaps in students' abilities for the next implementation.

When focusing on the alignment between measured item difficulty and defined levels, there are some mismatched items. Item Q2 (see Figure 7) is proposed to align with a submicroscopic in level 1, but the results indicate it to be the most difficult item. Some students failed to complete this item, which could be caused by a mismatch with the element symbol on the atom. Moreover, item Q9 (see Figure 3) which was proposed to align with level 2, was also difficult for students. The students may have made mistakes because the question asks about the product of the reaction of weak acid (HF) and strong base (NaOH) in terms of the submicroscopic related to the titration curve. It is noted that the two most difficult items were related to the submicroscopic level, which has been extensively documented in the literature as challenging for students to understand within chemistry (Laohapornchaiphan & Chenprakhon, 2024). Other items, such as Q3 (see Figure 8) and Q4 (see Figure 9), were difficult for participants because the questions deal with mathematics and require students to do arithmetic expressions to solve the problems. The students may have made calculation errors because they may not have understood the meaning of mole ratios in the balanced chemical equation concept, which was proposed to be one of the most challenging concepts in chemistry (Dahsah & Coll, 2007). For item Q4, the students may have had difficulty distinguishing the difference between pH and pOH values. These results provide useful information that can be used to revise questions in the future study.

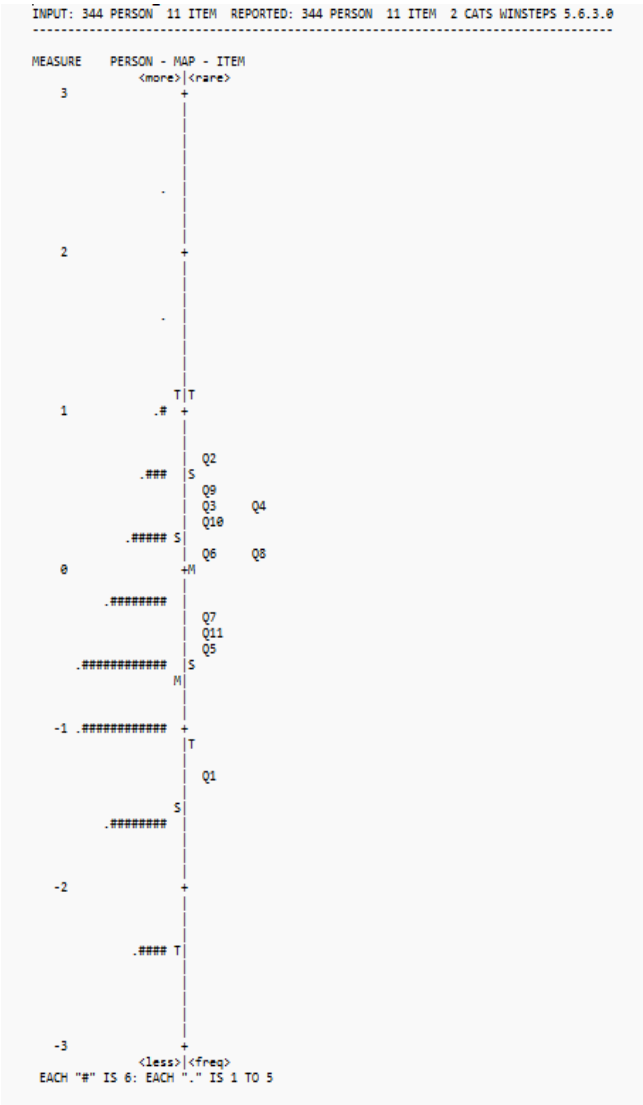


Figure 6: Person and Item Estimate Map (Wright Map)

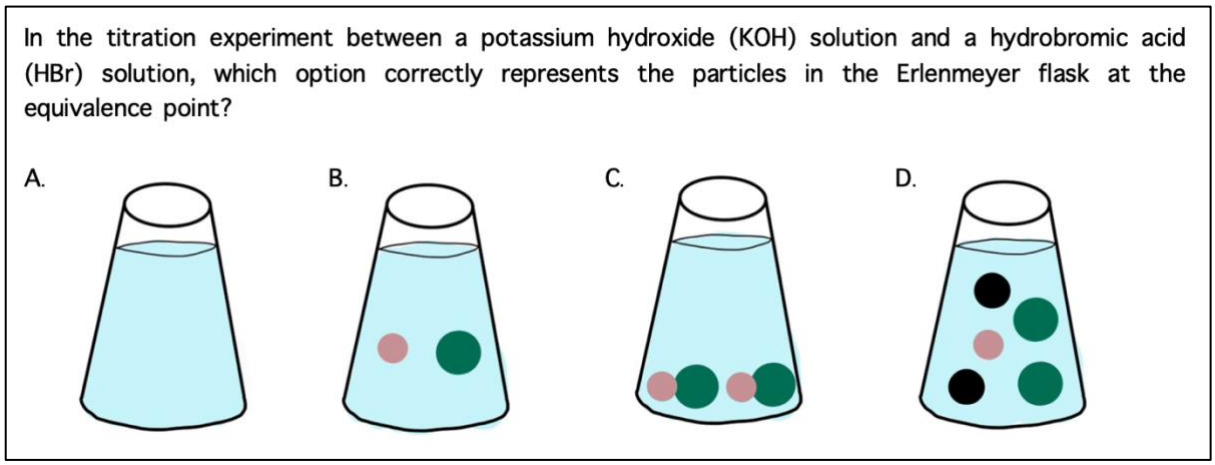


Figure 7: Item Q2

In the titration of 50.00 mL of unknown H_2SO_4 solution with 0.10 M NaOH solution, it was found that 50.00 mL of NaOH solution was required to reach the equivalence point. What is the concentration of the H_2SO_4 solution used in the titration?

A. 0.010 M B. 0.050 M C. 0.10 M D. 0.50 M

Figure 8: Item Q3

In the titration of 0.010 M HCl solution with 10.00 mL of unknown NaOH solution, it was observed that 10.00 mL of HCl was used to reach the equivalence point. Calculate the pH of the NaOH solution before the titration.

A. pH = 2.00 B. pH = 5.00 C. pH = 10.00 D. pH = 12.00

Figure 9: Item Q4

Table 3 presents a calculation of the mean measures (in logit scale) at each level of understanding defined in this study. According to the Rasch analysis, Q2 and Q9 were eliminated because both items were not aligned to the defined level that must be further revised. Using the results, the students' abilities can be divided into three groups. When the students' ability value was lower than -0.05, it was concluded that students' ability was below level 1 which means they were unable to demonstrate a correct understanding of the concept of acid-base titration and representation either at the macroscopic, submicroscopic, or symbolic levels. When students' ability was in the range of -0.05 to -0.01, it was concluded that they were at level 1, meaning they could demonstrate a correct understanding of the concept of acid-base titration and representation of at least one of the macroscopic, submicroscopic, and symbolic levels, without connecting these levels. When the students' ability was between -0.01 to 0.09, it was concluded that the students' ability was at level 2, meaning they could demonstrate a correct understanding of the acid-base titration concept and could connect its relationship to at least two levels of representations, for instance between the macroscopic and the submicroscopic levels, between the macroscopic and symbolic levels, or between the submicroscopic and symbolic levels for acid-base titration. When the students' ability was greater than 0.09, it was concluded that students' ability was at level 3, meaning they could demonstrate a correct understanding of the acid-base titration concept and could connect its relationship at all three levels of representations (macroscopic-submicroscopic-symbolic).

Table 3: Mean Measures of Understanding Levels After Excluding Items 2 and 9

Level	Items, measure	Mean measures
1	Q1(-1.27), Q3(0.54), Q4(0.59)	-0.05
2	Q5(-0.35), Q6(-0.25), Q7(-0.16), Q8(0.23)	-0.01
3	Q10(0.41), Q11(-0.23)	0.09

Table 4 presents a summary of the statistics from the measurement instrument which includes person and item measures, fit statistics, person and item separation, and person and item reliability. Generally, the mean of the item measure is normally set at 0. The table shows the mean of the person was -0.68, which is lower than the mean of item difficulty. This indicates that the measurement instrument was difficult for selected students. Analysis of the separation of person and item shows the person separation index was 0.67 and the item separation index was 4.27. Item and person separation index values greater than 2.00 indicate they met the recommended criteria (Bond & Fox, 2007). Although the item separation index

is acceptable, the person separation index needs to be considered because it is below 2.00. The person reliability index is 0.31, and the item reliability index is 0.95. The item reliability is categorized as acceptable if such a value is higher than 0.8 (Bond & Fox, 2007). In contrast, the person reliability value was low, indicating weak correlations among students' responses to the items (Lu & Bi, 2016).

Table 4: Statistical Summary of Persons and Items

Parameter (*N*)	Measure	Infit		Outfit		Separation	Reliability
		MNSQ	ZSTD	MNSQ	ZSTD		
Person (344)	-0.68	1.00	0.05	1.01	0.08	0.67	0.31
Item (11)	0.00	1.00	-0.10	1.01	0.00	4.27	0.95

Conclusion

The core contribution of this research lies in the development of a measurement instrument designed to assess student's competence in connecting multiple representations of chemistry in the context of acid-base titration. Utilizing the Rasch model for analysis, the study scrutinizes the validity and reliability of the instrument, shedding light on its strengths and areas for improvement. The findings indicate certain challenges in achieving unidimensionality. The standardized residual responses for the developed items met the criteria for local independence as defined by the Rasch model. The item reliability and separation indices exceeded the recommended thresholds, indicating that the items were well-calibrated and capable of distinguishing between their levels of difficulty. However, the person separation and reliability indices fell below acceptable levels, suggesting limited effectiveness in differentiating among students' abilities and weak correlations in their responses. Furthermore, the mean person measure being lower than the item mean highlights that the instrument posed a considerable challenge for the selected students. These findings underscore the need for refinement of the measurement tool to enhance its sensitivity and alignment with the target population's abilities and some items require reconsideration for the next implementation.

Acknowledgements

The authors acknowledge the research support from the Research Grant for New Scholar, fiscal year 2022 from the Faculty of Science, King Mongkut's University of Technology Thonburi.

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Contact email: prempree.dua@kmutt.ac.th

Building Gratitude: The Impact of Environmental Creation on Student Well-being

Mutmainnah, Universitas Pendidikan Indonesia, Indonesia
Syamsu Yusuf, Universitas Pendidikan Indonesia, Indonesia
Anne Hafina Adiwinata, Universitas Pendidikan Indonesia, Indonesia
Ipah Saripah, Universitas Pendidikan Indonesia, Indonesia

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
This study examines the influence of environmental factors on the level of gratitude among university students, involving 231 participants from the Faculty of Education at Universitas Muhammadiyah Enrekang (UNIMEN). The purpose of this research is to explore how aspects such as social support, access to green spaces, and community engagement contribute to students' sense of gratitude and overall well-being. Using a quantitative approach, a survey was distributed to 4th and 6th semester students. The survey employed a Likert scale to measure gratitude levels and assessed environmental factors, including social support and campus environment. Data were analyzed through linear regression to explore the relationship between these environmental factors and gratitude. The analysis was conducted using linear regression to determine the relationship between these environmental factors and gratitude levels. Results revealed a significant positive correlation between supportive environmental conditions—such as community engagement and green spaces, and gratitude levels, emphasizing that students with access to supportive environments were more likely to express higher gratitude and experience enhanced well-being. These findings suggest that fostering environments that promote social support and provide access to natural spaces can positively impact students' emotional health, with gratitude serving as a key mediator in this relationship. Educational institutions can benefit from this research by recognizing the role of environmental factors in student well-being and developing programs or policies that enhance social support and access to green spaces on campus.

Keywords: Gratitude, Environmental Factors, Student Well-being

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Introduction

In recent years, the concept of gratitude has garnered considerable attention in educational psychology, particularly concerning its influence on student well-being. Gratitude is recognized as a key element in enhancing emotional resilience, improving interpersonal relationships, and fostering a more positive outlook on life (Emmons, 2010). However, the development and maintenance of gratitude are often influenced by external factors, including social support, access to conducive learning environments, and community engagement. [1] Globally, university students increasingly face stressors such as academic pressure, financial challenges, and social isolation. These factors can hinder their ability to express gratitude, ultimately impacting their overall well-being. Research indicates that supportive environments both physical and social play a critical role in nurturing gratitude among students. [2] Universities that provide access to green spaces, peer support networks, and community-centered activities report higher levels of student well-being (Nisbet & Zelenski, 2023).

At UNIMEN, students in their 4th and 6th semesters of the Faculty of Education are at a crucial juncture in their academic and personal development. This stage, often associated with the emerging phenomena of the Quarter Life Crisis (QLC), is characterized by an array of challenges as students navigate between theoretical learning and practical application. The QLC, generally experienced by individuals in their twenties, involves significant uncertainty and self-doubt concerning career choices, identity, and personal direction (Hamvai et al., 2024). This phenomenon has become increasingly relevant as young adults, particularly university students, grapple with questions of purpose and life satisfaction. For many students, this stage represents not only an academic transition but also a period of self-discovery and heightened emotional turbulence. At this point, students are balancing rigorous academic requirements with the demand to make life-defining decisions about their futures. Some students actively participate in organizational activities, which offer both professional networking and a sense of belonging. In contrast, others choose not to engage, perhaps due to competing priorities or a lack of interest in structured campus life. These contrasting levels of involvement provide an enriched basis for exploring how engagement-or lack thereof- with campus resources and social networks impacts their sense of gratitude. The university environment at UNIMEN, which emphasizes a close-knit academic community, serves as an ideal context for examining these dynamics.

Research indicates that students' sense of well-being is significantly influenced by their interactions within supportive campus environments that promote peer relationships and communal activities (Watkins et al., 2022). For those experiencing the Quarter Life Crisis, access to a conducive campus environment with robust social support can be particularly vital in fostering a sense of gratitude and resilience. It is within such environments that students can find solace, clarity, and support, which can mitigate the effects of this life stage crisis and ultimately contribute to their overall well-being (Yang et al., 2024; Gano-Overway & Harrison, 2024). By examining these issues in the specific context of UNIMEN, this study aims to shed light on how environmental factors, including social engagement and the provision of green spaces, can play a role in shaping students' gratitude amidst the challenges posed by the QLC. This research not only contributes to the understanding of gratitude in

[1] See Wood (2020) for a more detailed discussion on how cultivating gratitude towards nature can enhance our ethical relationships with the environment.
[2] See also Watkins (2003 & 2022) explores the connections between gratitude and happiness by developing a reliable measure of gratitude and examining how gratitude relates to subjective well-being (SWB).

educational settings but also emphasizes the need for universities to address the unique challenges faced by students as they navigate this complex period of their lives.

Research Design

This study employs a quantitative survey design to examine the impact of environmental factors on students' levels of gratitude. According to Bryman (Pilcher et al., 2024), quantitative methods are particularly suited for studies that aim to explore relationships between variables, as they allow researchers to quantify the strength and direction of associations. This design was chosen for its ability to efficiently collect data from a substantial sample of 231 participants, facilitating comprehensive statistical analysis of environmental factors such as social support, access to green spaces, and community engagement. The survey utilized a Likert scale, which (Creswell & & David., 2018) highlights as an effective tool for capturing participants' perceptions and attitudes in a structured format, allowing for the collection of reliable and valid data. Linear regression was employed to examine how each environmental factor influences gratitude levels, providing insights that can be generalized to similar university settings. Furthermore, the survey approach supports the generalizability of the findings, offering implications for other educational institutions seeking to enhance student well-being through supportive environments (Chaudhry et al., 2024).

Participants

The sample for this study comprised 231 students enrolled in their 4th and 6th semesters at the Faculty of Education, UNIMEN. Participants were randomly selected from a total population of approximately 439 students within these semesters, ensuring that the sample accurately represents the broader student demographic. The use of random selection helped to minimize sampling bias and enhance the validity of the findings, as it captured a diverse range of student experiences and backgrounds. The sample was intentionally chosen to include students with varying degrees of involvement in campus organizational activities, from those who are actively engaged to those who are less involved.

This diversity within the sample provides an enriched perspective on how different levels of campus engagement, along with other environmental factors such as access to green spaces and social support, influence students' sense of gratitude. The inclusion of participants from multiple stages in their academic journey also allowed for the exploration of how these environmental factors impact students’ well-being at different points in their university experience.

Research Instruments

This study employed a structured survey instrument utilizing a Likert scale, which is widely acknowledged as a reliable and valid tool for capturing subjective perceptions and attitudes. Following Christensen et al. (2014), the Likert scale remains a cornerstone in educational research for quantifying attitudes and perceptions due to its ease of use and adaptability to diverse contexts. The scale used in this study was carefully validated for higher education settings, ensuring that it accurately captures the multifaceted nature of gratitude among university students.

The survey also assessed various environmental factors hypothesized to influence gratitude, specifically focusing on social support, access to green spaces, and community engagement. These factors were measured through a series of closed-ended questions and rating scales, which allowed participants to evaluate their experiences with these aspects of their environment in a consistent manner. This approach facilitated comprehensive data collection and allowed for subsequent statistical analysis to determine the relationships between these environmental factors and gratitude levels. By structuring the instrument in this way, the study was able to produce robust data suitable for exploring the complex interplay between environmental conditions and emotional well-being in an academic context.

Data Analysis Techniques

The data collected were subjected to statistical analysis using linear regression, which allowed for an examination of the relationships between environmental factors, social support, access to green spaces, and community engagement, and students' levels of gratitude. This analysis aimed to quantify the impact of each independent variable on gratitude levels, represented as the dependent variable. Initially, descriptive statistics were calculated to summarize the data, revealing that the mean level of gratitude among participants was 4.2 on a 5-point Likert scale, with a standard deviation of 0.6, indicating moderate variance in gratitude levels across the sample. To further explore these relationships, linear regression was employed to determine the individual contribution of each environmental factor to gratitude. The model yielded the following standardized regression coefficients, as depicted in the chart below:

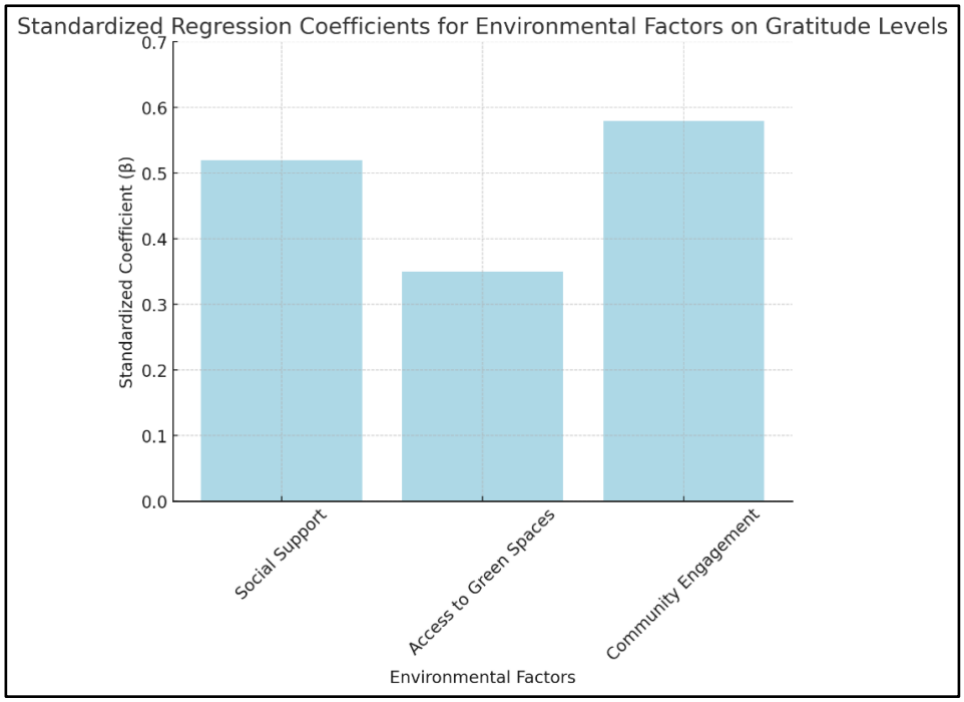

Figure 1: Comparison of Environmental Factors' Impact on Gratitude

These coefficients suggest that community engagement had the strongest positive impact on gratitude, followed closely by social support, while access to green spaces also had a significant, though slightly smaller, positive effect. The overall regression model was statistically significant, $F(3, 227) = 42.7$, $p < 0.001$, and accounted for approximately 55% of the variance in gratitude levels ($R^2 = 0.55$). This indicates that more than half of the

variability in gratitude can be explained by the environmental factors assessed in the study. Confidence intervals for each predictor were calculated at a 95% confidence level, with results showing narrow intervals that provide further evidence of the reliability of these findings. Additionally, residuals were examined to confirm that they were normally distributed, and multicollinearity diagnostics showed Variance Inflation Factors (VIFs) below 2 for all predictors, suggesting no issues with multicollinearity in the model. The standardized regression coefficients presented in the first chart reveal that community engagement had the strongest positive effect on gratitude, followed by social support and access to green spaces. This suggests that over half of the variability in gratitude can be explained by the environmental factors assessed. The subsequent scatterplots further illustrate these relationships:

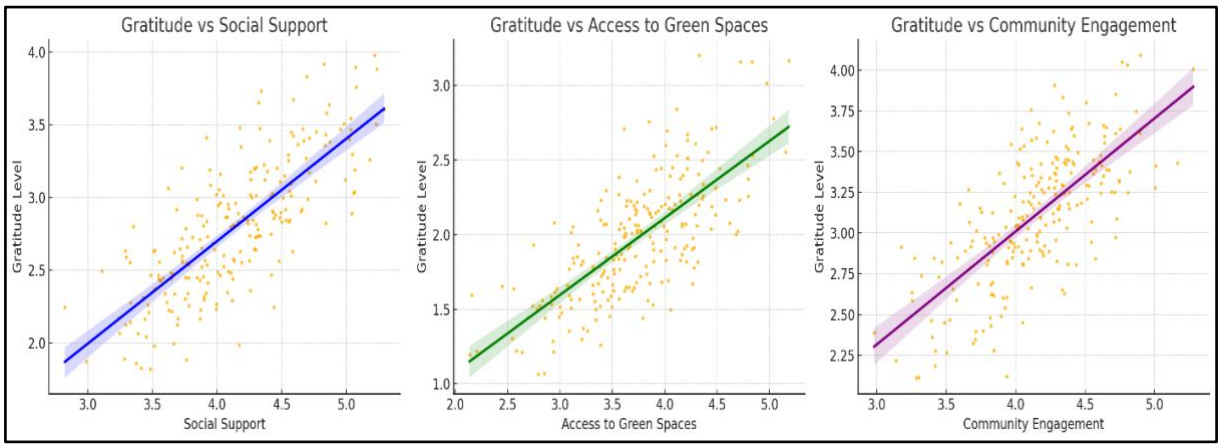

Figure 2: A Comparative Analysis of Social Support, Access to Green Spaces, and Community Engagement

The scatterplots visually depict the individual relationships between various environmental factors and gratitude levels. The observed patterns indicate that each factor contributes differently, with social support and community engagement emerging as notably impactful. Further details are provided below:

1) Gratitude vs Social Support: The regression line shows a strong positive association, indicating that higher levels of social support are linked to increased gratitude.
2) Gratitude vs Access to Green Spaces: While access to green spaces positively correlates with gratitude, its impact is weaker than the other two factors.
3) Gratitude vs Community Engagement: Community engagement has the strongest correlation with gratitude, consistent with the regression analysis, which showed the highest standardized coefficient for this factor.

These findings highlight the importance of social interactions, both through personal support networks and active participation in community activities, in enhancing gratitude levels. Although access to green spaces is significant, it may require the support of social factors to achieve optimal impact on emotional well-being. As an implication, educational institutions could consider strengthening social engagement programs as part of their efforts to improve students' emotional well-being. Through this analytical approach, the study quantified the precise impact of environmental factors on students' gratitude, offering a thorough understanding of how various campus-related elements influence their emotional well-being. This visualization not only emphasizes the importance of each factor but also highlights their relative effects on gratitude, providing a clearer view of where interventions could be most beneficial in promoting mental resilience.

Results and Discussion

The current study explores how environmental factors influence gratitude levels among students, with a focus on social support, access to green spaces, and community engagement. Gratitude, as a positive psychological trait, has been associated with various benefits, particularly in terms of mental health and emotional resilience (Chen et al., 2024). Understanding how these environmental factors impact gratitude can provide insights into creating supportive environments that promote student well-being. The findings of this study align with existing research on the crucial role of environmental factors in nurturing gratitude among students. Gratitude has been consistently linked to positive mental health outcomes, particularly as students navigate the challenges of academic life. Wood, Froh, and Geraghty (Zhang, 2024) highlight that gratitude acts as a protective factor, enhancing emotional resilience and aiding individuals in coping with stress and adversity. This underscores the need for educational institutions to cultivate supportive environments that promote well-being. The following sections examine the relationships between gratitude levels and each of these factors, highlighting the implications for educational settings:

1) Gratitude and Social Support

The first graph indicates a significant positive correlation between social support and gratitude levels. As students receive higher levels of social support, their gratitude also tends to increase. Social support, which encompasses emotional encouragement and a sense of connectedness, provides essential emotional comfort. This allows individuals to feel valued and accepted, ultimately fostering a stronger sense of gratitude toward their surroundings. According to Yıldırım and Green (2024), social support serves as a protective mechanism that helps individuals cope with stress and enhances psychological well-being. In this context, gratitude acts as a mediator that connects social support with feelings of happiness and well-being. This aligns with the findings, where social support can stimulate positive attitudes, such as gratitude, by validating individuals' feelings and experiences. Furthermore, (Eisenberger et al., 2023) argue that gratitude fostered through social support helps individuals develop a more positive and optimistic outlook on life. They add that quality social interactions enrich one's sense of gratitude, which in turn strengthens interpersonal relationships and mental health. This evidence supports the argument that social support not only provides emotional comfort but also cultivates deep-seated gratitude, reinforcing connections with others.

2) Gratitude and Access to Green Spaces

The second graph demonstrates a positive relationship between access to green spaces and levels of gratitude. Increased access to green spaces appears to correlate with higher gratitude levels, suggesting that such environments contribute to a sense of tranquillity and satisfaction, thereby fostering gratitude. Students with greater access to green spaces may experience a deeper sense of relaxation, which positively influences their feelings of gratitude. As indicated by Papastergiou et al. (2023), exposure to natural environments, including green spaces, has been shown to enhance psychological well-being by reducing stress and promoting relaxation. This process creates a conducive environment for gratitude to flourish, as individuals in natural settings often feel a heightened connection to their surroundings and a sense of appreciation for nature's beauty. These experiences are found to increase overall life satisfaction and gratefulness. Moreover, (Green et al., 2019) highlight that regular interaction with green spaces not only improves mental health but also encourages reflective

practices that can amplify gratitude. They explain that green spaces offer a break from daily routines and distractions, allowing individuals to focus on the present moment and appreciate it fully. This presence and mindfulness are crucial for cultivating gratitude, as they allow individuals to notice and value aspects of life they might otherwise overlook.

3) Gratitude and Community Engagement

The third graph demonstrates a strong positive correlation between community engagement and levels of gratitude. Greater involvement in community activities is associated with increased gratitude among students. Community engagement fosters a sense of belonging and provides additional emotional support, which amplifies feelings of gratitude. This finding highlights the significant role of collective experiences in shaping positive attitudes such as gratitude, a perspective further supported by Guo et al., 2024, who argues that active participation in community settings enhances well-being by fostering social connections and a sense of purpose. He suggests that when individuals are involved in community activities, they experience a heightened awareness of their support network, which contributes to feelings of appreciation and gratitude. Baker's insights align with the current findings, illustrating that community engagement does not only build social ties but also cultivates a deeper sense of gratitude by reinforcing one's connection to others.

4) Analysis of Regression Coefficients

The bar chart of regression coefficients reveals that community engagement has the strongest impact on gratitude levels, followed by social support and then access to green spaces. This underscores the notion that, while all factors significantly contribute to gratitude, community engagement exerts the most substantial influence.

These findings emphasize the role of educational institutions in promoting well-being by creating environments that foster gratitude, particularly crucial for students experiencing quarter-life crises (QLC). In this study, involving 231 participants from the Faculty of Education at UNIMEN, the demographic and academic context likely shaped students' responses to environmental factors. As future educators, these students may possess a heightened sensitivity to social connections and supportive settings, which can positively influence their levels of gratitude. QLC is marked by feelings of uncertainty, identity exploration, and stress about prospects. Students going through QLC are at risk of significant mental strain, especially if they lack emotional support. However, research suggests that those with high well-being and positive emotions, such as gratitude, are better equipped to navigate these challenges. By valuing and seeking social support, community involvement, and access to green spaces, students can build resilience against the stresses associated with QLC.

Educational institutions are uniquely positioned to help students through QLC by intentionally cultivating supportive environments. Integrating social support networks and expanding green spaces within campus infrastructure directly addresses the emotional needs of students, helping them foster positive attitudes like gratitude, which in turn boosts academic success. Green spaces, for instance, offer more than aesthetic benefits; they provide students with a peaceful setting to reflect, relax, and enhance their mental well-being. The perspectives of Seligman and Csikszentmihalyi (2014) align with this approach, emphasizing that environments fostering positive emotions can significantly enhance resilience. Additionally, Lyubomirsky, Sheldon, and Schkade (Fernandes de Souza, 2024) highlight that

supportive social interactions play a substantial role in cultivating gratitude and enhancing well-being. This is particularly relevant in managing QLC, where gratitude helps students stay positive amidst uncertainty. Bryant and Veroff's concept of "savoring" (Colombo et al., 2024) underscores the importance of appreciating positive moments, suggesting that green spaces and community activities on campus can further nurture gratitude. By fostering gratitude through social networks, green spaces, and community activities, universities can provide students with the resilience needed to navigate QLC, helping them thrive both academically and personally.

Conclusion: Implications and Limitations

1) Implications

Evidence from this study emphasizes the role of environmental factors like social support, access to green spaces, and community engagement in fostering gratitude among students. These findings have significant implications for higher education institutions striving to promote emotional well-being among their students.

a. **Importance of Physical and Social Environment for Emotional Well-being:** Educational institutions may consider developing social engagement programs and providing more green spaces on campus as part of efforts to improve students' mental and emotional well-being. A supportive environment can facilitate positive experiences like gratitude, which plays a crucial role in building resilience against the pressures of academic and personal life.

b. **Gratitude as a Protective Mechanism during the Quarter Life Crisis (QLC):** In the context of the QLC, often experienced by students, this study underscores that gratitude can serve as an important mediator in helping students navigate emotional and psychological challenges. Students engaged in supportive environments are more likely to develop gratitude, aiding them in coping with the uncertainties and psychological stressors associated with early adulthood.

c. **Expansion of Counseling Services to Support Mental Health:** Enhancing student counseling services that prioritize well-being is crucial, ensuring that these services address not only academic issues but also provide comprehensive emotional and psychological support. Based on this study's findings, institutions can offer counseling programs that prioritize emotional support and help students foster gratitude through positive social interactions. These well-being-oriented counseling programs can include reflective sessions, group therapy, and emotional skills training aimed at enhancing students' resilience in the face of QLC.

Sustained support from counseling services will help students become more actively involved in the campus community and utilize existing green spaces for relaxation and personal reflection. This is also relevant for educational policymakers who aim to create a holistic academic environment where counseling services address not only academic issues but also support students' emotional and psychological well-being. Through this approach, campuses can become spaces that foster both academic achievement and optimal emotional well-being.

2) Limitations

These limitations highlight areas where future research can expand and deepen the findings, offering a more nuanced understanding of the dynamics at play. The primary limitations of this study include constraints on the generalizability of results, the choice of a quantitative research design, potential biases in measurement tools, the cross-sectional nature of the data, and the exclusion of certain external variables. Each of these factors is elaborated upon below to clarify their potential impact on the study's conclusions and suggest directions for future research.

a) Limited Generalizability
The study sample consists solely of students from the Faculty of Education at Universitas Muhammadiyah Enrekang. As a result, the findings may not be generalizable to other universities, faculties, or broader populations. Future research that includes diverse institutions and student demographics could help enhance the applicability of the results across different educational contexts.

b) Quantitative Research Design
The reliance on a quantitative survey approach restricts the depth of insight into students' subjective experiences and perceptions of gratitude and environmental factors. While useful for statistical analysis, this method may not fully capture the emotional nuances and personal insights that qualitative methods, such as interviews or focus groups, could reveal. Follow-up studies incorporating these methods would offer a more comprehensive understanding.

c) Measurement Limitations
This study used Likert scales to measure gratitude and environmental factors, which, despite their validation, may be susceptible to response biases, such as social desirability bias. Additionally, individual differences in interpreting and responding to Likert scale items may affect result accuracy. Utilizing a combination of qualitative and quantitative approaches in future research could help mitigate these biases and validate the findings.

d) Cross-Sectional Data
As data were collected at a single point in time, this study offers a snapshot of the relationship between environmental factors and gratitude, without the ability to infer causality or observe changes over time. Longitudinal research would be needed to better understand the long-term effects of environmental factors on students' gratitude levels and how these relationships may evolve.

e) Unmeasured External Factors
This study did not account for potential external influences, such as family background, socioeconomic status, or past life experiences, which could affect levels of gratitude. The exclusion of these variables might introduce confounding factors, limiting the ability to fully interpret the findings. Future research that includes a broader range of variables could provide a more holistic understanding of the factors influencing student gratitude.

Despite these limitations, this study contributes to the growing body of literature on environmental factors and gratitude, offering a foundation for further exploration and practical applications within educational settings. Future research that addresses these

limitations can help scholars develop a more comprehensive understanding of how supportive environments enhance student well-being and resilience.

Acknowledgements

The author wishes to express gratitude to the Faculty of Education at Universitas Muhammadiyah Enrekang for their support throughout this research. Special thanks are extended to (1) the Balai Pembiayaan Pendidikan Tinggi (Center of Higher Education Fund) – BPPT, The Ministry of Education, Culture, Research, and Technology, Republic of Indonesia, and (2) Lembaga Pengelola Dana Pendidikan (Indonesia Endowment Fund for Education) – LPDP, Ministry of Finance Indonesia, for granting a scholarship to the first author and presenter, enabling the completion of this study. Appreciation is also due to the participating students, colleagues, and mentors for their valuable feedback and guidance. Finally, heartfelt thanks go to friends and family for their unwavering encouragement. This work would not have been possible without the generous support and resources provided by all involved parties.

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The Competency Based Effective Clinical Supervision (COBECS) in Counseling Research: Bibliometric Analysis

Deasy Yunika Khairun, Universitas Pendidikan Indonesia, Indonesia
Agus Taufiq, Universitas Pendidikan Indonesia, Indonesia
Yusi Riksa Yustiana, Universitas Pendidikan Indonesia, Indonesia
Nandang Budiman, Universitas Pendidikan Indonesia, Indonesia
Ibrahim Al Hakim, Universitas Pendidikan Indonesia, Indonesia

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
The aim of this study was to identify influential research on the topic of competency-based clinical supervision (COBECS) in counseling practice and to provide thematic insights for guidance and counseling academics. This article presented a bibliometric analysis (frequency analysis, citation metrics, and data visualization) from the Scopus database over the period 1998 to mid-2024. The analysis examined 113 articles related to COBECS. The keywords with the strongest links were "clinical supervision" and "competency-based effective clinical supervision." Comprehensive statistics on the annual publications of COBECS research from 1998 to 2024 were provided. According to the Scopus database, the first article on COBECS was published in 1998. Most publications occurred in 2017 and 2020, with 10 documents each. A total of 3,963 citations were referenced for 113 papers published over the 26-year period (1998–2024). A total of 33 countries were recorded as having contributed publications on COBECS in various languages. Network visualization tools were used to profile the centrality features of keyword clusters in COBECS. This study found that the existing literature was dominated by the area of clinical supervision.

Keywords: Competency Based Effective Clinical Supervision, Bibliometric Analysis, Data Visualization

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Introduction

Supervision is a process for a professional counselor to support, instruct, and evaluate the psychological, professional, and skill development of less experienced counselors (Bolu-Steve & Oredugba, 2017; Carter et al., 2005; Studer, 2005). Supervision is generally divided into two types: administrative supervision and general clinical supervision. Administrative supervision focuses on job performance in relation to organizational goals, while clinical supervision focuses on the professional development and evaluation of counselors. Administrative supervision includes performance reviews, compliance with laws and policies, attendance, and team interactions. A school principal may provide this type of supervision. On the other hand, clinical supervision helps school counselors develop various skills needed to address counseling practice challenges, such as working with exceptional children or addressing the mental health needs of students from diverse cultural or special needs backgrounds (Dollarhide & Miller, 2006).

Competency-Based Effective Clinical Supervision (COBECS) is defined as an approach that explicitly identifies the knowledge, skills, and values integrated to form clinical competence and develops learning strategies and evaluation procedures to meet competency standards aligned with evidence-based practice and local clinical environment requirements (Falender & Shafranske, 2007a). The COBECS framework (Falender et al., 2004; Falender & Shafranske, 2004, 2007b, 2008, 2011; Farber & Kaslow, 2010) provide blueprints for building, assessing, formatting, monitoring, and evaluating clinical training and supervision (Kamen et al., 2010). The focus is on competency development pathways for supervision. COBECS requires task analysis, frequent feedback, and assessment of progress toward the knowledge, skills, and attitudes required to perform the work. Falender & Shafranske explain that "outcomes" are critical components in the assessment, particularly observable and measurable results. The emphasis on outcomes focuses on what is learned and the specific results of training, rather than just testing the content taught or trained. COBECS integrates clinical training with career-long professional development.

The aim of this article is to expand readers' understanding of COBECS within the research landscape of counseling using bibliometric networks and visualization through the VosViewer application. This study also identifies papers published since 1998, indexed by Scopus. These three aspects represent the novelty of this research. The research questions posed in this bibliometric study of COBECS are as follows: (1) What are the trends and impacts of peer supervision in counseling studies? (2) What keywords frequently appear in peer supervision studies? (3) Which peer supervision articles in counseling research are the most influential?

This article is organized into four sections: introduction, methodology, findings and interpretation, and a discussion of various issues raised as responses to the research questions. The aim of this research is to gain a deeper understanding of COBECS practices. By reviewing the Scopus database of competency-based supervision papers, researchers are able to make recommendations for future research.

Methods

This bibliometric study analyzes competency-based clinical supervision in counseling-related papers using the Scopus scientific database from 1998 to 2024. The international scientific community considers Scopus as one of the primary sources of information on this topic. The

title search terms “Clinical Supervision” and "Competency-Based Effective Clinical Supervision" are used to find publications related to this topic.

Bibliometric analysis is a type of quantitative analysis that displays the intellectual structure and evolving patterns within a topic or field of study (Donthu et al., 2021). This analysis is useful when the scope of a topic is too broad and the dataset is too large to review manually. The bibliometric analysis consists of five stages: study design, data compilation, analysis, visualization, and interpretation (Zupic & Čater, 2014). This study uses a bibliometric analytical approach to generate two outcomes: 1) performance analysis and 2) network visualization.

Research contributions to a specific area are analyzed through performance analysis (Boonroungrut et al., 2022; Cobo et al., 2011). The number of publications and citations per year or per research constituency are the most commonly used metrics. Publications reflect productivity, while citations measure the level of impact and influence. Other methods for evaluating the success of research components, such as citations per publication and the h-index, combine the number of citations received with the number of publications.

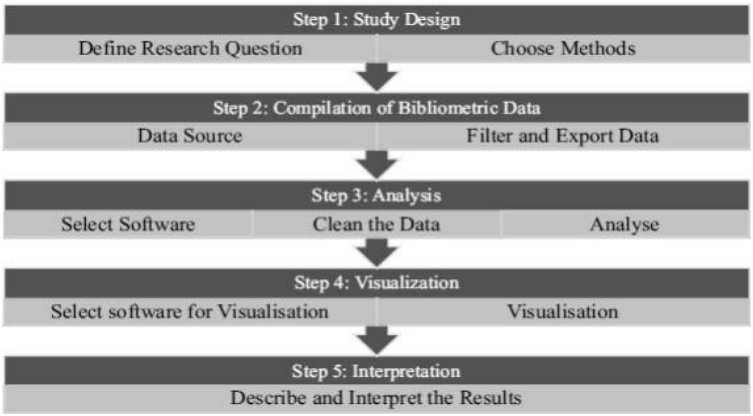

Figure 1: Stages of Bibliometric Analysis Technique

The second outcome is network visualization analysis. The first step in network visualization analysis is conducting a network metrics analysis. Bibliometric research evaluation is made more comprehensive by using network metrics. Specifically, network metrics convey the relative significance of research components (such as authors, institutions, and countries), which may not be reflected through publications or citations. This is because network metrics are based on relationships between research constituents (Andersen, 2021). Bibliometric analysis is often used in conjunction with network visualization software, such as the graphic user interface-based software Vos Viewer. Clustering is another bibliometric enrichment strategy, where the main goal is to build topic clusters, form network groups, and observe their development. This helps readers understand how a field of study emerges and evolves.

Results and Discussion

This section presents the findings of the bibliometric analysis used to answer the research questions. The study aims to address the first question regarding current trends and the impact of publications on Competency-Based Effective Clinical Supervision in counseling. It identifies the most productive and influential countries, organizations, and authors in Competency-Based Effective Clinical Supervision research. It also examines the most influential publications in Competency-Based Effective Clinical Supervision studies.

The following attributes are used to analyze the academic works extracted during the search process: annual publication growth, type of publication, field of study, keyword analysis, publisher distribution, author analysis, title and abstract analysis, and citation analysis.

The findings include statistics on annual growth through 2024, including frequency and percentage. To analyze the publishing patterns in Competency-Based Effective Clinical Supervision research in counseling, publications are analyzed by year, country, journal, author, and organization to identify research trends. This study uses bibliographic data from Scopus. The discussion of annual growth emphasizes trends and the importance of publications on Competency-Based Effective Clinical Supervision.

Annual Publication Growth

Table 1 summarizes the comprehensive statistics of annual publications on competency-based clinical supervision research from 1998 to 2024. According to the Scopus database, the first article on competency-based clinical supervision research is published in 1998. Most publications, as shown in the table, occur in 2017 and 2020, with 10 documents each. The number of competency-based clinical supervision research papers per year is presented in Table 1.

Table 1: Annual Publication Growth

Year	TP	%TP	NCP	TC	C/CP	Year	TP	%TP	NCP	TC	C/CP
1998	1	0.9%	1	18	18.0	2012	5	4.4%	5	102	20.4
1999	0	0%	0	0	0.0	2013	7	6.2%	7	276	39.4
2000	0	0%	0	0	0.0	2014	8	7.1%	8	347	43.4
2001	0	0%	0	0	0.0	2015	5	4.4%	5	419	83.8
2002	0	0%	0	0	0.0	2016	7	6.2%	7	317	45.3
2003	0	0%	0	0	0.0	2017	10	8.8%	10	183	18.3
2004	2	1.8%	2	98	49.0	2018	8	7.1%	8	98	12.3
2005	2	1.8%	2	57	29.0	2019	9	8%	9	108	12.0
2006	0	0%	0	0	0.0	2020	10	8.8%	10	175	17.5
2007	2	1.8%	2	192	96.0	2021	7	6.2%	5	22	4.4
2008	0	0%	0	0	0.0	2022	8	7.1%	5	14	2.8
2009	0	0%	0	0	0.0	2023	8	7.1%	6	15	2.5
2010	5	4.4%	5	127	25.4	2024	7	6.2%	1	4	4
2011	2	1.8%	2	81	40.5						

Note: TP = total publications; NCP = number of cited publications; TC = total citations; and C/CP = citations per cited publication.

The paper published in 2015 received the most citations (419 total citations; the average number of citations per publication is 83.8). However, since 2010, there has been an increase in the release of studies on competency-based clinical supervision (Figure 2). After determining the annual publication growth, the next step in identifying current trends is to determine the type of document and field of study. This reveals which types of documents and fields of study have been identified as having competency-based clinical supervision guidance.

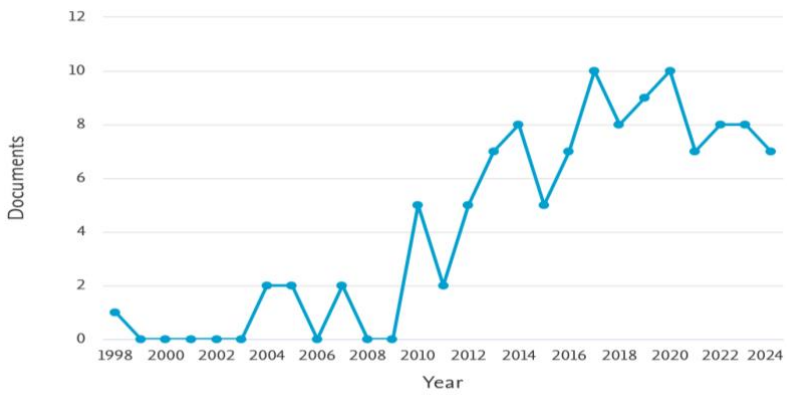

Figure 2: Number of Publications per Year

Type of Publication

After identifying the growth of annual publications and types of sources, the next step is to analyze the types of research publications. The obtained data is first assessed based on the type and source of publication. The type of document indicates the type of legitimacy, such as conference papers, essays, book chapters, etc. On the other hand, the source represents the origin of the publication, whether it is a journal, conference proceedings, book series, books, or commercial publications.

Table 2: Document Types

Type of publication	Number of publications	%
Article	98	86.7%
Review	12	10.6%
Conference proceeding	2	1.8%
Book chapter	1	0.9%

Table 2 summarizes the publications generated on the topic of competency-based clinical supervision, categorized into four types of documents. As shown in the table, articles account for more than half of all publications (86.7 percent), followed by reviews (10.6 percent). There are 2 conference proceedings (1.8 percent), and lastly, there is 1 publication from a book chapter (0.9 percent).

Field of Study

This study categorizes the published papers according to the field of study, as shown in Table 3. Overall, the distribution indicates that literature on competency-based clinical supervision can be found across various fields of study, including medicine; social science; psychology; arts and humanities; nursing; health professions; biochemistry, genetics, and molecular biology; environmental science; immunology and microbiology; energy; engineering; and pharmacology, toxicology, and pharmaceutics. As shown in the table, nearly half of the reviewed publications are in Medicine (37.1 percent), with social science in second place (21.4 percent).

The subsequent analysis focuses on identifying which countries, institutions, and authors are the most productive and influential in competency-based clinical supervision research. The second question raised in this study is answered by classifying articles according to the country in which they were published.

Table 3: Field of Study

Field of Study	Total Publications	%
Medicine	59	37.1%
Social Science	34	21.4%
Psychology	31	19.5%
Arts and Humanities	8	5.0%
Nursing	8	5.0%
Health Professions	7	4.4%
Biochemistry, Genetics and Molecular Biology	3	1.9%
Environmental Science	2	1.3%
Immunology and Microbiology	2	1.3%
Physics and Astronomy	2	1.3%
Other (Energy, Enginering, Pharmacology, Toxicology and Pharmaceutics)	3	1.9%

Most Active Countries

This section discusses the identification of countries that are most active in the topic of competency-based clinical supervision. The United States has the highest number of publications, with a total of 51 publications and 1,530 total citations, as shown in Table 4. Australia surpassed Canada to become the second most active country in the topic of competency-based clinical supervision.

Tabel 4: Most Active Countries

Countries	Examples of Published Journal Names	TP	TC	Countries	Examples of Published Journal Names	TP	TC
United States	Academic Medicine	51	1530	Belgium		1	
Australia	Rural & Remote Health	13	101	Brazil		1	
Canada	Annales de Medecine Interne	10	353	China	Journal of Nursing Scholarship	1	46
Netherlands	Health Policy and Planning	10	723	Ethiopia	Annals of Otology, Rhinology & Larygonolgy	1	2
United Kingdom	British Journal of Community Nursing	10	445	Hong Kong	Journal of Nursing Scholarship	1	46
Germany	European Journal of Obstetrics and Gynecology & Reproductive Biology	6	66	Indonesia	AIP Conference Proceedings	1	0

Iran	BioMed Research International	3	15	Ireland	BMC Medical Education	1	3
Pakistan	Medical Teacher	3	13	Japan	Endoscopy	1	26
Taiwan	Journal of Nursing Research	3	25	Malaysia	BMC Medical Education	1	17
India	Indian Journal of Surgery	2	1	Nepal	International Review of Psychiatry	1	46
Liberia	International Review of Psychiatry	2	52	New Zealand	Australasian Psychiatry	1	4
Malawi	International Journal of Mental Health Systems	2	13	Nigeria	Journal of Global Oncology	1	15
Saudi Arabia	Education for Health: Change in Learning & Practice	2	24	Serbia	Vojnosanitetski	1	0
South Africa	Journal of Surgical Education	2	7	Slovenia	European Journal of Obstetrics & Cynecology & Reproductive Biology	1	14
Sweden	BMC Family Practice	2	14	Uganda	International Review of Psychiatry	1	46
Tanzania	Human Resources for Health	2	57	Undefined	Family Process	4	255
Zambia	American Journal of Tropical Medicine & Hygiene	1	4				

Note: TP = total publications; TC = total citation

Author Analysis

This study also identifies the most active authors who have published research on the topic of competency-based clinical supervision in counseling practice. The most prominent authors have at least four articles in this field, as shown in Table 5. Falender, C.A., and Shafranske, E.P. are the most active researchers in competency-based clinical supervision. The third research question, which inquires about the most prominent themes in competency-based clinical supervision among researchers, is addressed after all issues related to the second research question are resolved. Next, an analysis of the most frequently occurring keywords from each publication reviewed in this study follows.

Table 5: Most Active Authors

Author	Article Title (Year of Publication)
Falender, C.A.	Competence in Competency-Based Supervision Practice: Construct and Application (Falender & Shafranske, 2007b) Multicultural Clinical Supervision and Benchmarks: Empirical Support Informing Practice and Supervisor Training (Falender et al., 2013) Competent Clinical Supervision: Emerging Effective Practices (Falender et al., 2014) Clinical Supervision: The State of The Art (Falender & Shafranske, 2014) Competency-based Clinical Supervision: Status, Opportunities, Tensions, and The Future (Falender & Shafranske, 2017)
Shafranske, E.P.	Competence in Competency-Based Supervision Practice: Construct and Application (Falender & Shafranske, 2007a) Competent Clinical Supervision: Emerging Effective Practices (Falender et al., 2014) Clinical Supervision: The State of The Art (Falender & Shafranske, 2014) Competency-based Clinical Supervision: Status, Opportunities, Tensions, and The Future (Falender & Shafranske, 2017)
Weck, F.	The Effects of Bug-in-the-Eye Supervision on Therapeutic Alliance and Therapist Competence in Cognitive-Behavioural Therapy: Randomized Controlled Trial (Weck et al., 2016) Topics and Tehniques in Clinical Supervision in Psychotherapy Training (Weck et al., 2017)

Publications by Title

Research on COBECS is published in various journals, conferences, and books. Table 6 displays the titles of the most actively published research papers on competency-based clinical supervision. The total number of published articles is used to determine which articles are the most active. As shown in Table 6, the article by Kok, M.C. et al. from 2015 is the most cited. This article identifies the design factors of interventions that affect the performance of community health workers (CHWs) in low- and middle-income countries (LMICs) through a systematic review of various quantitative and qualitative studies.

Table 6: Publications by Title

No	Author (Year)	Research Focus	TC
1.	(Kok et al., 2015)	Identifying the design factors of interventions that affect the performance of community health workers (CHWs) in low- and middle-income countries (LMICs) through a systematic review of various quantitative and qualitative studies.	316
2.	(Carraccio et al., 2016)	Introducing and promoting the understanding and application of competency-based medical education (CBME) globally by drafting a charter supported by fundamental principles and professional responsibilities for medical educators, in order to guide the effective implementation of CBME based on the health needs of the population.	222
3.	(Falender & Shafranske, 2007b)	Defining competency-based clinical supervision in psychology, exploring related ethical, legal, contextual, and practical issues, and providing recommendations for best practices in addressing the challenges of clinical supervision.	180
4.	(Kogan et al., 2014)	Reconceptualizing the cognitive issues of supervisors in competency-based assessment in medical education as problems of education and clinical care, emphasizing the importance of accountable assessments focused on the ability to provide safe, effective, and patient-centered care, and proposing a new faculty development model to enhance the quality of assessment and clinical supervision.	111
5.	(Lypson et al., 2004)	Evaluating the effectiveness of the Postgraduate Orientation Assessment (POA) in measuring the foundational knowledge and skills of new resident doctors, with the aim of identifying learning needs, enhancing patient safety, and meeting accreditation requirements at the early stage of their training.	95
6.	(Borders, 2014)	Distinguishing between competencies and best practices in clinical supervision, and describing the development and content of a comprehensive Best Practices Statement in Clinical Supervision for counseling, while highlighting its applicability across disciplines and countries, as well as the importance of reflective knowledge in the development of supervisor expertise.	86
7.	(Bell et al., 2020)	Identifying the challenges faced by health service psychology (HSP) education and training due to the COVID-19 pandemic and exploring opportunities for improvement and growth, including the use of remote technology, more effective competency assessment, and the potential for revising and redesigning HSP education and training.	68

8.	(Krajewsk et al., 2013)	Evaluating the effects of a two-month boot camp curriculum for general surgery interns in enhancing their knowledge, procedural skills, and clinical competencies, as well as its impact on performance perceptions by faculty and nursing staff, in the context of work hour restrictions and competency-based supervision requirements.	63
9.	(Falender et al., 2013)	"Providing foundational knowledge and context regarding competency-based clinical supervision, exploring diverse empirical approaches to effective supervision studies, including competent multicultural supervision and cross-cultural comparative perspectives, as well as offering guidance for future supervision training."	62
10.	(Falender et al., 2014)	Highlighting recent developments and the current state of clinical supervision with an emphasis on competency-based approaches, as well as presenting effective clinical supervision strategies and challenges in current supervision training practices.	60
11.	(Cate & Carraccio, 2019)	Proposing an integrated competency-based medical education and training model throughout a physician's career, combining education with competency-based medical practice, and developing a portfolio of Entrustable Professional Activities (EPAs) to ensure that doctors can continue to provide effective and safe care in alignment with evolving population health needs and competency expectations.	55
12.	(Kohrt et al., 2018)	Evaluating mental health training and supervision programs in Uganda, Liberia, and Nepal, and identifying gaps in competency assessment, along with recommendations for improving the integration of mental health services into primary care in humanitarian settings.	46
13.	(Chan et al., 2010)	Designing, implementing, and evaluating the 'Introduction to Disaster Nursing' training course based on the International Disaster Nursing Competency Framework, and assessing its impact on participants' competencies and attitudes in disaster management.	46
14.	(Falender & Shafranske, 2017)	Exploring and addressing the challenges in implementing competency-based clinical supervision models, using the trans-theoretical molecular model as a framework to define the content and process of supervision, and identifying steps to enhance supervisor competency and supervision effectiveness in clinical practice.	45

15.	(Schultz et al., 2015)	Developing and implementing 35 Entrustable Professional Activities (EPAs) in the family medicine residency program in Canada to enhance competency-based assessment, using EPA field notes as both formative and summative tools for evaluating and declaring resident competency.	45
16.	(Falender & Shafranske, 2014)	Providing a meta-theoretical framework for competency-based clinical supervision, highlighting effective supervision practices, as well as the evolving competencies and strengths of both supervisee and supervisor, including self-assessment tools to evaluate supervision readiness and competency.	45
17.	(Nyamtema et al., 2011)	Developing and implementing a competency-based curriculum to train non-physician medical officers in Tanzania to provide Comprehensive Emergency Obstetrical Care (CEmOC) and anesthesia in remote health centers, in order to improve access to and quality of maternal healthcare in rural areas.	43
18.	(Watkins, 2013)	Identifying and analyzing ten key guidelines that increasingly define effective psychoanalytic supervision practices, including enthusiasm in supervision, learning alliance, reflectivity, understanding the supervision field, supervisory interventions, and individual as well as developmental diversity, to strengthen the competency-based approach in psychoanalytic supervision.	42
19.	(Sarnat, 2010)	Exploring how four core competencies in professional psychology—relationship, self-reflection, case assessment-conceptualization, and intervention—are essential for psychoanalytic therapists, and how these competencies are developed through the deep supervisory relationship between the supervisor and the therapist in training.	40
20.	(Nash et al., 2012)	Identifying and describing the functional roles and basic characteristics of psychologists in integrated primary care settings, including the concept of 'primary care ethics' that encompasses the attitudes, values, knowledge, and skills essential for the effectiveness and productivity of psychologists within primary care teams.	38

Note: TC=total of citation

The first question of this study relates to the analysis of recent trends and impacts in the topic of competency-based clinical supervision. According to the Scopus database, the majority of publications occur in 2017 and 2020, with ten documents published each year. Article publications account for more than half of all publications (86.7 percent), followed by reviews (10.6 percent). Based on the area of expertise, nearly half of the examined publications are in Medicine (37.1 percent), with Social Science in second place (21.4 percent).

To answer the second question of this research, which pertains to the most frequently occurring aspects of competency-based clinical supervision, findings from keyword, title, and abstract analyses using VOSviewer provide insights into the key aspects of this area. The phrases “clinical supervision,” “group supervision,” and “competency-based supervision” are the top three keywords in the obtained papers. It is also emphasized that there is no such thing as a perfect search query; consequently, future researchers need to anticipate false positive and negative results (Schwebel & Gaines, 2007).

Finally, “Who are the most influential researchers in competency-based clinical supervision?” is answered using citation analysis and article titles. The number of citations in the articles indicates the extent of their influence, with the total citations received each year. According to the citation metrics table, there are 3,963 citations referenced for 113 papers published over a 26-year period (1998–2024). The article by Kok, M.C. et al. in 2015 is the most cited. This article identifies design factors of interventions that affect the performance of community health workers (CHWs) in low- and middle-income countries (LMICs) through a systematic review of various quantitative and qualitative studies.

Although Scopus is one of the most comprehensive databases for archiving academic research, it does not cover all published sources. Future researchers need to consider the possibility of using other databases. Some examples include Web of Science, Google Scholar, and Dimensions. A combination of these datasets has the potential to yield interesting and beneficial results. Despite these limitations, the current research contributes to the body of scientific counseling knowledge by providing an overview of recent developments in competency-based clinical supervision research.

Implications and Limitations

Implications

Impact on Counseling Practice:
The research underscores the vital role of Competency-Based Effective Clinical Supervision (COBECS) in advancing counseling practices. By advocating for its implementation, the study emphasizes its potential to enhance both professional development and clinical outcomes, making it an essential component of effective counseling practice. COBECS offers counselors a structured framework to refine their skills, address complex challenges, and improve service delivery for diverse client needs.

Global Research Contributions:
The research highlights significant global engagement in competency-based supervision studies, with the United States leading in both publications and citations. This dominance reflects a strong commitment to advancing the field and indicates widespread international interest in the topic. The contributions of other countries also showcase a growing global recognition of the importance of competency-based supervision in counseling practices, fostering cross-border collaboration and knowledge exchange.

Insight Into Future Research:
The study sheds light on key areas for future investigation, including professional identity formation, cross-cultural practices, and client diversity within competency-based supervision. These insights emphasize the need to explore how supervision frameworks can adapt to diverse cultural contexts and address the unique challenges faced by counselors and their

clients. By identifying these gaps, the research provides a roadmap for future studies to deepen understanding and application of competency-based practices in counseling.

Educational and Training Guidance:
The findings advocate for integrating competency-based supervision into counselor education and training programs. By adopting this approach, educational institutions can provide a structured pathway for the professional development of counselors, equipping them with the skills, knowledge, and values necessary for effective practice. This structured guidance ensures that counselors are better prepared to meet the demands of their profession and deliver high-quality care to their clients.

Limitations

Scopus Database Reliance:
The study primarily uses the Scopus database for bibliometric analysis, which may limit the scope of the research findings. The authors acknowledge that other databases such as Web of Science, Google Scholar, and Dimensions could offer additional insights.

Search Query Limitations:
The authors note that no search query is perfect, meaning some relevant studies may have been omitted, while others may have been incorrectly included. Future studies should refine the search strategy to avoid false positives and negatives.

Publication Bias:
As the study is based on published articles, there is an inherent bias towards research that has been deemed valuable enough to be published, potentially overlooking unpublished studies or negative results.

These implications and limitations provide guidance for further research and practical applications in the field of counseling supervision.

Conclusion

This research emphasizes the critical role of Competency-Based Effective Clinical Supervision (COBECS) in counseling practice, analyzing its development through bibliometric methods from 1998 to 2024. By examining publication trends, global contributions, influential authors, and key thematic areas, the study provides valuable insights into this evolving field.

The study reveals significant growth in COBECS research, with notable surges in 2017 and 2020, each year seeing the publication of ten documents. Over the 26-year period, 113 papers on COBECS accumulated 3,963 citations, demonstrating a substantial impact in the academic community and highlighting the increasing recognition of competency-based supervision as a pivotal area of study. COBECS research is marked by global contributions, with the United States leading the field, accounting for 51 publications and 1,530 citations. Other active contributors include Australia and Canada, showcasing the international engagement in advancing this critical aspect of counseling supervision. The majority of publications in this field are journal articles, representing 86.7% of the total output. The dominant area of expertise is medicine (37.1%), followed by social sciences (21.4%) and psychology (19.5%),

illustrating the interdisciplinary nature of COBECS research and its applications across various domains.

Among the leading contributors to COBECS research are Falender, C.A., and Shafranske, E.P., whose works have significantly shaped the understanding and application of competency-based supervision. Wiley-Blackwell stands out as the publisher with the highest contribution, reinforcing its role in disseminating influential research in this area. The most frequently occurring keywords in COBECS literature include "clinical supervision," "competency-based supervision," and "group supervision." These terms reflect the central themes of the field and underscore its focus on structured approaches to supervision aimed at enhancing professional competence and practice outcomes.

Recommendations

The study identifies crucial areas for future exploration, emphasizing the need to focus on the professional identity of counselors, particularly in cross-cultural practices and client diversity. By addressing these gaps, researchers can further refine competency-based supervision frameworks to better meet the needs of diverse populations and practice settings. Through its comprehensive analysis, this research not only underscores the growing importance of COBECS in counseling but also provides a roadmap for advancing the field through targeted future studies and applications.

Overall, this research provides in-depth insights into trends in COBECS research and emphasizes the importance of competency-based clinical supervision to support the ongoing professional development of counselors.

Acknowledgements

Special thanks are extended to (1) the Balai Pembiayaan Pendidikan Tinggi (Center of Higher Education Fund) – BPPT, The Ministry of Education, Culture, Research, and Technology, Republic of Indonesia, and (2) Lembaga Pengelola Dana Pendidikan (Indonesia Endowment Fund for Education) – LPDP, Ministry of Finance Indonesia, for granting a scholarship to the first author and presenter, enabling the completion of this study. Appreciation is also due to the participating students, colleagues, and mentors for their valuable feedback and guidance. Finally, heartfelt thanks go to friends and family for their unwavering encouragement. This work would not have been possible without the generous support and resources provided by all involved parties.

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Contact email: deasyyunikakhairun.88@upi.edu

Predicting Student Flourishing: Uncovering Challenges and Opportunities in Higher Education

Anna Ayu Herawati, Universitas Pendidikan Indonesia, Universitas Bengkulu, Indonesia
Syamsu Yusuf LN, Universitas Pendidikan Indonesia, Indonesia
Ilfiandra, Universitas Pendidikan Indonesia, Indonesia
Ahmad Syaf Ya Habibi, Universitas Negeri Padang, Indonesia

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
Research on student flourishing in higher education is crucial given the complexity of challenges faced by modern students. The competitive academic environment, high academic demands, and social pressures can significantly impact the mental well-being of students. The primary objective of this research is to identify and understand the challenges and opportunities students face in their efforts to thrive in the higher education environment. The study employed a survey approach, utilizing the Student Flourishing Index to measure various dimensions of student well-being. A diverse sample of 360 students from various disciplines participated in the survey. The results of the survey data analysis revealed specific challenges faced by students, including academic stress, social pressures, and emotional well-being. On a positive note, opportunities for improvement, such as enhanced support systems, targeted interventions, and the promotion of a positive learning environment, were identified. The study concludes that fostering student flourishing is a complex endeavor requiring a holistic approach. It emphasizes the need for educational institutions to systematically address the identified challenges and capitalize on opportunities to create a supportive atmosphere for student well-being. Recommendations for policymakers and education stakeholders are suggested to consider the survey findings when formulating strategies and policies.

Keywords: Flourishing, PERMA, Challenges, Opportunities, Higher Education

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Introduction

Higher education is an important stage in individual development, where individuals not only seek academic knowledge, but also hone life skills, form self-identity and improve their psychological well-being. In positive psychology, well-being can be described in flourishing, which is the most optimal form of well-being based on hedonic well-being (HWB) and eudaimanic well-being (EWB). Aristotle introduced eudaimanic to reflect individual flourishing as a reflection of virtue and the development of an individual's full potential, in contrast to the pleasure-centered hedonic (Heintzelman, 2018). An individual who is flourishing in life tends to feel positive things and successfully achieve their goals and expectations (Tay, 2018). In contrast, individuals who experience difficulties in life usually do not feel positive emotions and fail to fulfill the goals or expectations they have. Flourishing is a concept that describes an individual's highest level of well-being in various aspects of life, such as emotional, social and mental well-being (Keyes, 2022). In addition, flourishing is defined as a state of life characterized by well-being, which includes competence, emotional stability, engagement, meaning, optimism, positive relationships and self-esteem (Huppert & So, 2013). Regardless of the word used to describe it, flourishing demands individual excellence, optimization of certain strengths, character and thoughts.

Flourishing is not only important for individual success, but also has broad implications for higher education institutions and society as a whole. In the realm of higher education flourishing is a crucial benchmark for evaluating student success. Flourishing students usually show high levels of academic engagement, have strong social relationships, and are able to cope with academic pressures and life challenges with good resilience (Howell, 2009). In addition, students are also better prepared to face the challenges of the world of work and contribute positively to their communities after graduation. Saligman (2011) presents a flourishing model known as PERMA, which is 1) positive emotion, 2) engagement, 3) relationship, 4) meaning, and 5) achievement. According to Seligman, these five elements of well-being are pursued for their own sake and not necessarily to improve other elements of well-being.

The study of flourishing, especially in the context of higher education, has received increasing attention. This is in line with the increasing understanding of the importance of mental and psychological well-being. However, this is not an easy task, due to the complex and diverse factors and challenges that affect students' well-being. One of the main challenges is the high academic load, which can cause mental and emotional distress (Baik et al., 2019). In addition, social factors such as social isolation and lack of psychological support also contribute to low levels of flourishing among university students (Sesarika & Kennya, 2015). Other studies have shown that students who lack adequate social support are more prone to stress, anxiety and reduced academic performance (Kuh et al., 2005). Understanding the factors that influence flourishing is becoming increasingly crucial as attention to the mental health and well-being of university students around the world increases. Schreiner (2012) emphasized the importance of identifying predictors of flourishing to design effective interventions and create supportive campus environments. In addition, Fredickson (2001) revealed that flourishing individuals not only have better well-being, but also show superior academic performance and stronger social engagement.

However, this is often difficult to realize due to the many challenges that students face. The main challenges students face include academic pressure, financial problems and social difficulties. In addition, heavy study loads and high expectations often trigger stress and

anxiety (Beiter et al., 2015). Not only that, financial problems such as high tuition fees and poor financial management can exacerbate psychological distress (Archulete et al., 2013). In addition, the imbalance between academic and personal life is often a significant challenge. Students must try to manage their time between studies, part-time jobs and social life (Martines et al., 2013). Despite the many challenges that students may face, higher education provides various opportunities for students to achieve flourishing. Higher education offers students opportunities for personal development, exploration of new interests, skill development and building valuable social and professional networks that can support their future success (Chickering & Reisser, 1993; Thomas, 2002). The important role of universities in creating an environment that supports students' psychological and social healing can be through counseling services, mentoring programs, life skills improvement programs, academic resources, career exploration through internships, research, campus organizations that can strengthen a sense of belonging and encourage self-development (Schreiner et al., 2012; Kuh, 2009; Pascarella & Terenzini, 2005; Datu, 2018).

Understanding the challenges and opportunities is crucial for higher education institutions, as this will enable them to design effective programs and policies to support student flourishing, maximize potential and prepare for later life. Therefore, this study aims to predict student flourishing in higher education by identifying the challenges and opportunities that exist, the findings from this study are expected to provide practical guidance for higher education managers in formulating effective strategies to optimize student well-being, so that they can achieve maximum potential in both academic and personal life aspects.

Method

This research uses a survey method with a quantitative approach. The sample of this research was 360 students of Bengkulu University. The instrument used in this study used a scale compiled based on the PERMA concept to measure the flourishing level of students. Data collection procedures using Google Form. Data analysis in this study by creating a frequency distribution table and descriptive statistics using SPSS.

Finding and Discussions

Table 1: Frequency College Students

Gender	Frequency (n)	Percentage (%)
Male	65	18.1
Female	295	81.9
Total	360	100

Based on the results of research conducted on 360 Bengkulu University students, it shows that most of the respondents are women with a percentage of 81.9%, or 295 students, while men are only 18.1% or 65 students. Based on these results, it can be concluded that the majority of students involved in this study are women.

Table 2: Frequency of Student Flourishing Based on Gender

Gender	Low	Medium	Total
Male	6	59	65
Female	13	282	295
Total	19	341	360

Based on the table above, it shows that the distribution of students' flourishing level based on gender is grouped into 3 categories, namely; low, medium and high. A total of 65 male students, there are 6 students (9.2%) in the low category, and 59 students (90.8%) are in the medium category. While female students with a total of 295 students, there are 13 students (4.4%) in the low category, and 282 students (95.6%) are in the moderate category. These results show that the majority of students, both male and female, have a flourishing level in the moderate category. Although there is a striking difference, that the flourishing level of male students has a higher percentage than women. So it can be concluded that female students have a higher level of flourishing than men.

Table 3: Frequency of Student Flourishing Based on Study Program

Prodi	Low	Medium	Total
Teknik Elektro	1	9	10
Manajemen	0	2	2
D3 Akuntansi	0	1	1
Hukum	0	1	1
Agribisnis	0	2	2
Ilmu Hukum	0	3	3
Kedokteran	2	6	8
Kesejahteraan Sosial	0	4	4
Akuntansi	0	3	3
Bimbingan dan Konseling	5	99	104
Pendidikan IPA	3	40	43
PGSD	1	22	23
Bahasa Indonesia	1	8	9
Pendidikan Bahasa Inggris	3	27	30
Biologi	0	3	3
Pendidikan Nonformal	2	43	45
Fisika	0	17	17
Matematika	0	27	27
Pendidikan Jasmani	0	1	1
Peternakan	1	18	19
Kimia	0	3	3
Ilmu Tanah	0	1	1
Statistika	0	1	1
Total	19	231	360

Based on the results of the table above which displays the distribution of students from various study programs grouped by low, medium and high categories. Of the total 360 students from 23 study programs, the majority of student flourishing is in the medium category, namely 34 students, and 19 students have flourishing in the low category. The study program with the largest number of students at 104 students in the guidance and counseling study program has flourishing in the medium category of 99 students, and the low category is 5 students. Furthermore, the non-formal education study program has the second largest number of students with a total of 45 students, and 43 students have flourishing in the moderate category and 2 students in the low category. From the results of the table above, it can be concluded that most students from various study programs tend to have flourishing in the moderate category.

Table 4: Frequency of Student Flourishing Based on Indicators

Indicator	Frequency (n)	Percentage (%)
Positive Emotion	11.658	19.97
Engagement	11.568	19.82
Relation	10.888	18.65
Meaning	12.858	22.03
Achievement/Accomplishment	11.3397	19.53
Total	58.369	100

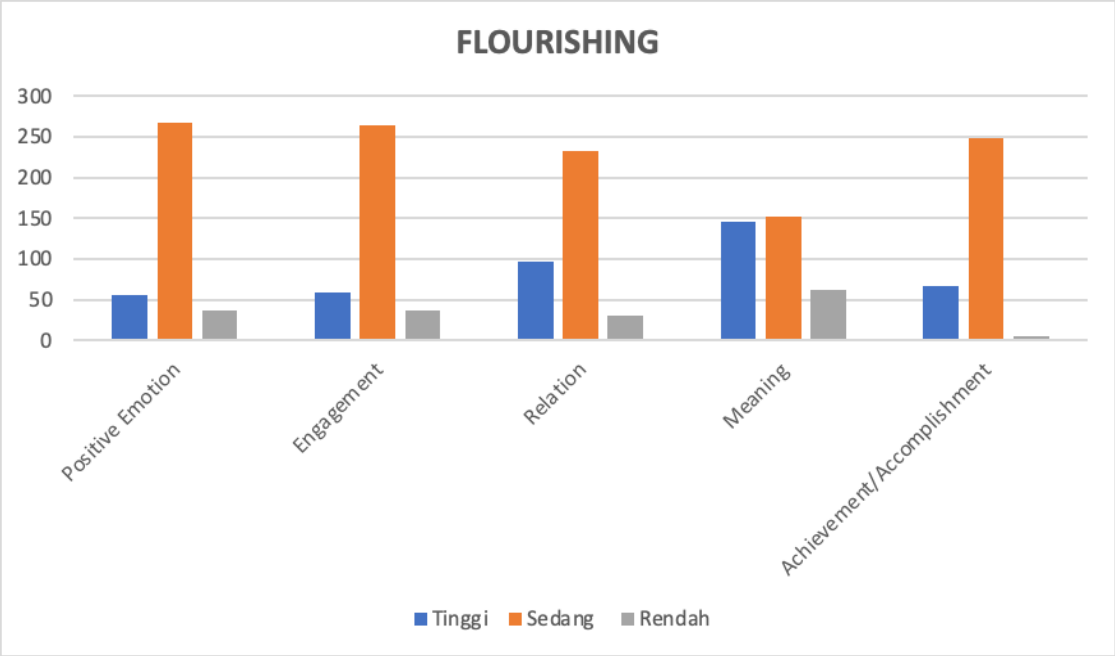

Figure 1: Flourishing

These findings provide an overview of student flourishing. In the context of flourishing, the five main indicators taken in the PERMA model developed by saligma include: positive emotion, engagement, relationship, meaning, and achievement. Based on the research results, the meaning indicator has the highest percentage of 22.03%. This shows that students manage to find goals in their academic and personal lives. According to Frankl (1984) the search for meaning is a basic human drive and this finding reflects that students who have a sense of purpose in life tend to experience better flourishing. Steger et al (2008); Matthews & Lerner (2016) in their research showed that sense of purpose and meaning in life are closely related to psychological well-being and tend to experience personal growth during the study period. Students who feel that their education is relevant to their life goals, both in personal development and professional preparation, tend to be motivated and have higher levels of satisfaction and have a foundation for building a career. In the context of education, students who understand their educational and life goals have stronger motivation to achieve better outcomes, both academically and professionally.

Furthermore, positive emotion with a percentage of 19.97%, this shows that positive feelings play an important role in motivating students, increasing creativity and broadening their perspectives. Fredricson (2001) states that positive emotions serve to strengthen the psychological and social individual, which then encourages further development. Students who have positive emotions tend to have higher life satisfaction, which in turn increases their academic motivation and achievement. Theengagement indicator has 19.82%, indicating that

students are emotionally and intellectually involved in academic and social activities in higher education. Schreiner (2013) states that strong academic engagement can create a sense of satisfaction and happiness during the study period. In addition, students who are actively involved in campus activities are more flourishing because they feel intellectually challenged. Achievement, with a percentage of 19.53%, reflects the importance of academic achievement for students. setting and achieving goals provides a sense of success that contributes to increased flourishing. When students are able to achieve their academic and personal targets, they tend to have a more positive outlook on life and are motivated to achieve success in the future.

In contrast, relationship has the lowest percentage at 18.65%. This low percentage indicates that students may face challenges in building and maintaining healthy social relationships. The low percentage indicates that students need a lot of support in the social aspect. Social support has consistently emerged as a strong predictor of student flourishing. According to Cohen & Wills (1985); Frey et al (2018); Fink (2014) social support can act as abuffer against stress and as a determining factor, where students who have strong interpersonal relationships, both fellow students and with lecturers, tend to have better emotional well-being, are able to cope with pressure, have lower stress levels and have higher levels of life satisfaction. Social support not only helps students in facing challenges, but also as a buffer against stress to achieve optimal flourishing. In line with research conducted by Mock & Smale (2023); Kuettel et al (2021) that individuals who are more actively involved in social activities, such as interacting with friends, often participating in cultural activities such as attending music performances or visiting museums and doing regular physical exercise, tend to show higher levels of flourishing and lower levels of laungushing.

In addition, students who do not have adequate coping skills tend to experience decreased flourishing and overall well-being. This is further exacerbated by social pressures, both from the college environment, such as demands to perform well and fit in with peer groups, and from families who may have high expectations of academic success. These challenges collectively add to the mental burden of college students, which if not managed well can lead to emotional disorders such as anxiety, depression or mental exhaustion. Schotanus et al (2017) in their study stated that high levels of flourishing can reduce the risk of emotional distress by 28% and anxiety disorders by 53%, but it does not significantly predict the occurrence of substance use disorders. Therefore, it is important for universities to provide adequate support in the form of stress management and resilience development programs that can help students develop better coping skills. This kind of support can reduce the impact of the social and emotional stress they face, as well as provide opportunities to increase student flourishing which lies in the delivery of the intervention.

One of the main opportunities to support student flourishing is an academic environment that encourages intellectual engagement. Schreiner (2013) emphasizes that students who are engaged in the learning process, such as actively participating in discussions, collaborative projects and other academic activities, they will tend to have higher levels of well-being. This is because academic engagement allows students to fully develop their intellectual abilities, gain recognition for academic achievement and feel the satisfaction that comes from achieving academic goals. Universities can enhance these opportunities by introducing interactive and innovative teaching methods. A challenging and inspiring academic environment can motivate students to engage more deeply which positively contributes to their flourishing. In addition, resilience training programs, mentoring programs, stress management workshops or counseling services that focus on skill development can greatly

benefit students to achieve mental and physical well-being which are key elements of flourishing (Colvin & Ashman, 2010). This supports the findings of Li & Hasson (2020) who pointed out the importance of resilience in facing challenges in the college environment. Finally, the promotion of mental and physical health through various mental health and wellness programs also makes an important contribution to flourishing. Colleges have the opportunity to promote mental health by providing access to accessible health services, such as counseling services or campus psychologists (Steger et al, 2008).

There are many factors that contribute to flourishing, so it is necessary to implement strategies to help students achieve this condition. Research conducted by VanderWeele (2020) identified various activities and interventions that can facilitate this development. Hence, the need for a holistic approach in supporting student flourishing. Colleges need to consider implementing strategies that address the challenges identified and capitalize on the opportunities that exist. These include cognitive exercises centered on gratitude, enjoyment, and endangering the optimal future self. Behavioral exercises emphasize the application of character strengths, acts of kindness, and volunteerism. Next comes engagement in institutional and relational practices aimed at enhancing flourishing. These include increasing academic and financial support, creating opportunities for meaningful social engagement and integrating life skills development into the curriculum.

Previous research shows that the level of flourishing is significantly affected by various factors, including self-efficacy and social support (Masturah & Hudaniah, 2022), involvement in volunteer activities and coping mechanisms (Yuspendi et al, 2017), overall life satisfaction (Fadhillah & Masturah, 2023), self-compassion (Zulfa & Prastuti, 2020), as well as optimism, happiness, financial status, marital status, social relationships, and demographic variables such as age, health, education, gender, race, and religion (Diener et al., 2010; Seligman et al., 2005). Based on the findings of this study, educators, mental health professionals, institutions, and policy makers should recognize the importance of building an environment that supports students' flourishing. This goal can be achieved by creating a welcoming and safe atmosphere, and by offering students optimal opportunities for academic support (such as mentoring groups) and social engagement (including informal networking events). Academically, it is clear that students need better support in achieving mastery, particularly in the areas of time management and academic task execution. Implications for future research are to understand how these factors interact over time, as well as cross-cultural research to explore how different social and cultural contexts may affect students' flourishing. In addition, intervention research is needed to test the effectiveness of the proposed strategies in improving students' flourishing.

Implications and Limitations

1) Implication

The findings of this study provide several important implications for higher education stakeholders, including educators, administrators, and policymakers:

a. **Policy Formulation for Student Well-being**: The research highlights the importance of integrating mental health and well-being strategies into higher education policies. Universities should focus on creating comprehensive programs that address not only academic challenges but also social and emotional support for students.

b. **Customized Interventions**: The variation in flourishing levels across different gender and program groups suggests the need for targeted interventions. Programs designed

to address gender-specific challenges and study program requirements can better support diverse student populations.

c. **Promotion of a Supportive Environment**: Universities can play a crucial role in promoting a positive academic and social environment by offering mentoring, counseling, and peer support systems. Emphasizing the PERMA indicators (Positive Emotion, Engagement, Relationships, Meaning, and Achievement) can enhance students' overall flourishing.
d. **Faculty and Staff Training**: Training educators and staff to recognize and address factors affecting students' flourishing can ensure early intervention and more effective support systems.
e. **Future Research Directions**: The study underscores the necessity for longitudinal and cross-cultural studies to explore how diverse contexts affect student flourishing and to test the effectiveness of tailored intervention strategies.

2) Limitation

a. **Sample Representation**: The study's sample is limited to students from a single university, which may not fully capture the diversity of student experiences across different cultural or institutional contexts. Future research should include a broader range of participants from various universities and regions.
b. **Self-Reported Data**: As the research relies on self-reported survey data, it is subject to biases such as social desirability and inaccurate self-assessment. Including qualitative methods or observational data could provide more comprehensive insights.
c. **Cross-Sectional Design**: The study's cross-sectional nature limits the ability to infer causality between variables. Longitudinal studies would help in understanding the dynamic relationship between academic, social, and psychological factors and student flourishing over time.
d. **Limited Scope of Challenges and Opportunities**: While the research identifies key challenges and opportunities, it does not delve deeply into external factors such as family background, financial constraints, or institutional policies that might influence student flourishing.
e. **Generalizability**: The findings may not be generalizable to all higher education contexts, particularly in non-Indonesian settings, due to cultural and institutional differences. Comparative studies are recommended to explore these variations.

These implications and limitations underscore the need for a multifaceted approach in both research and practice to optimize student flourishing in higher education.

Conclusion

Students flourishing is an important aspect that is influenced by the various challenges and opportunities that exist in the college environment. Students face academic, social and emotional pressures that can inhibit their flourishing. However, there are opportunities to support flourishing through a supportive academic environment, targeted interventions and strong social support. Higher education institutions need to take a holistic approach by providing academic, social and financial support to help students achieve optimal well-being. This research emphasizes the importance of programs that support intellectual engagement, stress management, and the promotion of mental and physical health in an effort to maximize students' potential in both their academic and personal lives. Longitudinal studies are proposed to further explore the interaction between these factors in different social and cultural contexts and test the effectiveness of the proposed intervention strategies.

Acknowledgements

Special thanks are extended to (1) the Balai Pembiayaan Pendidikan Tinggi (Center of Higher Education Fund) – BPPT, The Ministry of Education, Culture, Research, and Technology, Republic of Indonesia, and (2) Lembaga Pengelola Dana Pendidikan (Indonesia Endowment Fund for Education) – LPDP, Ministry of Finance Indonesia, for granting a scholarship to the first author and presenter, enabling the completion of this study. Appreciation is also due to the participating students, colleagues, and mentors for their valuable feedback and guidance. Finally, heartfelt thanks go to friends and family for their unwavering encouragement. This work would not have been possible without the generous support and resources provided by all involved parties.

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Contact email: annaayuherawati@upi.edu

The Influence of Regional Origin on the Interest in Differentiated Learning and Culturally Responsive Teaching

Yesi Martha Afrillia, Universitas Negeri Yogyakarta, Indonesia
Sekar Purbarini Kawuryan, Universitas Negeri Yogyakarta, Indonesia

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
Each student has a different regional origin. This study aims to determine the effect of regional origin on interest in differentiated learning and culturally responsive teaching in PGSD students in the class of 2022 at Sanata Dharma University. A sample of 136 students from various regions of Indonesia participated in this study, such as Sumatra, Java, Kalimantan, Sulawesi, and Papua. This study uses quantitative research design and questionnaires as data collection tools. We use structural equation modelling with partial least squares as the method. The results show that regional origin significantly influences interest in differentiated learning consisting of visual, auditory, and kinesthetic elements, as does interest in culturally responsive teaching. These results suggest the importance of considering students' regional backgrounds when designing effective learning strategies and promoting cultural responsiveness in educational contexts. This study's findings enhance student learning outcomes and guide classroom instruction.

Keywords: Regional Origin, Differentiated Learning, Culturally Responsive Teaching, Mathematics

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Introduction

Education is essential for the rapid advancement of a nation and serves as its foundation (Kamble et al., 2020). Regional cultural characteristics significantly influence educational achievement at all levels, from basic to higher education, in Indonesia, a nation renowned for its cultural and geographical diversity (Gastil, 2016). This diversity presents unique challenges, particularly in urban environments where students come from a diverse range of linguistic, cultural, racial, ethnic, and knowledge backgrounds. In the development of teaching and learning strategies, educators must take into account the cultural differences and perspectives of students (Kieran & Anderson, 2019).

Regional origin has a substantial impact on education, particularly in terms of the potential for learning and the availability of resources. Students from less developed regions, such as Eastern Indonesia, frequently encounter substantial infrastructure and educational support constraints. Conversely, students from more developed regions, such as Western Indonesia, typically have greater access to educational facilities, technology, and extracurricular programs (Sihombing, 2019). These discrepancies may impact the caliber of graduates, which in turn may affect students' motivation and learning outcomes. In order to ensure that all students, irrespective of their nationality, receive an equitable and high-quality education, it is imperative that educators and legislators comprehend and resolve these concerns. This will promote long-term social and economic development in Indonesia, as well as improve academic performance.

In order to facilitate academically diverse children, it is imperative to differentiate instruction in a mixed-ability classroom according to their learning profiles, interests, and preparation, as well as their place of birth (Tomlinson et al., 2003). In order to foster justice and success in education, variable learning is indispensable, as it caters to the distinctive learning needs of each student and increases motivation (Tomlinson, 2005). Differentiated instruction improves learning outcomes, motivation, interest, creativity, and accomplishment in mathematics (Siregar et al., 2023). Differentiated learning in higher education improves motivation, engagement, and outcomes by tailoring instructional strategies to the unique learning preferences and interests of each student (Gobiberia, 2021). As a result, it is essential to customize instruction according to the learning preferences and interests of each student at the higher education level.

It is also essential to adjust instruction to the cultural influences of a diverse student body in consideration of the diverse geographic origins. By integrating the cultural backgrounds, experiences, and perspectives of students, culturally responsive teaching improves the quality of education (Gay, 2002a). Culturally responsive education facilitates the academic success of ethnically diverse children by making academic information and skills more personally relevant and applicable to their lives (Gay, 2002b). Teacher candidates in urban schools promote culturally responsive teaching by incorporating students' interests into the curriculum, providing learners with a diverse range of options, and establishing real-world connections (Tanase, 2022). In order to legitimize the perspectives of students from diverse backgrounds, promote equality in schools, and demonstrate sociocultural comprehension, culturally responsive teacher candidates may facilitate change (Villegas & Lucas, 2016).

In response to diversity, two strategies have emerged: differentiated learning and culturally responsive teaching. Differentiated learning is a teaching approach that ensures students understand and demonstrate mastery of the material they have learned while considering their

individual characteristics (Desinguraj & Ebenezer, 2021). In the interim, educators must reassess their beliefs and perspectives regarding racial, ethnic, and cultural diversity. They must also focus on the teaching process, culture, and differences in order to educate in a culturally responsive manner (Gay, 2013). The purpose of this research is to investigate the influence of the place of origin of undergraduate students on their interest in these two learning approaches. PGSD students at Sanata Dharma University, specifically the class of 2022, are enthusiastic about the prospect of becoming future educators. This study will employ a quantitative methodology and survey design to investigate the preferences of students from a diverse range of Indonesian regions, including Sumatra, Java, Kalimantan, Sulawesi, and Papua.

Literature Review

Regional Origin

In Indonesia, the educational environment is characterized by a wealth of geographical and cultural diversity, and the concept of regional origin is particularly significant for comprehending social and cultural contexts. The distinctive characteristics of each island and region influence the learning experience of students. For example, students from Java may be more familiar with the principles of modesty, whereas students from Papua may possess a perspective that is more in alignment with the natural world. Local culture and traditions significantly influence these variables. Furthermore, communication difficulties may arise due to the diversity of local languages, particularly when pupils are more comfortable speaking their mother tongue. In general, students from urban areas have access to more facilities than students from remote areas, although the latter also experience fluctuations in their access to formal education. Local economic and social conditions also impact educational motivation and support.

Educators must implement inclusive learning strategies like differentiated learning and culturally responsive teaching methods to capitalize on this diversity. It is also essential to adapt teaching methods and develop relevant social skills in order to create a positive learning environment. By taking into account and appreciating the differences in the regional contexts of students, educators can create a more adaptable learning environment, which will allow all students to achieve their full potential and excel. In Indonesia, the principal islands are Papua, Sulawesi, Kalimantan, Java, and Sumatra.

Differentiated Learning

Educators who employ differentiation as a teaching strategy customize lesson plans, procedures, and final outputs to the learning profiles, interests, and preparedness of students (Kenney et al., 2024). From a growth perspective, differentiated learning optimizes learning by tailoring instruction to students' learning profiles, preparedness, and interests (Gheyssens et al., 2022). By initially identifying students' learning styles, we can implement differentiated learning to meet their needs (Nofitasari et al., 2023). The objective of mapping students' learning styles is to organize students according to the learning styles they possess. Once teachers identify each learner's learning style, they can tailor learning activities to each grouping, ensuring students can follow the learning process according to their individual learning styles.

Implementing differentiated learning can enhance the quality of learning and establish a positive classroom environment (Jhon & Alfiandra, 2024). Its objective is to accommodate the learning requirements and attract a diverse array of students to the classroom. In differentiated learning, there are three types of learning styles: auditory through the sense of hearing, visual through the sense of sight, and kinesthetic through body movements.

Culturally Responsive Teaching

A pedagogical approach known as "culturally responsive teaching" acknowledges and regards the cultural origins of students as valuable resources for the educational process. The growing diversity of their student body necessitates that instructors adopt a culturally sensitive teaching approach (Comstock et al., 2023; Hu et al., 2021; Irwin, 2021). This method has encouraged students to engage in self-reflection in order to cultivate their cultural identity and gain a better understanding of themselves and others (Rahmawati et al., 2019). Culturally responsive teaching is an educational model that is designed to enhance student achievement while simultaneously facilitating the acceptance and reinforcement of their cultural identity (Pebriansyah, 2020). Institutions such as schools and universities function as socialization institutions that assist students in acquiring knowledge of the local culture. Thus, it is imperative to ascertain the extent of cultural responsiveness that students in the high, medium, or low categories possess.

Methods

This investigation employed the survey methodology. The researcher used a Google Form to administer an online survey and distributed invitations to participants via a WhatsApp group in order to determine the geographical origin and distinctive learning interests of the 136 undergraduate students of Sanata Dharma University in 2022. We modified concept of differentiated learning interest (Sugianto, 2021). You have one week to complete the survey.

During the learning process, researchers distributed exam questions to assess the degree to which the students were learning in a culturally responsive manner. Students had twenty minutes to complete the form. We assured them that we would use the data they provided in the survey exclusively for research purposes and that it would not affect their course grade.

To collect data, we used a questionnaire with three components:

1. Demographic Section: Gathering data regarding the students' regions of origin, which include Java, Sumatra, Kalimantan, Sulawesi, and Papua.
2. Differentiated Learning Section: Assessing interest in differentiated learning, which encompasses visual, auditory, and kinesthetic components.
3. Culturally Responsive Teaching Section: Assesses the level of interest in cultural responsiveness, which is classified as high, medium, or low. The researcher divided the assessment into a scoring system of 1 and 0 after obtaining this data. Students are awarded one point each for their interest in culturally responsive teaching, differentiated learning, and regional origin, as determined by analyses conducted by previous researchers. If students do not possess these attributes, they are awarded zero points.

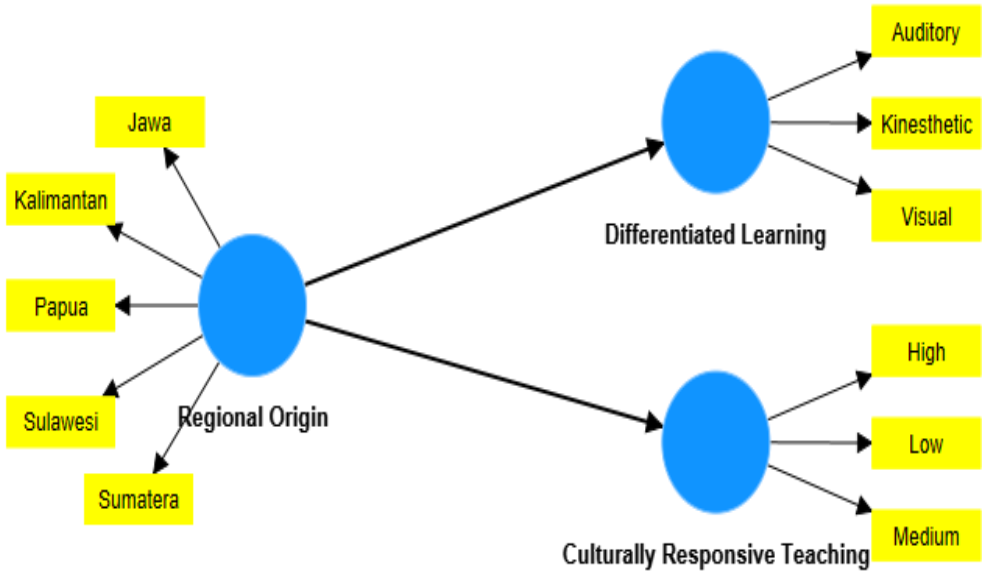

Figure 1: Variables Analyzed

Figure 1 illustrates the variables that underwent structural equation modelling-partial least square (SEM-PLS) analysis using the SmartPLS software program version 4.0.9. SEM-PLS analysis is implemented as a result of its numerous benefits. I. Able to test relationships of cause and effect, reliability, and validity all at the same time; II. Able to see both direct and indirect effects between variables; III. Able to test multiple dependent variables along with multiple independent variables; IV. Able to measure how much indicator variables affect each factor variable; and V. Able to measure factor variables that can't be directly measured by indicator variables (Nur Sasongko & Rusgiyono, 2016).

SEM-PLS research involves a series of steps: i) Conducting tests to identify variables; ii) constructing a measurement model (outer model) to establish the relationship between latent variables and their indicators; iii) designing a structural model of the relationship (inner model) to define the relationship between latent variables; iv) constructing a path diagram based on the outer and inner models; v) estimating evaluation parameters, which involves conducting multiple tests on variables, such as composite reliability and Cronbach's alpha, to demonstrate the degree of confidence in the measuring tool; vi) conducting hypothesis testing using the t-test to determine whether a relationship exists between latent variables and their indicators; vii) obtaining analysis results (Irwan & Adam, 2020).

Findings

The Undergraduate's Students Regional Origin

In order to comprehend the geographical distribution of students in the primary school teacher education program, a questionnaire was implemented to determine their regional origin. Figure 2 illustrates the student regional origin analysis results, which indicate that Java Island has the highest regional origin with a mean of 0.471. This suggests that nearly half of the pupils are from this island, which is indicative of the higher population density and superior educational infrastructure in Java. The island of Sumatera follows with an average of 0.221, indicating that despite having a lower number of students than Java, it remains a substantial source of students. In the meantime, the islands of Kalimantan and Sulawesi recorded an average of 0.147 and 0.110, respectively, suggesting that pupils from these

islands also exist, albeit in a lesser number. The number of pupils from the island of Papua is the most remarkable, with a mere 0.051.

This implies that a relatively small number of pupils originate on this island, which is frequently recognized for its limitations in terms of infrastructure and educational accessibility. The distribution of students' regional origins is significantly imbalanced, as indicated by this analysis. In contrast to islands in the Eastern region of Indonesia, such as Sulawesi and Papua, students are more influenced by those located in the Western region of Indonesia, including Java, Sumatra, and Kalimantan. This discrepancy may be influenced by a variety of factors, such as the quality of education facilities, the opportunities available to pupils in each region, and the disparity in access to education.

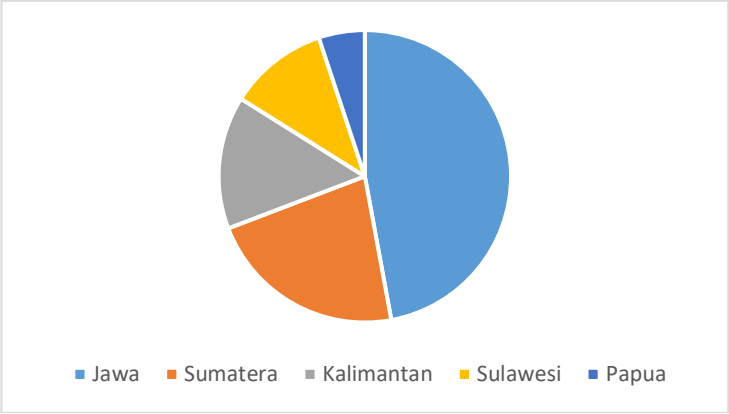

Figure 2: The Undergraduate's Students Regional Origin

The Undergraduate's Students Differentiated Learning

Students' learning styles in differentiated learning were measured using a questionnaire, which aims to understand students' learning preferences in the context of primary school teacher education. Figure 3 presents the results of the analysis of students' learning styles, revealing that the visual learning style is the most common, with an average score of 0.441. This suggests that the majority of students favor learning methods that incorporate the use of the visual sense, such as multimedia presentations, visualizations, images, or diagrams. Additionally, the auditory learning technique, with an average score of 0.301, occupies the second position. This demonstrates that a significant number of students also employ their auditory sense to acquire knowledge, whether through lectures, discussions, or listening to recordings. The high demand for auditory learning styles underscores the significance of verbal interaction and communication in the learning process, thereby enhancing student engagement and comprehension.

Nevertheless, the kinesthetic learning style, which emphasizes physical activity and hands-on experience, has the lowest mean score of 0.257. This suggests that students are less likely to select learning methods that necessitate physical activity or hands-on experimentation. This could be the result of a variety of factors, including the student's unease with more dynamic physical activities or the absence of opportunities to participate in practical activities in the classroom.

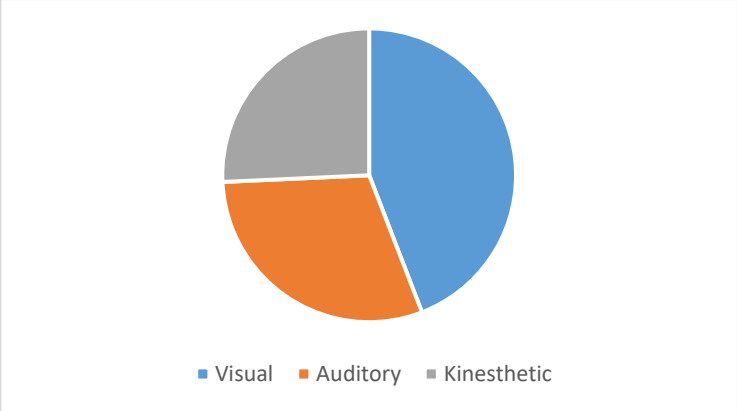

Figure 3: The Undergraduate's Students Differentiated Learning

The Undergraduate's Students Culturally Responsive Teaching

We used questions about the comprehension and application of learning, considering students' cultural backgrounds, to evaluate culturally responsive teaching. Figure 4 illustrates the findings of the analysis, which indicate that the majority of primary school teacher education students exhibit a medium level of cultural responsiveness, with an average score of 0.515. This indicates that most students demonstrate a good awareness and understanding of the importance of culturally responsive teaching, despite not fully implementing the approach to its fullest extent.

Furthermore, a group of students demonstrated a high level of cultural responsiveness, with an average score of 0.309, suggesting a greater understanding and proficiency in implementing culturally sensitive learning practices. We can expect students with this high level of cultural responsiveness to adapt learning methods that are inclusive and respectful of diversity, and to manage classes containing students from various backgrounds more effectively.

However, the least culturally responsive level was in the low category, with an average score of 0.176. This shows that even though the number is not large, there are still students who need further attention and development in terms of cultural responsiveness. These low-level students may not have fully realized the importance of cultural aspects in education or have not received adequate training to integrate cultural values in their learning practices.

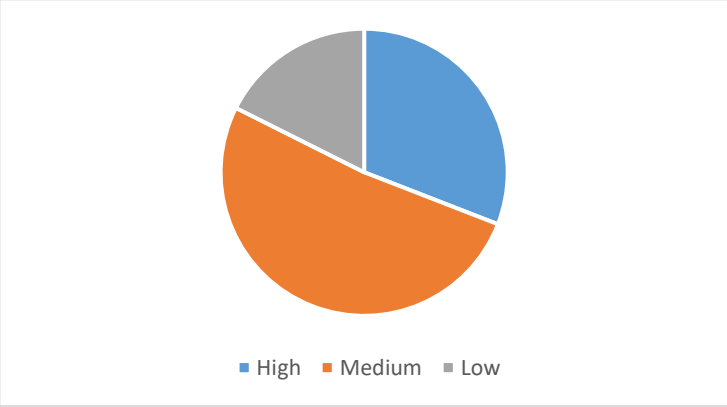

Figure 4: The Undergraduate's Students Culturally Responsive Teaching

R-Square

Table 1 displays the R-squared findings. The regional origin variable has a 9.2% impact on the differentiated learning variable, according to the R-squared value. Regional origin, on the other hand, has a 24.7% impact on culturally responsive teaching. Other factors not included in this study have an impact on the remainder.

Table 1: R-Square

	R-Square	R-Square Adjusted
Differentiated Learning	0.092	0.085
Culturally Responsive Teaching	0.247	0.241

Hypothesis Test

Testing hypotheses Table 2 explains the process of determining whether to accept or reject the hypothesis. The t-statistic value for the formation of regional origin on differentiated learning is 6.676 > 1.96 with a p-value of 0.000 < 0.05. Thus, the first hypothesis establishes the impact of regional origin on differentiated learning. The t-statistic value of 2.689 > 1.96 and the p-value of 0.007 < 0.05 are associated with the impact of regional origin on culturally responsive teaching. Thus, the second hypothesis illustrates the influence of students' place of birth on their culturally responsive teaching.

Table 2: Hypothesis Test

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Regional Origin → Culturally Responsive Teaching	0.690	0.647	0.148	6.676	0.000
Regional Origin → Differentiated Learning	0.472	0.501	0.175	2.689	0.007

Discussion

The findings of this investigation suggest that the majority of students are from the Western region of Indonesia, specifically from islands such as Sumatra, Kalimantan, and Java. This suggests that these regions have a higher concentration of pupils than the islands in the eastern part of Indonesia, such as Papua and Sulawesi. This discovery is consistent with prior research, which demonstrated that the western region of Indonesia has made more progress than the eastern region (Sihombing, 2019). This connection is indicative of the improved socio-economic conditions and educational infrastructure in the western region, which facilitates a broader range of educational opportunities for students. The presence of students whose regional origins are predominant also influences the classroom dynamics and the teaching methods employed, as educators must consider the diverse cultural and educational backgrounds of their students. As a result, it is imperative that relevant entities, such as the government and educational institutions, acknowledge this issue. In order to guarantee that all prospective educators, regardless of their regional origin, have identical opportunities to participate in educational programs, it is imperative that we prioritize initiatives to improve access to education in remote and underdeveloped regions, such as Papua. There is a likelihood that the reduction of these inequalities will result in a more diverse and competent

graduate cohort, which can subsequently facilitate more equitable educational development throughout Indonesia.

Furthermore, other research has found that students are more likely to have visual learning styles than auditory and kinesthetic learning styles. The visual learning approach is the most popular among students, as it prioritizes the use of visual aids, including diagrams, images, and videos. This finding is in accordance with previous research, which suggests that the majority of students prefer a visual learning approach (Syofyan & Siwi, 2018). This trend has substantial implications for education, as it enables educators to enhance the efficacy of the learning process by modifying instructional materials to include more visual elements. The majority of students prefer to employ their visual and auditory faculties in the learning process, while more physically active methods are less desirable, as indicated by these findings. This underscores the importance of developing instructional strategies that prioritize auditory and visual components, as well as kinesthetic elements, in order to create a more comprehensive and equitable learning experience. Educators must take these preferences into account when creating curricula and learning activities that are inclusive of all learning styles in order to improve the overall efficacy of learning.

In contrast, the research on culturally responsive teaching suggests that students exhibit a moderate level of cultural responsiveness. This suggests that, despite the fact that students acknowledge the importance of cultural competence, there is still room to improve their understanding and competencies in engaging with a variety of cultures. The research highlights the challenges in producing academically proficient graduates who can also comprehend and value cultural diversity (Repo et al., 2017). The level of cultural competence of student graduates is classified as medium. These results clearly demonstrate that, despite a substantial number of students demonstrating a moderate level of cultural responsiveness, there is still room for improvement. In the context of culturally responsive teaching, educators and educational institutions must provide additional support for the development of students' comprehension and abilities. Practical activities that involve direct interaction with a diverse array of cultures, seminars, or training can achieve this. The anticipated outcome is a more inclusive and respectful learning environment in the classroom, as all students will be able to improve their cultural responsiveness.

Consequently, these findings not only offer a more profound comprehension of the challenges and opportunities associated with improving the cultural competence of graduates, but they also provide insight into the regional origin patterns and learning styles of students. We anticipate graduates to be capable of adapting and collaborating with individuals from a diverse array of cultural backgrounds in a globalized educational environment. This is particularly relevant. As a result, it is crucial for educational institutions to create curricula that prioritize the development of social and cultural skills in addition to academic knowledge, as these are indispensable for success in the modern global economy and workplace.

Conclusion

In conclusion, the findings of this investigation suggest that the majority of pupils are from the Western region of Indonesia, which encompasses Java, Sumatra, and Kalimantan. This discovery suggests a disparity in educational opportunities between the Western and Eastern regions of Indonesia. Additionally, students' preference for visual learning styles over auditory and kinesthetic techniques emphasizes the importance of modifying teaching

methods to improve learning efficacy. In order to interact with individuals from a diverse array of cultural contexts, it is essential that the students improve their cultural competence, despite their moderate level of cultural responsiveness. As a result, educational institutions must establish a comprehensive curriculum that prioritizes the development of social and cultural competencies in addition to academic subjects. This will provide graduates with the necessary tools to overcome the challenges that emerge in a world that is increasingly multicultural and globalized. This research is essential for comprehending the influence of geographical diversity on learning and preferences, and it serves as a guide for educational institutions in the development of more inclusive programs. The anticipated outcomes of this research have the potential to improve the quality of education and learning outcomes of students in Indonesia and other countries.

Acknowledgements

I am grateful to the Ministry of Finance of the Republic of Indonesia's Education Fund Management Institute, or Lembaga Pengelola Dana Pendidikan (LPDP), for funding this study and offering scholarships.

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Contact email: yesimartha.2023@student.uny.ac.id

Internalization of Local Wisdom As Strengthening of Pancasila Student Profile Values Through Art Activity Early Childhood Education in Indonesia

Rizqy Aisyah Leonia, Universitas Negeri Yogyakarta, Indonesia
Joko Pamungkas, Universitas Negeri Yogyakarta, Indonesia
Nelva Rolina, Universitas Negeri Yogyakarta, Indonesia

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
This research examines the role of internalizing local wisdom as an effort to strengthen the profile of Pancasila students through art activities in early childhood in Indonesia. Local wisdom is seen as a source of cultural values, traditions, and local identity that can support the formation of Pancasila character in children. The purpose of this study is to explore how early childhood art activities can be an effective means of internalizing local wisdom and strengthening the profile of Pancasila students. The research methods used are participatory observation, interviews, and documentation analysis of early childhood art activities that integrate local wisdom. The results showed that early childhood art activities can be an effective platform in introducing, internalizing, and applying local wisdom in the context of children's daily lives. Through art, children can learn about cultural values, strengthen a sense of community, and develop creative and expressive skills. Strengthening the identity of Pancasila students through early childhood arts can be done by teaching the noble values of Pancasila such as gotong royong, tolerance, and social justice. This helps children build a strong cultural identity and understand Pancasila values as moral principles in social life. However, there are challenges in implementing early childhood arts activities that incorporate local wisdom, including limited resources and understanding among educators and parents. Cooperation from various parties, including educators, parents and communities, is needed to thoroughly integrate local wisdom in early childhood education and strengthen the character of Pancasila in future generations.

Keywords: Art Activities, Internalizing Local Wisdom, Pancasila Character, Strengthening Pancasila

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Introduction

In the dynamic landscape of early childhood education in Indonesia, the integration of local wisdom is a key approach in fostering the holistic development of young learners. This article explores the profound implications of internalizing local wisdom as a way to strengthen the values contained in the Pancasila Learner Profile. Amidst the backdrop of rapid globalization and cultural exchange, the preservation and development of indigenous knowledge systems becomes the cornerstone in shaping resilient, culturally rooted individuals, ready to navigate the complexities of contemporary society.

Local wisdom, which comes from the words "kearifan" meaning "wisdom" and "lokal" meaning "local", is a concept that is etymologically defined as local wisdom and knowledge applied in everyday life (Rummar, 2022). Other terms often used to refer to this concept include "*local wisdom*", "loc al *knowledge",* and "local *genius"* (Shufa, 2018). In Indonesia, local wisdom denotes the unique cultural identity of the local community and reflects a philosophy and outlook on life that is reflected in various aspects of life.

Local wisdom is a collection of values that develop as the cultural identity of the local community, allowing the assimilation and processing of outside culture into part of the local identity and capabilities (Ganda & Romadi, 2017). It is obtained through experience that is accumulated and integrated with an understanding of the culture and natural conditions of an area (Mimin, 2023). Its function is important in providing guidance for people's lives in order to survive safely, comfortably, and prosperously.

Often referred to as local excellence, local genius, or local wisdom, local wisdom also highlights the importance of context and place-specificity, and can be utilized to wisely regulate the order of community life (Mu'ti & Amirrachman, 2021). In Indonesia, local wisdom has various forms that are unique to each ethnicity, but basically directs people to act in accordance with the principles of Pancasila (Bhagaskoro et al., 2019; Wiratmaja et al., 2021).. Thus, Pancasila becomes the main foundation in preserving various local wisdom, emphasizing its important role in integrating local wisdom into the education system with the aim of preserving local culture and contributing to the development of the nation and state.

The Pancasila Learner Profile is a set of desirable characters and skills to be possessed by students in Indonesia, which is stipulated in the Merdeka Curriculum based on Ministry of Education and Research Regulation number 262 of 2022 (Kemendikbudristek, 2022). Pancasila, as the national philosophy, serves as the foundation for the daily lives of Indonesians, and Indonesia's national education system is based on the values of Pancasila. The goals of national education also lead to the values of Pancasila. The Pancasila Student Profile includes six dimensions of character and competence that are in line with Pancasila (Marjuni, 2019).

The Ministry of Education and Culture (Kemendikbud) through the Center for Character Strengthening (Puspeka) seeks to form a generation that is in accordance with the Pancasila Student Profile. There are six dimensions in the Pancasila Learner Profile, namely: faith and piety in God Almighty, independence, a spirit of mutual cooperation, an open attitude towards global diversity, critical thinking skills, and creativity (Mahardhani et al., 2023). The development of these six dimensions of characteristics is expected to occur thoroughly in the education system, taking into account the uniqueness of individual students and their cognitive and psychological development processes.

The Pancasila Learner Dimension is the set of attributes and skills that students in Indonesia are expected to possess, in line with the principles of Pancasila. Six key aspects in this dimension form the moral and ethical foundation of students (Mayasari et al., 2021). First, the Iman and Taqwa dimension focuses on belief in God Almighty and the implementation of religious teachings or beliefs with a taqwa attitude (Karim et al., 2021; Karim et al., 2023). Second, Independence reflects the ability of students to think and act independently and take responsibility for themselves. Third, the Spirit of Mutual Cooperation shows the ability of students to work together and help others selflessly. Fourth, Open Attitude to Global Diversity shows students' appreciation of the diversity of cultures, religions, and backgrounds (Septiani & Kurniawan, 2022). Fifth, Critical Thinking Skills emphasize students' ability to evaluate, analyze, and conclude information objectively. Finally, Creativity highlights students' innovation in solving problems. These six dimensions are not only the main objectives in education in Indonesia, but also integrated in the curriculum and learning process to shape student character in accordance with the principles of Pancasila (Mahardhani et al., 2023).

The arts, with their diverse appeal and expressive potential, are emerging as a powerful vehicle for immersing young minds in the ethos of local wisdom. Through creative engagement, early childhood education seeks to instill values deeply rooted in Indonesian culture, fostering a deep understanding of the principles of Pancasila. This article examines how arts activities become tools for the internalization of local wisdom, facilitating the integration of core Pancasila values-such as religiosity, nationalism, humanity, democracy and social justice-into the developmental journey of young learners.

By exploring the intersection between tnhe arts, early childhood education, and Indonesia's rich culture, this article aims to provide an understanding of the transformative potential of integrating local wisdom into educational practice. Through a nuanced understanding of how arts activities can be a catalyst for values internalization, educators and stakeholders in the field of early childhood education can gain insights into fostering the holistic development of learners who are imbued with a deep appreciation of their cultural heritage and an unwavering commitment to the principles of Pancasila.

Method

In this study, the research methods include participatory observation, interviews, and documentation analysis. First, participatory observation is used to actively observe and engage in early childhood art activities that include the internalization of local wisdom. This research was conducted by involving 15 children in one class. This observation allows researchers to understand directly how the art activities are carried out and how local wisdom is integrated in them. Second, interviews were conducted with various related parties, such as educators, parents, and the community, to gain a deeper understanding of their views on the role of art activities in strengthening the student profile of Pancasila through the internalization of local wisdom. These interviews provided an opportunity for respondents to share their views, experiences and thoughts on the research topic. Third, documentation analysis was conducted on various documents related to early childhood arts activities that had been conducted previously. This involved collecting and analyzing documents such as activity reports, observation notes and learning materials used. By combining these three methods, this study was able to gain a comprehensive understanding of the role of art activities in strengthening the student profile of Pancasila through the internalization of local wisdom in Indonesia.

Findings and Discussions

Local Wisdom is the truth that has become part of the tradition or distinctiveness of a region. Local wisdom holds important life values and deserves to be explored, developed, and preserved as a contrast or alternative to socio-cultural change and modernization (Njatrijani, 2018). Local wisdom is a product of the cultural past that continues to be upheld as a guide to life, although the values are local, the values contained in it are considered universally relevant. Local wisdom is formed from the cultural excellence of local communities and geographical conditions at large. Local wisdom needs to be introduced to early childhood and can be integrated in the Merdeka Curriculum currently in effect in Indonesia. This can be done through art activities related to local culture.

Table 1: Interview With Teachers

No	Question	Answer
1	Can you tell us a bit about your teaching experience to date?	I've been an Early Childhood Teacher with more than ten years of experience feeling the satisfaction of guiding children's development in their early years. She describes her experience as a new adventure every day, noticing remarkable growth in various aspects, from cognitive to social and emotional. Interactions with children who are always full of energy bring her indescribable joy, while challenges such as managing a diverse group have helped her grow as a better educator.
2	What do you think about curriculum changes in Indonesia	Teachers in Indonesia recognize that frequent curriculum changes in line with leaders' policies can be challenging. While the goal is to improve the quality of education, these changes often cause uncertainty among educators. Despite having to adapt themselves every time a change occurs, teachers remain focused on the interests of children and strive to provide meaningful learning experiences. They believe that involving educators and other stakeholders in curriculum development can create a curriculum that is more stable and relevant to the needs on the ground
3	What do you think about the importance of integrating local wisdom in art activities at school to raise the profile of Pancasila students?	The integration of local wisdom in arts activities at school has a very positive impact in strengthening the learner profile of Pancasila. Through art, we are able to introduce students to local cultural values and traditions, which in turn helps them understand the principles of Pancasila more deeply. In addition, arts activities also allow students to develop their creativity while strengthening the sense of community and social values advocated by Pancasila.
4	How do you see the role of local wisdom in strengthening the values of the Pancasila student profile in the Early Childhood Education (ECE) environment?	Local wisdom has an important role in strengthening the values of Pancasila in the ECE environment. Through the integration of local wisdom in art activities, children can better understand and internalize cultural values, such as gotong royong, tolerance, and togetherness. This helps build character in accordance with the principles of Pancasila from an early age.

5	What challenges do you face in implementing the integration of local wisdom in art activities at school?	One of the main challenges is limited resources, especially in terms of time and funds. Developing and implementing arts activities that include local wisdom requires careful preparation and sometimes additional costs. In addition, we also need to continuously educate parents and students about the importance of local wisdom in their education.
6	How can art activities be a means to internalize local wisdom among young children?	Arts activities give children the opportunity to interact directly with local culture through their creative expression. For example, through dance, painting or handicrafts, they can learn about traditions, stories and cultural values inherent in everyday life.
7	How do you integrate local wisdom into art activities in the ECD classroom?	I integrate local wisdom through various art activities such as singing folk songs, learning traditional dances, playing angklung which is one of the traditional musical instruments and making crafts inspired by local culture. I also utilize traditional stories as inspiration for children's art projects.
8	What benefits do you see from incorporating local wisdom in art learning in PAUD related to character building and Pancasila values?	Incorporating local wisdom in art learning helps to form a strong character and uphold the values of Pancasila. Children learn to appreciate and respect the culture and values around them, which is an important aspect of Pancasila character building.
9	Do you think there are certain strategies or methods that are effective in improving children's understanding of local wisdom and Pancasila values through art activities?	One effective strategy is to integrate local wisdom in all aspects of learning, including art, music and drama materials. In addition, I often invite guests from the local community to share their knowledge with the children. The school also facilitates art teachers who are experts in their fields, such as teachers of Angklung music, dance, and others. Not only at school, but the children are also involved in art activities outside of school, such as competitions or visits to museums, where there are many works of art
10	How do you see the role of teachers in supporting the process of internalizing local wisdom and Pancasila values through art activities in PAUD?	As a teacher, I feel responsible to be a facilitator in this learning process. My role is to inspire and guide the children in appreciating and understanding local wisdom and Pancasila values through art activities.

Table 2: Interview With Parents

No	Question	Answer
1	What do you think about the integration of local wisdom in arts activities in schools to help raise the profile of Pancasila learners?	We strongly support the idea. We believe that introducing our children to local culture and traditions early on will help them become better and responsible citizens. In addition, art activities give children the opportunity to express themselves creatively while learning noble values such as gotong royong and tolerance, which are very important in Pancasila
2	Do you face any particular obstacles or challenges in supporting the integration of local wisdom in art activities at school?	One of the obstacles we face is the lack of understanding of local wisdom among parents. Some of us may not fully realize the importance of introducing children to local culture and traditions. However, we strongly support the school's efforts in this regard and are ready to work together to improve our understanding and support.

The interviews show that ECD teachers have extensive experience in guiding children's development in their early years. Although challenges such as curriculum changes and resource limitations often arise, they remain focused on children's interests and strive to provide meaningful learning experiences this is also in line with research conducted by (Eni Susilawati, 2021). The integration of local wisdom in arts activities in schools plays an important role in strengthening the learner profile of Pancasila by helping students understand and internalize cultural values, traditions, and Pancasila values (Mujahidah & Dewi, 2022). Challenges such as limited resources and parental education on the importance of local wisdom still need to be overcome. However, with effective strategies, such as inviting guests from the local community and involving students in arts activities inside and outside of school, as well as the role of teachers as facilitators in the learning process, the integration of local wisdom can be a meaningful and impactful experience for children's development in PAUD.

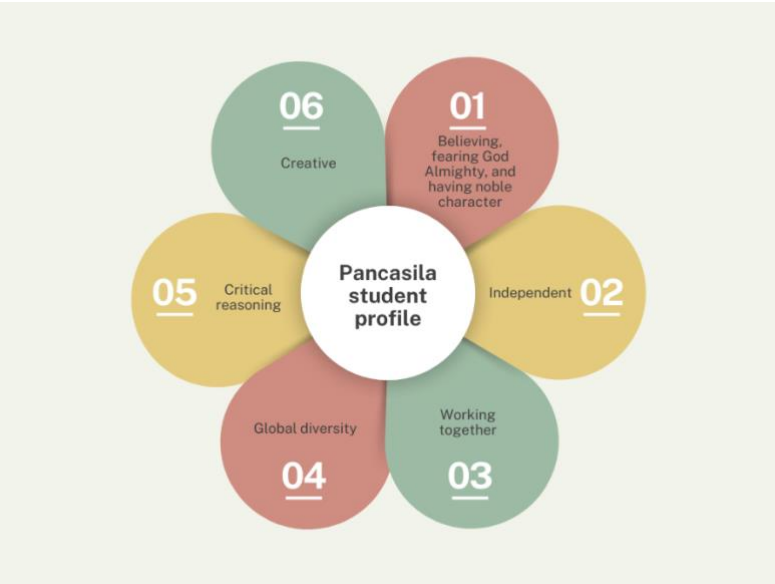

Figure 1: Pancasila Student Profile

Early childhood learns through play, with the concept of independent play at the PAUD level that directs children's freedom in play. Play activities are not only for physical and mental

growth, but also for internalizing the values of Pancasila (Ardy Wiyani, 2022). The implementation of the philosophy of free play is expected to reduce educational approaches that pressure children psychologically, such as activities with memorization methods. There are three important components in the implementation of free play: commitment to goals, independence in choice, and periodic reflection. These components form a new foundation for PAUD teachers in facilitating early childhood development. In addition, art activities such as dancing, singing and others also help children learn.

Arts activities have great potential to be an effective way of raising the profile of Pancasila learners in Early Childhood Education (ECED). Here are some ways in which arts activities can contribute to this:

1. Internalizing Pancasila Values through Creative Expression: Through art activities such as painting, handicraft making, and drama, children can actively learn about Pancasila values such as gotong royong, justice, tolerance, and democracy (Septiani & Kurniawan, 2022). They can convey their understanding of these values through their artwork, thus better understanding and internalizing them.
2. Strengthening Cultural Identity and Nationalism: Through traditional Indonesian arts such as dance, music, and visual arts, children can recognize and appreciate Indonesia's cultural diversity (Srirahmawati & Hunaifi, 2022). This helps strengthen their cultural identity and sense of nationalism, which is an important aspect of Pancasila.
3. Teaches Cooperation and Social Skills: Art activities often involve collaboration and cooperation between children. This helps them learn the values of gotong royong and togetherness, which are key principles in Pancasila (Karim et al., 2023). In addition, they also learn to communicate, share ideas and work together, which are important social skills.
4. Developing Creativity and Personal Expression: Art activities give children the opportunity to develop their creativity and express themselves in unique ways. This not only boosts their confidence, but also helps them understand and appreciate the diversity of opinions and ways of thinking, which again ties back to the democratic principles in Pancasila.
5. Encouraging Respect for Diversity (Anugrah Octavian, 2018): Through art, children can learn to appreciate differences, be it in the form of artistic expression, culture, or views. This helps them understand the values of tolerance and respect for individual rights, which are key principles in Pancasila.
6. By making the most of the potential of arts activities, PAUD can create a rich and stimulating learning environment, where children can develop a deeper understanding of the values of Pancasila while experiencing the joy and satisfaction of their creative expression.

Conclusion

The internalization of local wisdom through arts activities in early childhood education in Indonesia serves as an important mechanism to strengthen the values of the Pancasila student profile. By introducing children to local wisdom from an early age and integrating it into current curricula, such as Merdeka Curriculum, educators can shape a deeper understanding and appreciation of Indonesian culture and heritage. Through engagement in art activities rooted in local traditions, children not only develop their art skills but also absorb fundamental values embedded in their cultural context. This holistic approach not only enriches their educational experience but also forms a sense of identity, pride and respect for

diversity. Therefore, promoting the internalization of local wisdom through art activities in early childhood education is crucial to advancing the holistic development of Indonesian children and strengthening the foundation of Pancasila values in the younger generation.

Acknowledgements

I would like to thank the Education Fund Management Institution / Lembaga Pengelola Dana Pendidikan (LPDP) of the Ministry of Finance of the Republic of Indonesia for providing scholarships and supporting this research.

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Contact email: rizqyaisyah.2023@student.uny.ac.id

Evaluation of the Illiteracy Programme at Batara Banyuwangi Traditional School, Indonesia

Kiki Irafa Candra, Universitas Negeri Yogyakarta, Indonesia
Yudan Hermawan, Universitas Negeri Yogyakarta, Indonesia

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
This study aims to evaluate the illetercay programme in Batara Banyuwangi Village. This research uses *CIPPO (Context, Input, Process, Product, and Outcome)* evaluation methodology, with descriptive type. The research location is a non-formal institution, namely Batara Traditional School, Kalipuro sub-district, Banyuwangi district. The informants in this research are the Institution Supervisor, Tutors and Learners. While data collection techniques are carried out by conducting observations, in-depth interviews with informants, as well as the use of written and graphic documents. Then to ensure the validity of the data in this study, triangulation techniques were used. Furthermore, data analysis techniques were carried out by recording data, presenting data, and drawing conclusions. The results obtained from the research show that the implementation of the overall education programme for the Batara village community has not been fulfilled optimally, this is because the existing facilities at the school institution have not been fulfilled, the tutor resources are lacking, and the enthusiasm of the community is still minimal to study actively. Then, from the comparison between *inputs* and *outcomes*, the programme imposed the outcome is not optimal in achieving the objectives.

Keywords: Public Education, Character Blindness, Evaluation

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Introduction

Many needs are required by the community, one of which is related to non-formal education (PNF). Various factors also encourage the increasing need for PNF in community life. Changes in society that occur very quickly today cause the results of education obtained at school (formal education) to be inappropriate or lagging behind the new demands in the world of work. The knowledge and skills gained from school seem to become obsolete faster and are less able to be used to solve new challenges faced in everyday life. Such conditions demand educational services provided by the community and government that function as an addition or complement to formal education. Formal education is often unable to answer the new needs that are developing in society as described above, so the demand for non-formal education services is needed. Ki Hajar Dewantara (Father of Indonesian National Education) differentiated education into three centres of education, namely: family education, school education, and community education. The three centres of education formulated by Ki Hajar Dewantara seem to be replaced by another term, namely education pathways. Article 13 of the National Education System Law No.20 of 2003 states: Paragraph *1, education pathways consist of formal, non-formal and informal education that can complement and enrich each other. Paragraph 2, education as referred to in paragraph 1 is organised in an open system through face-to-face education and/or distance education.*

Understanding the scope of non-formal education activities (services) requires a broad interpretation, perhaps not only tutoring or equality, but also other non-formal education service programmes. Moreover, if the function of non-formal education is placed as part of supporting lifelong education, then many community education activities can be included such as community skills education, as well as literacy that is really needed by the community and based on daily needs.According to Marzuki Shaleh H.M (2010: 116), "the term literacy has long been known and is a very influential concept in building education through illiteracy eradication programmes". Many parties are very concerned with the idea, including adult education experts, economic development experts, village development workers, innovation dissemination agencies, planners and implementers in international institutions. Literacy education as an activity or process of recognising letters into sentences or paragraphs that contain meaning.

However, often along with the development of culture and the complexity of human life, the term literacy education develops into everything that conveys information or thought processes or work processes both using media and without using media. According to Marzuki Shaleh H.M (2010: 117), "ideologically, literacy is a provision for after death to face God in order to get a better life". There is an assumption that reading and writing will be politically advantageous because it will gain political support from the community due to greater understanding and openness. As stated by Napitupulu in Yoyon Suryono and Sumarno (2012: 53), namely: "Literacy is simply defined as the ability to read, write, and count. Literacy is broadly defined as the basic knowledge and skills possessed by everyone. Literacy is a necessary skill for humans and is one of the foundations for other life skills".

Based on the concepts above, an outline of the concept of literacy education can be drawn. Literacy education must be functional in order to explore, obtain and manage information intelligently. This ability includes writing, counting and communicating to continuously develop knowledge, skills and attitudes in order to adapt to fluctuating, uncertain and competitive situations. Illiteracy hinders access to information and the development of knowledge and skills for competitiveness.

Seeing Banyuwangi as an area rich in cultural heritage and customary values, it certainly requires community participation to continue to ground and teach it more widely. Culture and local wisdom can provide prosperity and welfare for local communities/indigenous peoples by enjoying the values contained therein, or conversely culture and local wisdom only prosper third parties (i.e. people who understand the strategy of utilisation and development of culture and local wisdom), while cultural resources do not get any benefit. Over the past few decades, cultural wealth has become a major source of income for communities in Banyuwangi Regency, and has become a mainstay of new learning facilities in Banyuwangi Regency and can sustain the welfare of the community, therefore it is necessary to be based on good literacy knowledge in empowering culture and local wisdom in a comprehensive and integrated manner.

Talking about the diversity of culture and customs in Banyuwangi, Batara traditional school should also be an icon in this regard, Batara traditional school or known as Kampoeng Batara. That is the name of the conservation-based traditional school located at the foot of Mount Raung to the east. Precisely, in Papring Neighbourhood, Kalipuro Village, Kalipuro District, Banyuwangi, Kampoeng Batara was initiated by Widie Nurmahmudy, this school was born out of concern for the condition of education in Papring. For example, many children drop out of school, child marriage is also high and there is a lack of public awareness of education. Kampoeng Batara was officially established on 31 October 2015. At that time, there were four children who were members of Batara. At that time, Batara still did not have a special place, still using a small kobhung (langgar). Sometimes they learn and play in the yard and open space around the house. Learning here also uses the concept of play while providing knowledge about nature, conservation and local culture.

Methods

This research uses a type of evaluation with a qualitative approach. The Evaluation Model used this research uses the evaluation model developed by Stufflebeam, namely: *context, input, process, product* (CIPP). However, this research did not only reach the product evaluation. Ambar T.S (2004: 116) adds one more stage, namely *outcomes.* Therefore, the evaluation approach that will be used in this research is CIPPO. The components of the evaluation *(Context, Input, Process, Product, Outcomes). The* place of research is at Batara Traditional School, Batara Village, Kalipuro District, Banyuwangi Regency. The sample in this study were 4 people, including institute supervisors, institute tutors, institute administrators, and participants. Data collection in this study used observation, interviews, documentation, which was conducted in November 2023. The analysis method used in this research is qualitative analysis technique with descriptive method. Activities in data analysis, namely: *data reduction, data presentation, and verification of conclusions* (Milles, Huberman and Saldana (2014).

Findings and Discussion

Sample Perception

Pembina Lembaga: From the results of the research related to how the illiteracy programme is evaluated, the Pembina Lembaga revealed that the illiteracy programme in the Batara traditional village community has been implemented quite optimally, but due to the lack of facilities in several phases, it hampers the learning process.

Institution Tutor: The tutor revealed that the learners tend to experience unstable motivation in learning, so that even though it is optimal, it does not succeed in achieving the expected target, namely the hope that the learners participating in the illiteracy programme can participate in introducing culture at Batara Banyuwangi traditional school.

Institution Admin: Institutional administrators revealed that programme procedures in some sections are hampered, because the institution is still not optimal in digitising, so administrative processes are not optimal and slow.

Participants: The participants stated that the illiteracy programme has had a good impact on their reading development, but for the programme to be sustainable, they need intensive mentoring, so the programme should last longer.

The State of Education in the Community of Papring, Kalipuro, Banyuwangi District, Indonesia

Judging from the data obtained, the majority of people in the Papring Neighbourhood have elementary and junior high school education, with the tendency that there are still few people with education above that. This can be seen in the table below:

Table 1: Education Level of Kalipuro Village Community, Banyuwangi, Indonesia

No.	Education	Total
1	Not yet in school	107 People
2	Not completed primary school	6 People
3	Completed primary school	1,777 People
4	Completed junior high school	567 People
5	Completed senior high school	325 People
6	Academy Graduation	79 People
7	College Graduates	75 People
	Total	**2,336 People**

Source Data: Kalipuro Village, 28 June 2021

Many people under the age of 12 have only completed primary school due to their parents' poor economic situation and many people marry at a young age. There are infrastructure facilities in Papring Neighbourhood, Kalipuro Village, Kalipuro Sub-district, Banyuwangi Regency, namely kindergarten, primary school, junior high school, Islamic boarding school and health centre.

Context Evaluation

The context in this evaluation helps to plan the decision, determine the needs, which will be achieved by the programme and formulate the programme objectives (Arikunto, 2012). Context evaluation is a needs assessment. The basic question in this component of the evaluation is "what is needed?". In the context of the illiteracy programme and the learning model, this question can be developed into, "what is needed by the institution, Sekolah Adat Batara, Banyuwangi Regency, Indonesia?". The main purpose of the context evaluation is to find out whether the implementation of the illiteracy programme is optimal, in terms of learning and community participation, because it will have implications for the promotion of the local culture of Kampung Batara Banyuwangi.

The strong foundation of the illiteracy programme is supported by Banyuwangi Regent Regulation No. 4/2014 on the Community Movement Programme for the Eradication of Tributa (Illiteracy) and the Uplifting of Dropout Students of Banyuwangi Regency. Therefore, the implementation of the illiteracy programme must be carried out in accordance with this regulation and be able to run effectively.

Input Evaluation

Input evaluation is intended to help determine programmes to make needed changes (Mahmudi, 2011). Input evaluation looks for barriers and potentials available within an institution.

The results of observations and interviews (19-20 January 2023) with institute coaches, tutors and institute participants at Sekolah Adat Batara, Banyuwangi, Indonesia are as follows:

Table 2: Institutional Trustees and Tutors, and Participants of Batara Indigenous School, Banyuwangi Regency, Indonesia

Observation	Interview	Summary
The supervisor of the institution is Mr Widi Nurmahmudi, who is the supervisor and initiator of Sekolah Adat Batara, Banyuwangi Regency.	Kampung Batara, is one of the remote villages located in Banyuwangi, Kalipuro District, Kalipuro Village. Specifically in the illiteracy programme there are up to 40 students, but there has not been cooperation with the government on an ongoing basis, any cooperation is just conditional, Pak Widi said that school is not only limited to the classroom, but can be anywhere and anytime.	Batara Traditional School, Banyuwangi Regency is a non-formal institution that implements non-formal programmes for the Batara Village community in particular, and the public at large.
The tutor in this interview is Ibu Rahmi, she has been a tutor since 2018, she focuses on the illiteracy programme.	He said that many of the tutors lacked technological skills, which had implications for some of the learning that was hampered, as a result the students' understanding of literacy was not optimal.	Lack of understanding of technology has a big impact on students' literacy, so there is a need for ongoing training.
Learners, to see how the subjects felt about the script programme.	In this case, the learners saw that the facilities in learning illiteracy were still not optimal, related to the reading park which still had few books, e-book services were also inadequate, and also classes were still small, in some cases this had an impact on the slow learning process.	This requires needs-based integration, in this case including learning facilities and learning innovations.

Table 3: Number of Students at Batara Traditional School, Banyuwangi, Indonesia

No.	Year	Total
1	2015	20 People
2	2016	32 People
3	2017	41 People
4	2018	46 People
5	2019	41 People
6	2020	140 People

Source Data: Documentation Kampoeng Batara, dated 20 January 2023

In 2015 the initial members of Kampoeng Batara were only children but as time went on, in 2019 adults began to join Kampoeng Batara. At the beginning of the establishment of Kampoeng Batara, the activities carried out were only reading and writing. The founder of Kampoeng Batara, Mr Widie, initially published Kampoeng Batara's activities on social media just to save documentation, because he received a positive response resulting in people outside the Papring community knowing about the existence of Kampoeng Batara. The activities used to be only reading and writing with the volunteers who entered Kampoeng Batara and participated in providing positive and educational activities.

The results of document review, observations and interviews conducted by the author found that the facilities and infrastructure of the Batara Traditional School institution, Banyuwangi, Indonesia, are not complete, there are still inadequate places, from classrooms, internet access, to the library (Taman Baca). For this reason, an immediate solution is needed, not only to improve quality, but also to encourage higher community participation in learning. It is hoped that all levels of society can be involved, from the government, private sector, institutions, and the surrounding community. So that the programmes that run can be more effective and quality, as well as more adequate facilities for the implementation of a conducive learning process.

Table 4: Operational and Personal Costs of Batara Traditional School, Banyuwangi, Indonesia

Observation	Interview	Summary
Batara Traditional School, related operational costs from the Batara Village Community itself, and also temporarily from the Private Sector. This includes the cost of maintaining the facilities and also the cost to the tutors.	Regarding routine financing from the Batara Village Community, where the Institute provides a pavilion for overnight stays, and usually from people outside the area often visit for study or observation, where the pavilion is rented out, besides that the Batara Village Community also has a business unit which is promoted to visiting tourists.	Batara Traditional School, Banyuwangi Regency receives funding from the Community Business Unit, from visitors to the Institute, tourists, and the private sector.

The results of document review, observations and interviews conducted by the author found that operational costs and personal costs at Batara Traditional School, Banyuwwangi Regency, are insufficient, this can be seen in several poorly maintained classrooms, non-existent technological equipment, and also supporting facilities that are not optimal. For this reason,

cross-sectoral cooperation and support is expected as well as the utilisation of funds by the government and the need for support from all circles in terms of collaboration.

Table 5: Facilities and Infrastructure of Batara Traditional School, Banyuwangi, Indonesia

Observation	Interview	Summary
The infrastructure of the Batara Traditional School, Banyuwangi is constrained by access to remote locations and steep roads, in addition to inadequate internet and technology facilities, and learning facilities such as libraries and practical learning spaces are still not optimal.	Facilities and Infrastructure at Batara Traditional School, Banyuwangi in the aspect of culture and arts are adequate, but supporting facilities in academic learning are still minimal.	• Infrastructure facilities are still inadequate and not conducive to learning in illiteracy and digital literacy programmes. • Library facilities are minimal. • Facilities for learning practice are incomplete.

The results of document review, observations and interviews conducted by the author found that the facilities and infrastructure of the Batara Traditional School, Banyuwangi, are not complete, there are still parts of the facilities of the institution that are not optimal, these deficiencies, from internet access and technology such as computers, libraries are less complete, and facilities for student activities are also incomplete, so that with less than optimal facilities the improvement for calistung skills is stagnant. It is hoped that all those involved in the institution and local policy holders can collaborate with each other in developing the institution more optimally so that the programmes that run can be more optimal.

Process Evaluation

Process evaluation is the implementation of the programme. The fundamental question is: "is the programme being done?". Process evaluation can revisit the organisation's plan and previous evaluations to identify important aspects of the organisation that should be monitored (Mahmudi, 2011). Here, it is important to remember that process evaluation primarily aims to ascertain the process.

Table 6: Programme Planning, Implementation and Evaluation, Sekolah Adat Batara, Banyuwangi, Indonesia

Observation	Interview	Summary
• Terms of reference for lesson planning at Batara Traditional School, Banyuwangi. • Programme module and programme draft. • Programme assessment and evaluation format.	Programme planning is contained in the learning plan for the school year. The implementation of the programme at Sekolah Adat Batara includes opening activities, sports, hands-on nature learning, and regular evaluations.	All planning and implementation of the illiteracy programme is based on the needs of the learners.
	The evaluation of the programme at Sekolah Adat Batara Banyuwangi takes place from the progress of illiteracy improvement of each learner.	The evaluation instrument for the illiteracy programme at Sekolah Adat Batara Banyuwangi only uses conversations with students.

The results of document review, observations and interviews conducted by the author show that the planning and implementation of the programme is based on the needs of students and also the implementation of the programme runs intensively.

Evaluation has also been carried out at the Institute and in every learning process of the illiteracy programme. Although there are still learning evaluation instruments of the programme that have not been running optimally, but overall it has been quite effective in reducing the problem of illiteracy for students.

Product Evaluation

Product evaluation is an evaluation that aims to measure, interpret, and assess programme outcomes (Muyana, 2017). In addition, it assesses outcomes and relates them objectively to the context, inputs, and processes. The product or outcome component is an assessment carried out to measure success in achieving predetermined goals. The product component of the illiteracy alleviation programme process at Batara Traditional School, Banyuwangi, Indonesia.

The learning process activities of the Illiteracy Programme generally use methods where learners learn to overcome illiteracy problems directly through communication and storytelling patterns. Implementation efforts in the programme have been well implemented at Sekolah Adat Batara, Banyuwangi, Indonesia.

Outcome Evaluation

Outcome evaluation is used to measure the extent of the impact of the implementation of programme evaluation that has been carried out (Arikunto, 2012). As for the evaluation of the

implementation of the illiteracy programme, there are several obstacles, such as the lack of complete reading facilities from the library to digital literacy through the internet, these obstacles hinder progress in the achievement of the programme, but in addition to obstacles there are also maximum results obtained in the learning method and learning model.

The purpose of learning evaluation is to determine the effectiveness and efficiency of the learning system, both concerning goals, materials, methods, media, learning resources, the environment and the assessment system itself.

Conclusion

The illiteracy eradication programme is something that must be done in this day and age, it is also related to the rapid development of education. This also applies to all levels of society, even traditional communities.

Thus, the illiteracy programme at Sekolah Adat Batara Banyuwangi is a programme that aims to educate and train the community in literacy and numeracy, and more broadly, the community's understanding of literacy and numeracy is able to participate in communicating and introducing the culture and diversity of Banyuwangi to the national and global community.

Figure 1: Batara Traditional School, Banyuwangi, Indonesia

Acknowledgements

I would like to thank the Lembaga Pengelola Dana Pendidikan (LPDP) of the Ministry of Finance of the Republic of Indonesia for providing scholarships and supporting this research.

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Interview List

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Contact email: kikiirafa.2023@student.uny.ac.id

A Meta-Analytical Study About the Impact of Mindfulness as a Pedagogic Practice in Establishing Socio Emotional Learning Environment in Schools

Puneet Rahi, Ministry of Education, India

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
Social and emotional abilities are thought to predict how successfully a person adjusts to his or her surroundings, adapts to change, and, eventually, how successful she or he will be in life. In reality, basic development qualities like conscientiousness, emotional stability, openness, and agreeableness can be just as, if not more, essential than cognitive intelligence in determining future employment. Despite the fact that these competencies are associated with important life outcomes, educators may struggle to discover effective approaches to prioritise, teach, and assess social and emotional skills. Developing these essential life skills through social and emotional learning (SEL) is critical for a child's development since they are strongly related to adult success and happiness. For many kids, school is the only place. The major objective of this study is to present comprehensive data on how Mindfulness can be used as a pedagogical practice to enhance productivity and motivation amongst the learners and enable them to become socially and emotionally strong individuals. The research also aims to explore how teachers promote mindfulness using breathing techniques, yoga, and meditation for pupils and the benefits they see; How do teachers incorporate mindfulness techniques into their classrooms; What problems do teachers have when implementing mindfulness techniques in the classroom and how do they address them?

Keywords: Mindfulness-Based Interventions (MBIs), Socio-Emotional Learning (SEL), School-Based Mindfulness, Student Well-being

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Introduction

In recent years, the integration of mindfulness practices into educational settings has gained significant attention as a promising approach to enhance socio-emotional learning. This growing interest stems from the recognition that fostering students' emotional well-being and social skills is crucial for their overall development and academic success. Research has shown that mindfulness-based interventions have the potential to improve attention, empathy, and resilience, making them valuable tools to support social emotional learning in schools.

This meta-analysis examines the effectiveness of mindfulness as a pedagogic practice for socio-emotional learning in educational environments. The study explores how mindfulness-based interventions impact various aspects of students' social emotional skills, including self-awareness, emotional regulation, and cognitive flexibility. By analysing data from multiple studies, this research aims to provide a comprehensive understanding of the benefits and limitations of incorporating mindfulness into social-emotional learning curricula. The findings of this meta-analysis will offer valuable insights to educators and policymakers looking to implement evidence-based strategies to boost student emotional wellbeing and academic achievement.

What is Mindfulness?

Definition of Mindfulness

Mindfulness is a practice that has its roots in Buddhist philosophy but has gained significant attention in Western culture in recent years. It involves maintaining a moment-by-moment awareness of our thoughts, feelings, bodily sensations, and surrounding environment through a gentle, nurturing lens (*Mindfulness Definition | What Is Mindfulness*, n.d.).

Jon Kabat-Zinn, the creator of the popular Mindfulness-Based Stress Reduction Program, defines mindfulness as "the awareness that arises from paying attention, on purpose, in the present moment and non-judgmentally" (Rossy, 2023).

This practice encourages individuals to focus on the present rather than dwelling on the past or worrying about the future. It emphasises acceptance, meaning that we pay attention to our thoughts and feelings without judging them or believing there's a "right" or "wrong" way to think or feel in a given moment (*Mindfulness Definition | What Is Mindfulness*, n.d.).

Core Components of Mindfulness Practice

The practice of mindfulness comprises three essential components:

1. Intention: This involves consciously choosing to cultivate awareness. It's the first step towards mindfulness, achieved by setting an intention to be present (*What Are the Three Components of Mindfulness*, n.d.).
2. Attention: This refers to focusing on the present moment, including one's thoughts, feelings, and sensations. It involves bringing attention to one's breath and body, harnessing the intent to evaluate how one feels (Rossy, 2023), (*What Are the Three Components of Mindfulness*, n.d.).
3. Attitude: This encompasses the heart qualities of mindfulness, including acceptance, patience, trust, non-striving, openness, kindness, curiosity, compassion, letting go, gratitude, and generosity (Rossy, 2023). A non-judgmental, accepting attitude allows

individuals to emerge from distractions and reconnect with the intention to be mindful (*What Are the Three Components of Mindfulness*, n.d.).

These three characteristics intertwine to transform how we relate and respond to events, creating a more spacious way of being that is gentler and more peaceful (*What Are the Three Components of Mindfulness*, n.d.).

Benefits of Mindfulness

Research has shown that mindfulness practices offer numerous benefits, particularly in educational settings:

1. Improved attention and concentration: Mindfulness teaches children to anchor their attention in the present moment, whether it's on their breath, a sensation in their bodies, or a particular task (Lab & Lab, 2024).
2. Enhanced emotional regulation: By becoming more aware of their thoughts and feelings, children learn to navigate their emotions without becoming overwhelmed by them. This emotional intelligence lays the foundation for resilience, enabling young learners to face challenges and setbacks with a more balanced and composed mindset (Lab & Lab, 2024).
3. Stress reduction: Mindfulness offers a way to calm the mind and body, providing a sense of peace and relaxation amidst the chaos of daily life (Lab & Lab, 2024). The American Psychological Association indicates that mindfulness lowers the stress response by reducing blood pressure and heart rate, so students feel less stress (Team, 2023).
4. Improved social skills: As children become more attuned to their own emotions, they also develop a greater capacity for empathy and understanding towards others (Lab & Lab, 2024).
5. Academic performance: Students who receive mindfulness training generally have higher test scores and grades than their peers. The National Institutes of Health found that college students with lower perceived stress and increased mindfulness had better cognitive function than those who did not (Team, 2023).
6. Mental health: Students who receive mindfulness training usually have lower stress levels and lower rates of anxiety or depression (Waterford.org, 2024).

In conclusion, mindfulness is a powerful tool that can significantly impact cognitive, emotional, and social domains, offering children valuable skills that can enhance their learning journey and overall well-being.

Mindfulness in Education

Growth of School-Based Mindfulness Programs

In recent years, mindfulness has gained significant traction in educational settings. Globally, an increasing number of schools are incorporating mindfulness into their curricula, often through group-based programs where mindfulness skills are taught over several weeks by external trainers or trained school staff (Hudson et al., 2020). This growing interest stems from the recognition that fostering students' emotional well-being and social skills is crucial for their overall development and academic success.

The implementation of mindfulness in schools has taken various forms, from standalone interventions to more comprehensive whole school approaches (WSA). WSAs are particularly promising as they utilize and seek to influence school structures, culture, procedures, ethos, and the wider community to secure sustainable improvements and outcomes in young people's mental health (Hudson et al., 2020). These approaches are more likely than individual classroom-based interventions to result in long-term positive outcomes.

Potential Benefits for Students

Research has shown that mindfulness-based interventions in schools can yield numerous benefits for students (Team, 2023):

1. Stress and anxiety reduction: The American Psychological Association indicates that mindfulness lowers the stress response by reducing blood pressure and heart rate, helping students feel less stressed.
2. Improved self-regulation: Mindfulness practices enhance both behavioural and emotional self-regulation. Students who practice mindfulness are better able to regulate and gain control over their emotions, leading to improved communication of their needs and a better classroom environment.
3. Enhanced academic performance: The National Institutes of Health found that college students with lower perceived stress and increased mindfulness had better cognitive function than those who did not. The University of California also discovered a close connection between greater mindfulness and better academic performance in school.
4. Increased emotional intelligence: Improved self-regulation enhances students' mindful awareness of their emotions, forming the foundation of strong emotional intelligence. This leads to greater empathy, compassion, and kindness towards themselves and their peers.
5. Better mental health: Students who receive mindfulness training generally have lower stress levels and lower rates of anxiety or depression.

A meta-analysis of universal social and emotional skill-based interventions found that high-quality implementation produced larger expected outcome effect sizes compared to interventions with low implementation quality (Hudson et al., 2020). This underscores the importance of effective implementation in realizing the full potential of mindfulness programs in schools.

Challenges of Implementation

Despite the potential benefits, implementing mindfulness programs in schools faces several challenges:

1. Consistency in administrative support: Securing consistent administrative support can be difficult, which is crucial for successful implementation (Hudson et al., 2020).
2. Teacher engagement: Engaging teachers effectively in the program can be challenging, especially given the demands on their time and resources (Hudson et al., 2020).
3. Staff turnover: High staff turnover can disrupt the continuity of mindfulness programs (Hudson et al., 2020).
4. Overwhelming staff demands: The additional responsibilities associated with implementing mindfulness programs can be overwhelming for already busy staff members (Hudson et al., 2020).

5. Time constraints: Carving out time for mindfulness practices within the school day can be challenging, given the numerous academic priorities (*UNESCO MGIEP | 404*, n.d.).
6. Personal nature of mindfulness: Some concepts discussed in mindfulness-based curricula can be broad and personal, which may make some individuals uncomfortable (*UNESCO MGIEP | 404*, n.d.).
7. Voluntary participation: It's crucial to maintain the voluntary nature of mindfulness practices, which can be challenging in a school setting where activities are often mandatory (*UNESCO MGIEP | 404*, n.d.).

To address these challenges, research suggests that school leadership buy-in, forming community partnerships, and providing ongoing support for staff are strategies associated with successful implementation (Hudson et al., 2020). Additionally, delivering the program within school hours and having a dedicated physical space for the program can facilitate implementation (Hudson et al., 2020).

As mindfulness programs continue to grow in popularity, ongoing research, such as the MYRIAD Project in the UK, aims to provide more comprehensive evidence on the effectiveness and cost-effectiveness of mindfulness interventions in schools (Baker et al., 2022). These studies will help inform best practices for implementation and support the development of more effective, evidence-based mindfulness programs for educational settings.

Socio-Emotional Learning (SEL)

Definition and Key Competencies of SEL

Social and emotional learning (SEL) is an integral part of education and human development. It is the process through which individuals acquire and apply knowledge, skills, and attitudes to develop healthy identities, manage emotions, achieve personal and collective goals, demonstrate empathy, establish supportive relationships, and make responsible decisions (*Fundamentals of SEL - CASEL*, 2024). The Collaborative for Academic, Social, and Emotional Learning (CASEL) has identified five core competencies that form the foundation of SEL:

- Self-awareness
- Self-management
- Social awareness
- Relationship skills
- Responsible decision-making

These competencies can be taught and applied at various developmental stages, from childhood to adulthood, across diverse cultural contexts (*What Is the CASEL Framework? - CASEL*, 2023). They provide a framework for schools, districts, and states to foster knowledge, skills, and attitudes that support students' social, emotional, and academic development.

Importance of SEL in Schools

The implementation of SEL in educational settings has gained significant attention due to its proven ability to enhance students' overall well-being, academic performance, and long-term

life outcomes. Research has shown that SEL programs can lead to substantial improvements in various areas:

1. Academic performance: Students who participated in SEL programs saw an 11 percentile increase in their overall grades and better attendance (National University & NU Editorial Contributors, 2024). A 2017 meta-analysis involving students from kindergarten to high school demonstrated that those exposed to SEL programs performed 13 percentile points higher academically than their non-SEL peers (Bridges, 2024).
2. Behaviour and social skills: SEL helps students better cope with emotional stress, solve problems, and avoid peer pressure to engage in harmful activities. It also promotes the development of "soft skills" required in many jobs, such as teamwork and problem-solving.
3. Mental health: SEL programs have been shown to reduce stress and anxiety levels among students (*Fundamentals of SEL - CASEL*, 2024).
4. Educational equity: SEL can help address various forms of inequity and empower young people and adults to co-create thriving schools and contribute to safe, healthy, and just communities (*Fundamentals of SEL - CASEL*, 2024).

Overlap Between Mindfulness and SEL

Mindfulness and SEL are highly complementary approaches that, when taught together, can have a powerful effect on students' ability to manage emotions and demonstrate social and emotional aptitude. While mindfulness works from the inside-out, helping students recognize triggers and changes within their bodies, SEL addresses students' needs from the outside-in, providing them with the tools to apply social and emotional competencies externally (DESSA, 2024).

The relationship between mindfulness and SEL can be understood through the adage, "Mindfulness is the canvas and SEL skills are the paint" (DESSA, 2024). Mindfulness practices can support the development of executive functions (EFs) and self-regulation during childhood, which are essential components of SEL. Both approaches aim to increase awareness of moment-to-moment experiences, promote reflection, self-regulation, empathy, and caring for others (Schonert-Reichl et al., 2014).

SEL interventions that include mindfulness practices may be particularly well-suited for supporting young people as they navigate their changing bodies and minds, offering conscious and compassionate ways of relating to themselves and their peers (Schonert-Reichl et al., 2014). This integration can lead to improved behaviour and academic outcomes, as well as enhanced overall well-being (DESSA, 2024).

In conclusion, the combination of SEL and mindfulness practices in educational settings offers a comprehensive approach to fostering students' social, emotional, and academic development. By addressing both internal awareness and external application of skills, this integrated approach has the potential to create more inclusive, supportive, and effective learning environments.

Meta-Analysis Methodology

Inclusion Criteria for Studies

The meta-analysis methodology began with a systematic search of published articles on mindfulness-based school interventions (MBSIs) from the earliest available date until July 2021. The search encompassed electronic databases including PsycINFO, EBSCOHost, MEDLINE, and CINAHL, utilising terms related to MBSIs. The initial search yielded 352 articles prior to eligibility coding (Phan et al., 2022).

To be included in the meta-analysis, studies had to meet specific criteria:

- Peer-reviewed journal articles
- Mindfulness-based school interventions, programs, or strategies
- Mindfulness outcomes on teachers or children and/or implementation outcomes
- Review papers on school-based mindfulness interventions
- Grade levels from kindergarten to 12th grade (Phan et al., 2022)

Data Extraction Process

The data extraction process involved two coders who assessed the eligibility of each journal article, achieving high inter-rater reliability (k = 0.98) (Phan et al., 2022).

From each study, the following information was extracted:

- Country
- Sample characteristics (size, age, gender, ethnicity, socioeconomic status, special needs population)
- School level and classroom setting
- Type of intervention
- Research design
- Evaluation design
- Intervention mediator
- Outcome measures and types
- Control group
- Teacher training provision

To ensure the quality of the meta-analysis, the PRISMA 2020 guidelines were followed. The Harbor & Miller (2001) ratings were used to examine the level of evidence, as recommended by PRISMA 2020 for assessing certainty in the body of evidence (Phan et al., 2022).

Statistical Analysis Approach

The statistical analysis approach involved grading evidence based on the methodological rigour of studies to draw conclusions about the state of the science of MBSIs and make informed recommendations. Two authors independently assigned numerical ratings to each article using the Harbor & Miller (2001) scale, ranging from 1++ (RCTs with a very low risk of bias) to 4 (expert opinion) (Phan et al., 2022).

Criteria for rating studies as 1++ (highest quality) included:

- Competence/fidelity measurement
- Daily program implementer meetings

- High participant attendance rate (90% or higher)
- Experienced program implementer
- Large sample size
- 8-week or longer sessions
- Conducted follow-ups post-intervention (Phan et al., 2022)

This rigorous approach to statistical analysis aimed to provide a comprehensive understanding of the effectiveness of mindfulness as a pedagogic practice for socio-emotional learning in educational environments. By analysing data from multiple studies, the meta-analysis sought to offer valuable insights into the benefits and limitations of incorporating mindfulness into social-emotional learning curricula.

Results of Meta-Analysis

The meta-analysis of mindfulness-based interventions (MBIs) in educational settings revealed significant positive effects on various aspects of socio-emotional learning (SEL) and psychological well-being among students. This section presents the overall effect sizes, specific impacts on SEL domains, and factors that moderate the effectiveness of these interventions.

Overall Effect Sizes

The analysis demonstrated that MBIs have a small to moderate effect on reducing psychological distress in non-clinical settings. Compared to passive control groups, MBIs reduced average distress between 1- and 6-months post-intervention with a standardised mean difference of -0.32 (95% CI: -0.41 to -0.24, $p < 0.001$) (Galante et al., 2023). This effect was maintained at follow-up periods ranging from one to six months post-intervention, with a small but statistically significant pooled effect (Hedges' $g = -0.35$, 95% CI: -0.61 to -0.09, $p < 0.01$) (Kraemer et al., 2020).

Effects on Specific SEL Domains

The meta-analysis revealed varying effects of MBIs on different SEL domains:

1. Affect intolerance/sensitivity: MBIs demonstrated a small-to-medium effect on improving affect intolerance/sensitivity from pre- to post-intervention (Hedges' $g = -0.37$, 95% CI: -0.52 to -0.23, $p < 0.001$) (Kraemer et al., 2020).
2. Anxiety sensitivity: A small effect was observed on anxiety sensitivity from pre- to post-intervention (Hedges' $g = -0.37$, 95% CI: -0.57 to -0.10, $p < 0.01$) (Kraemer et al., 2020).
3. Distress tolerance: MBIs showed a small effect on improving distress tolerance from pre-to post-intervention (Hedges' $g = -0.37$, 95% CI: -0.63 to -0.05, $p < 0.05$) (Kraemer et al., 2020).
4. Academic performance: Students who participated in SEL programs saw an 11 percentile increase in their overall grades and better attendance (National University & NU Editorial Contributors, 2024).
5. A 2017 meta-analysis involving students from kindergarten to high school demonstrated that those exposed to SEL programs performed 13 percentile points higher academically than their non-SEL peers (Bridges, 2024).

Moderating Factors

The meta-analysis identified several factors that moderated the effectiveness of MBIs:

1. Control group type: Studies with inactive controls (Hedges' g = -0.49, 95% CI: -0.67 to -0.31, $p < 0.001$) had a significantly larger effect than those with active comparisons (Hedges' g = -0.19, 95% CI: -0.40 to 0.02, $p = 0.07$) (Kraemer et al., 2020).
2. Implementation quality: A review of 213 universal SEL programs demonstrated that the presence of implementation problems substantially reduced effect sizes (Kraemer et al., 2020).
3. Dosage: One study showed that a higher dose of MBI was related to increases in positive attitudes towards school and decreases in mood disturbance post-intervention (Tudor et al., 2022).
4. Participant responsiveness: Higher satisfaction with the prevention program was associated with pre-post improvements in affective self-regulatory efficacy and emotional awareness (Tudor et al., 2022).
5. Home practice: Seven studies examined the influence of practice on outcomes, with four finding a significant positive association and three finding no significant associations (Tudor et al., 2022).

Interestingly, the meta-analysis found no clear indication that the effect of MBIs is modified by pre-specified candidates such as baseline psychological distress, age, gender, education level, or dispositional mindfulness (Galante et al., 2023). This suggests that MBIs may be broadly applicable across different demographic groups.

These findings highlight the potential of MBIs as an effective tool for promoting SEL and reducing psychological distress in educational settings. However, the results also underscore the importance of considering implementation factors and the type of control group when interpreting the effectiveness of these interventions.

Implementation Considerations

Teacher Training Requirements

Implementing mindfulness-based interventions (MBIs) in educational settings requires careful consideration of teacher training requirements. Research has shown that the effectiveness of these programs is closely tied to the quality of implementation and the competence of the instructors. To ensure successful integration of mindfulness practices in schools, educators should undergo comprehensive training programs.

One such program is the Cultivating Awareness and Resilience in Education (CARE) for Teachers, developed by Tish Jennings, M.Ed., Ph.D., associate professor at the Curry School of Education at the University of Virginia. This program aims to improve teachers' overall well-being, effectiveness in providing emotional and instructional support to students, and classroom management skills. Research has demonstrated that teachers trained in the CARE program experienced reduced time urgency, increased positivity, and enhanced sensitivity (Lab & Lab, 2024).

Another notable training program is the Mindfulness-Based Wellness Education (MBWE), a 9-week elective course designed to enhance teachers' wellness by facilitating changes in their

personal and professional identities, reflective practices, and social-emotional competencies. A controlled 2-year study found that MBWE resulted in increased mindfulness, teacher self-efficacy, and improved physical health ratings among participants ("Benefits of Mindfulness and Meditation in School Curriculums - Banyan Tree School," 2024).

To become qualified mindfulness instructors, educators often need to complete an 8-week, teacher-led, group-based secular mindfulness course. This foundational training is essential for developing a personal mindfulness practice, which is crucial for effectively teaching mindfulness to students. Additionally, experience working with children aged 11-18 years is typically required, as mindfulness training programs do not typically cover general classroom management skills (Schonert-Reichl, Kimberly & Roeser, Robert, 2016).

Curriculum Integration Strategies

Integrating mindfulness into the existing curriculum requires thoughtful planning and adaptable strategies. Here are some effective approaches for incorporating mindfulness practices into the classroom:

- Start small: Begin with brief mindfulness sessions, such as a few minutes at the start of the day or during transitions between activities.
- Incorporate mindful listening: Use exercises that enhance students' attention and empathy through focused listening activities.
- Create a mindful space: Designate a specific area in the classroom for students to practice mindfulness when feeling overwhelmed or in need of centring.
- Engage in mindful movement: Introduce gentle stretching or yoga exercises to help students become more aware of their bodies and manage energy levels.
- Use mindfulness cues: Implement reminders throughout the day to encourage students to return to the present moment.
- Practice mindful eating: Utilize snack time as an opportunity for mindful eating exercises, promoting awareness of sensory experiences (Schonert-Reichl et al., 2014).
- Integrate mindfulness into existing subjects: For example, incorporate mindfulness-themed stories and books into reading time or use mindful journaling in writing exercises.

Best Practices for School-Wide Adoption

To successfully implement mindfulness programs on a school-wide level, consider the following best practices:

- Secure administrative support: Ensure that school leadership, including superintendents and principals, understand and support the long-term vision for mindfulness integration.
- Adopt a bottom-up approach: Allow mindfulness programs to grow organically rather than mandating them for all teachers. Encourage voluntary participation and group practice to build a supportive community.
- Integrate into existing curricula: Rather than adding a separate program, supplement mindfulness practices into existing health and wellness curricula.
- Involve parents and the community: Conduct public meetings to educate parents and community members about the secular nature of mindfulness practices and their benefits for students.

- Ensure secular presentation: Keep all references to religious practices or terminology out of the school vernacular to maintain a secular approach based on neuroscience.
- Provide ongoing support: Offer continuous guidance and resources to teachers as they implement mindfulness practices in their classrooms.
- Adapt to diverse needs: Customize mindfulness approaches to cater to the unique requirements of different students and classroom environment (*Mindfulness Based SEL - Learning from Inside Out*, n.d.).

By adhering to these implementation considerations, schools can create a supportive environment for integrating mindfulness practices, potentially leading to improved well-being, academic performance, and social-emotional skills among students and teachers alike.

Limitations and Future Directions

Gaps in Current Research

Despite extensive empirical support for mindfulness practice with adults, the question of whether mindfulness-based interventions (MBIs) benefit youth remain less clear. Far fewer studies examine mindfulness practice with school-aged children and adolescents (Lab & Lab, 2024). This gap in research is particularly evident in the limited number of reviews focused solely on school-based interventions (Lab & Lab, 2024). Additionally, there is a lack of studies examining the effects of MBIs on symptoms of psychopathology in youth and schools (Schonert-Reichl et al., 2014).

Another significant gap in the current research is the scarcity of studies that simultaneously examine neuropsychological, biological, and social-emotional competence measures in relation to the effectiveness of a social-emotional learning (SEL) program for children. This limitation hinders a comprehensive understanding of the multifaceted impacts of mindfulness interventions on children's development.

Methodological Challenges

Several methodological limitations complicate the interpretation of research on mindfulness programs. One of the most common challenges is the ambiguity in the conceptualization of mindfulness. Programs differ in how they operationalize mindfulness and which specific practices they emphasize, making it difficult to compare outcomes across studies (“Benefits of Mindfulness and Meditation in School Curriculums - Banyan Tree School,” 2024).

Another significant challenge is the lack of comparisons to 'active' control groups. Many studies rely on passive control groups, which limits the ability to determine the specific effects of mindfulness interventions compared to other types of interventions. Additionally, there is a heavy reliance on self-report measures, which can be subject to social desirability bias and demand characteristics (“Benefits of Mindfulness and Meditation in School Curriculums - Banyan Tree School,” 2024).

Implementation fidelity is another crucial methodological consideration. Factors such as the extent of teacher training, student and teacher 'buy-in,' and integration of mindfulness practices into the classroom outside of formal program sessions can significantly impact program outcomes (“Benefits of Mindfulness and Meditation in School Curriculums -

Banyan Tree School," 2024). However, these factors are not consistently reported or analyzed in current research.

Promising Areas for Future Study

Future research should address the identified gaps and methodological challenges. One promising area is the examination of potential moderators that influence program effectiveness, such as the length of the program and the age of participants. Additionally, investigating the additional benefits of incorporating mindfulness practices with other evidence-based practices could yield valuable insights (Schonert-Reichl et al., 2014).

To enhance the quality of evidence, future studies should focus on using more robust research designs. This includes incorporating active control groups and employing a wider range of assessment methods beyond self-report. The use of 'second-person' reports by outside observers has been recommended as a strategy to assess outcomes in mindfulness programs more objectively ("Benefits of Mindfulness and Meditation in School Curriculums - Banyan Tree School," 2024).

Another promising area for future research is the exploration of how mindfulness training relates to improving stress regulation, well-being, learning, and prosocial behaviours among typically developing children in regular elementary school classrooms. This broader focus could provide a more comprehensive understanding of the potential benefits of mindfulness interventions in educational settings.

Lastly, future studies should aim to elucidate the relationship between mindfulness and academic achievement, particularly at the university level. While some studies have indicated a promising relationship, further research is required to establish causal links and understand the underlying mechanisms. Investigating the effectiveness of mindfulness-based interventions specifically tailored for university students could provide valuable insights into practical applications aimed at enhancing academic achievement (*Mindfulness Based SEL - Learning from Inside Out*, n.d.).

Conclusion

The integration of mindfulness practices into socio-emotional learning curricula has a significant impact on students' overall well-being and academic performance. This meta-analysis sheds light on the effectiveness of mindfulness-based interventions in fostering key SEL competencies, including self-awareness, emotional regulation, and social skills. The findings demonstrate that these programs have a positive influence on reducing psychological distress and improving various aspects of students' social and emotional development.

While the results are promising, it's important to keep in mind the limitations and gaps in current research. To move forward, there's a need to conduct more rigorous studies with active control groups and diverse assessment methods. Future research should also focus on exploring the long-term effects of mindfulness interventions and their impact on different age groups and educational settings. By addressing these areas, educators and policymakers will be better equipped to implement evidence-based mindfulness programs that enhance students' socio-emotional skills and academic success.

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Contact email: puneetsohal@gmail.com

Exploring Teaching Experiences With SPARK Using Augmented Reality and 5G Technology

Tammie Leong Li Cheng, Media Design School, New Zealand

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
This case study provides a unique lens into teaching experiences through the innovative project "Matariki Hunga Nui", which embodies co-learning with SPARK utilizing Augmented Reality and 5G Technology. In a transformative journey in design education, educators collaborate with industry partners to co-design live briefs aligned with course objectives. This project, a pedagogical innovation beacon, invites final-year Bachelor of Media Design students to form interdisciplinary teams. These groups, comprising motion designers, UX/UI specialists, and graphic designers, transcend traditional roles to embrace novel positions such as relationship designer, translator, behaviour designer, and visualiser, thereby nurturing an inclusive and dynamic learning environment. Recognised with a silver award in student and academic categories from the Design Institution of New Zealand, "Matariki Hunga Nui" demonstrates the power of experiential learning. The project aimed to revive Maori traditions in celebrating and appreciating the Matariki festival, utilising storytelling and augmented reality tools to locate the Matariki star cluster meaningfully. Educators facilitate co-learning and co-designing in studio-based settings, nurturing reflective practices through prototyping and design thinking. Agile tools enable iterative refinement, with ongoing evaluations before formal presentations. Under the program director's mentorship and with SPARK's collaboration, lecturers and students embark on technical exploration and hands-on experimentation, culminating in installations. The projects sourced from external entities offer invaluable insights derived from case studies and stakeholder perspectives. Educators evolve from knowledge dissemination to active mentorship, shaping student-led projects. This holistic approach equips educators and students with practical skills, fostering adaptability in design education's evolving landscape.

Keywords: Practice-Led Research, Autoethnography Research, Heuristic Enquiry, Participatory Design, Human-Centred Design, Digital Storytelling, Augmented Reality, Matariki Festival, Maori Practices, Co-design, Interdisciplinary Learning, Co-learning, Co-teaching, Industry Collaboration

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Introduction

The purpose of this paper is to describe the process of implementing practice-led research, creative inquiry and industry engagement into the third-year curriculum of the Bachelor of Media Design (BMD) programme at Media Design School. There is a focus on practice-led research education, where a student gets the opportunity to design and work through whilst developing innovative solutions to complex issues. The program also focuses and innovations and research-based questions and activities: creativity, experimentation, reflection and practice are always at the forefront of this program. Also, the professionals are engaged in co-teaching, where different students get a chance to have interactions with their fellows, in addition to gaining insights on practices in the real industry and contemporary media contexts.

1. Positioning the Project

1.1 Interdisciplinary Group Project Component

Higher education institutions are found at the core of preparing students for professional life in today's world, especially in the digital and creative fields that change at the speed of light. The Bachelor of Media Design (BMD) of Media Design School provides a practice-led research model that engages students in designing, creative thinking, and professional practice. This climate of learning with appropriate modality promotes teamwork, problem-solving skills, and practical exposure of our students to fulfil their postgraduate education and professional goals. For example, the third year of the BMD degree combines these elements in terms of interdisciplinary group projects where in addition to enhancing their creative and technical aspects students receive key notions of project management and professionalism.

The interdisciplinary group projects in Media Design School as a third-year Bachelor of Media Design where the students work on an 8-week, 30-credit project that emulates a professional workspace. Working in teams consisting of students from different design disciplines, students are given a real-life client and task – a digital product or a campaign. With the basis of a client brief, students use creative thinking to address objectives and tasks for a real client, getting exposure to the client and professional requirements. It also acts as an opportunity to build important personality skills such as project management skills, communication, and teamwork which are so vital in the field of design. Furthermore, the principles of portfolio creation and studio organization are also introduced, which students find useful in their future jobs, or when managing a design studio. Contributing to the subject as well as other components of the third-year curriculum, this project prepares students for life-long learning and, if the student chooses postgraduate studies, thus lays the basis for the education of the graduates.

1.2 SPARK New Zealand

SPARK New Zealand is a telecommunications and digital services company that provides fixed-line telephone, mobile phones, broadband, and digital services such as cloud, security, digital transformation, and managed services. This collaboration is part of Te Korowai Tupu, SPARK initiatives. The initiatives strive to operate in a parity co-creative, co-design and co-partnership manner. Those guidelines sought by a Māori partnership are the frameworks that facilitate Māori to engage in the relationship. An essential concept that underpins Te Korowai Tupu is space – which ethnographically translates back to Spark and the communities. To

unlock the opportunity of shared space, therefore, Spark has opted to uphold the three beneath the Tiriti o Waitangi, namely Kaitiaki, Kawa and Kupungapere. Preserving and strengthening Māori individual and collective organizing phenomena such as whakapapa (ancestry), cultural practices, and taonga (treasured possession), including protocols, customs, and language by endorsing, supporting, and empowering local knowledge or mātauranga Māori. So, as we move into the new world of Tikanga in the digital environment, it is a significant and positive development of Tikanga and recognize that there are responsibilities that rest on all of us to protect our whānau members in this new frontier. This collaboration to co-partnership has committed resources to developing our rangatahi (youth), and a range of activities designed to increase their awareness, understanding and confidence in the digital world.

1.3 Collaborative Brief

As expected, due to the essentially open and fluid nature of the group project's format, Spark and Media Design School have written and agreed upon a specific brief for the project as well as co-taught the course. This checks that the project is liberal in its approach to creativity as a group project while at the same time promoting the practical, learning-by-doing approaches of co-teaching and co-learning.

The 'Brief' for the interdisciplinary group project is based on speculative design in which participants develop and design mock designs to depict design artefacts in practice. When students work together, they explore how the design impacts the future of society and violates conventionalist rules and regulations. A significant component of the work entails creating applications that augment physical experiences with 5G and augmented reality and honouring shared obligations to protect whānau in cyberspace as per tikanga (Māori customs). It also seeks to strengthen the relationship between Māori youth (Rangatahi) with riveting stories and technology as part of the mechanism to work with Spark. This process stimulates innovation as well as continued engagement within the community promoting the development of future generations of Māori leaders.

1.4 Matariki Hunga Nui Project

Matariki Hunga Nui is an AR application for Android devices, that aids the users in identifying the position of Matariki star cluster, preferably during the Matariki celebration, which celebrates Māori New Year.

Matariki is a time to gather. A time for sharing and collectivity, giving back to the environment, and being thankful. It is one of the opportunities for people to celebrate what makes a country outstanding. As the weather warms up and spring arrives, we want the people of Aotearoa to be invited to learn and celebrate Matariki with their families and friends. In regard to this project, the general objective of which is to create a virtual hub for Matariki, our whakaaro (intention) is grounded in the following whakatauki (proverb) 'Matariki hunga, Matariki hunga nui' which means literally 'Matariki has many devotees, Matariki unites people.' This whakatauki encouraged us to strive for a project that would unite people and fueled the name of our project.

Matariki Hunga Nui takes advantage of Augmented Reality to provide the users with interest and an interactive approach to how they can use the Te Waka o Rangi celestial navigation tool to identify the location of the Matariki star cluster in the dawn sky. With such knowledge

gained it will be our desire for people to gather with their loved ones just to appreciate the beauty of Matariki and make special memories out of it. The purpose is for people to use this knowledge to gather with those they care for to watch Matariki thus, forming interdependent partnerships between them, their environment and the seasons.

Figure 1: Representative Images of Matariki Hunga Nui Project in the Best Awards 2023 of the Design Institute of New Zealand

2. Co-designing and Research Method

2.1 Creative Thinking and Design Process

In a co-design context, creativity involves the choice of problems to solve, the generation of solutions, the assessment of these solutions, and the implementation of chosen solutions creativity involves two broad areas: exploration, where new ideas are generated and exploitation where ideas are applied (Bledow et al., 2009). Students' motivation must be incorporated in designing educational processes to address creativeness with the help of chosen individual distinctive features. This complex notion has changed from a narrow perspective of personal attention to considering global and community contexts (Choi et al., 2019), Therefore, it is crucial for design studies to develop both reflection and imagination for innovative solutions (Lin et al., 2021).

The Design Council's "Double Diamond" framework, which is discover, define, develop, and deliver, combines explicit divergence and convergence processes to address issues (Onarheim & Friis-Olivarius, 2013). The first part of the process is about creating a problem frame through direct communication with people struggling with it and the second is about generating and prototyping solutions through collaboration between potential users and designers. These design processes are inherently social, calling for debates among students, and teachers to gain insights into design strengths and, more importantly, weaknesses. Innovative designer performance is characterized by a high level of motivation, a positive attitude towards risk-taking and self-confidence in performing high-risk stuff (Cross, 2011).

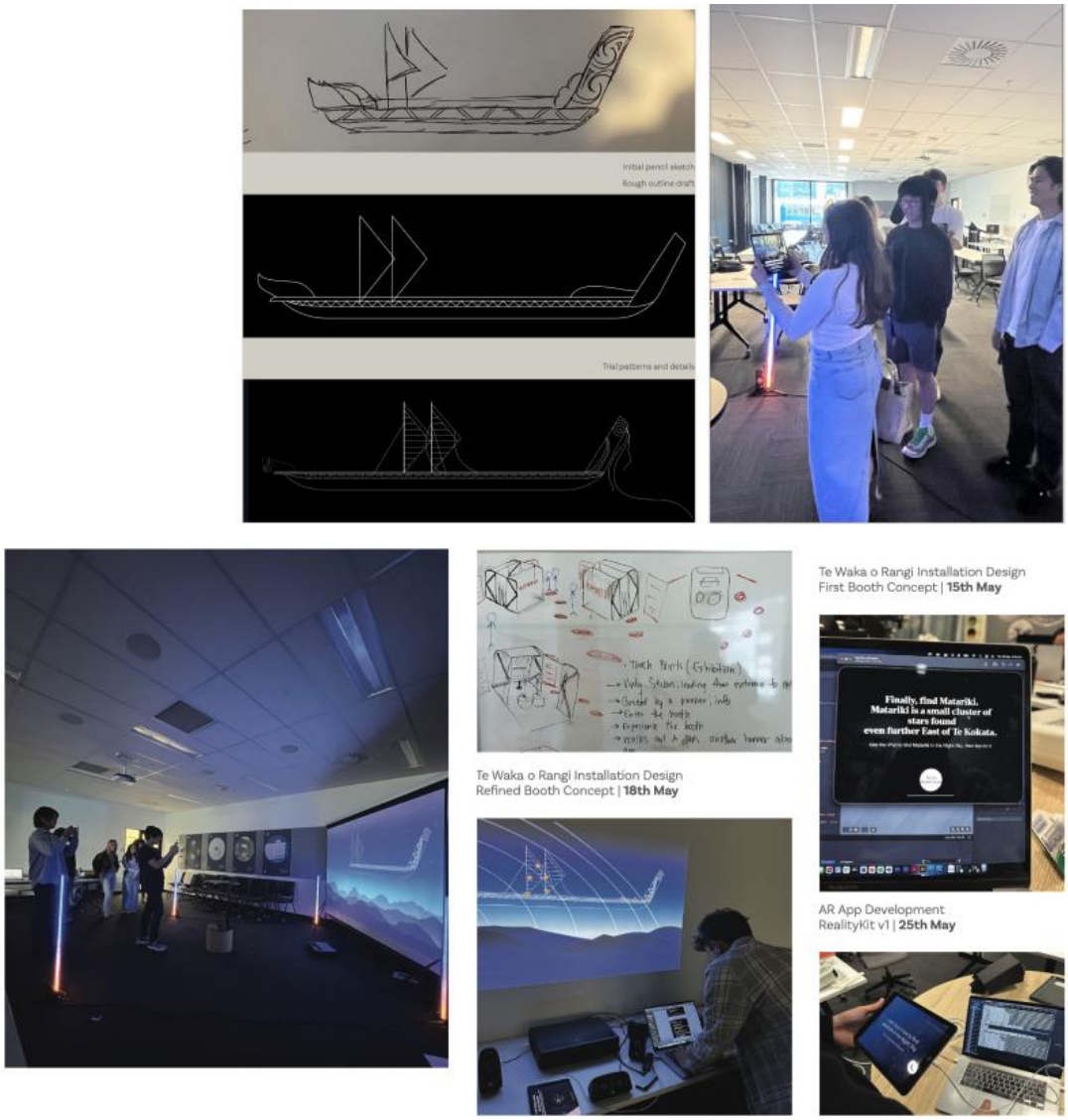

Figure 2: In-Studio and Presentation Session Photos Captured by Lecturers

These one-on-one meetings held within the group expose the participants to group brainstorming sessions which promote radical thinking as pointed out by Snyder (2014) in as much as ideas generated need to be innovative. Such closed-door meetings are conducted with invited participants restricted to just the lecturers and the team members and in keeping with the agile process espoused in the book by McGovern (2018) – feedback must be sought on the ideas being developed in an endless loop. nurse education promotes a risk-taking and creative environment that fosters idea exchange as found by Lai (2011) on creativity in a collaborative environment. Such collaborative construction allows students to augment what has already been said and think about their learning and performance all the time.

2.2 Participatory Co-design

However, participatory co-design is a powerful approach that improves collaborative design by engaging more users and being involved, protected, and appealing to others. Diversity enhances communication since there is opportunity in the discussion and everyone in the society has an equal chance to contribute (Duncan et al., 2021). Roles assigned for tasks respond to their performance, enhancing coordination with others and ensuring the contribution of each person (Cawood et al., 2022). Encompassing motion designers, UX/UI

designers, and graphic designers, relationships are extended to cover relation designers as well as behaviour designers; this fosters learning (Hernández et al., 2021). Engagement helps the members to post their ideas, and orientations provide focus in the group towards specific objectives.

Figure 3: Behind the Scenes Photos Captured by Students

2.3 Storytelling Through Auto-Ethnography and Heuristic Inquiry

Human-centred design focuses on motivation, universality, perceptible, realizable, attainable and safe objectives to satisfy the design requirements. It also helps grow a close link between designers and users since the user needs and experience is considered vital in design. Heuristic inquiry supports this approach by enabling team members to learn through modelling and reflecting on what goes on in their manner of knowing and reacting to enhance appreciation for design problems (Moustakas, 1990). It means that one always takes an attempt and trial at developing an effective design for the user and so enhances the possibility of providing a design that fits the user by repeating this process. Human-centered design and heuristic approach bring people together to respect the process of collective learning and embrace the plurality of ideas toward arriving at solutions that the clients find satisfactory (Brown, 2009; Schön, 1983).

Reconstructing user experiences in UX practices, creating the user journey map through visual storyboarding, and generating the personified user personas assist groups in using individual narratives to envision cultural meanings. Personal storytelling is beneficial for oneself and others, for gaining different people's perspectives, and for improving interpersonal relationships within a team, which will help explore identities and emotional aspects regarding design. This approach places personal stories in cultural contexts allowing for better discourse and enhancing cooperation (Ellis et al., 2011; Bochner, 2000).

The integration of these approaches therefore has the potential of greatly improving the practice of teamwork in design. Using auto-ethnography, the team members create a positive environment by revealing themselves and their experiences, established and appreciated at

work. This, in turn, fosters a heuristic approach, where the team members are proactive concerning searches and tests and, therefore, innovative. n sum, narrative through this methodology enhances not only design but also a stronger collaborative and shared language in the team (Buchanan, 2001; Frayling, 1993).

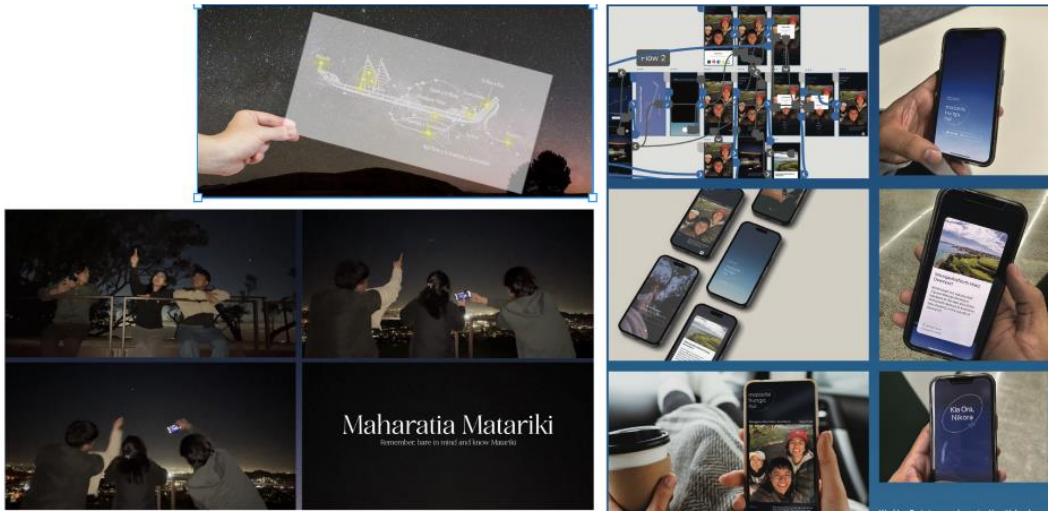

Figure 4: Documented Work-in-Progress Photos and Initial Prototypes by Students

2.4 Prototyping and Presentation

Two of the design processes that fully support the improvement of teamwork, and the further development of the ideas are the processes of prototyping and presentation. During work in progress presentation, everyone wants to share their progress with the team, thereby encouraging positive improvements. These sessions offer an opportunity to present what people brought into the work and have others point out what may have been missed, thus engendering ownership in the team members (Schön, 1983).

Prototyping is usually done in cycles and requires design review at various stages and hence involves the cycle of design and reviewing. This process also aids in the concerned area by channelling the early signs that need to be flagged: this helps in the refinement of the prototypes with the input of the users and relevant stakeholders (Brown, 2009). By synthesizing people's inputs into single feedback messages or using combined input, a group might develop unique ideas that can be easily merged into user-oriented solutions (Buchanan, 2001). In conclusion, the integration of prototyping, presentation and feedback is helpful in the promotion of interaction, and innovation, as well as the provision of effective usability and user-friendly digital solutions.

Figure 5: Interface and Augmented Reality Prototype for User-Testing, Documented by Students

3. Co-learning in Hybrid Environment

3.1 'MyLearn' Learning Platform

The 'MyLearn' is a portal where the students can log into a live synchronized class, for real-time participation in the discussions, and for watching recorded lectures. It allows for verbal and written feedback to be provided to supervisors or mentors as well as facilitating one on one or a group meeting. The platform also provides direct links to the lesson plans, learning resources, program outlines, assessment guidelines and grading systems to provide the same chance to both face-to-face and distance students.

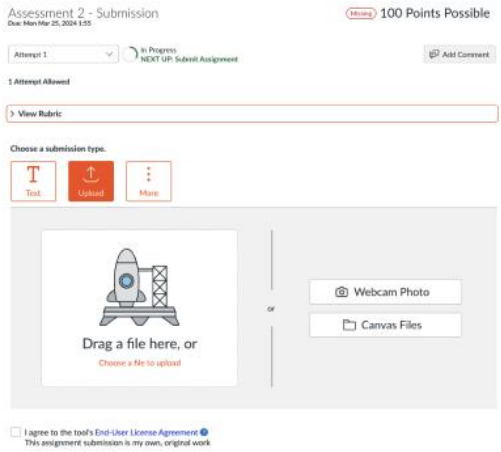

Figure 6: Screenshots of the Learning Platform and Virtual Class Sessions Captured by the Lecturer

3.2 Virtual Classrooms and Physical Studio on Campus

The cohort is estimated at approximately 60 students, traditional and fully online. Classes take place from Tuesday to Friday, from 8:30 AM to 11:30 AM, except for Mondays when the students work independently. Although classes are delivered in physical classroom or studio lab in the institution, the my learn platform offers a live stream for remote learners to participate effectively (online). The virtual environment is installed with cameras and microphones to facilitate group meetings and discussion, live group presentations review, and face-to-face interaction between the physically present and zooming students. Such a strategy

means that the class is more open and a student, regardless of an emergency or sickness, would be able to contribute to any group discussion or meeting held in the virtual classroom. Furthermore, the presence of outside auditors, and others from the SPARK project team, means that it is easy to enter into the virtual classrooms to participate in projects.

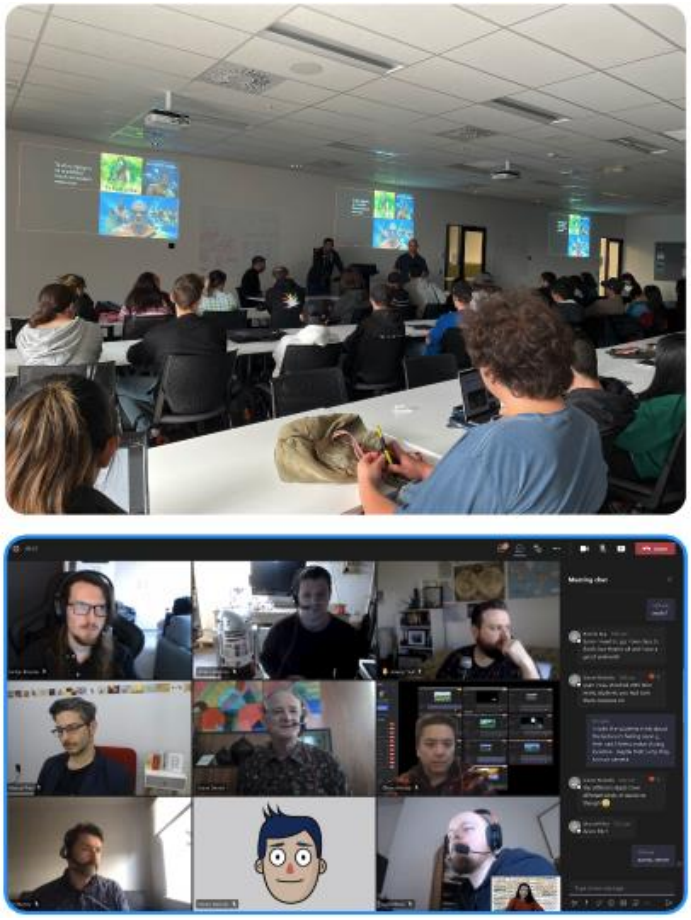

Figure 7: Photo of Lecture Room on Campus and a Screenshot of Virtual Team Meetings in Microsoft Teams, Captured by Lecturers

3.3 Collaborative Digital Project Management Tools

Microsoft Office and Microsoft Teams as external project management tools embedded in the learning platform also significantly contribute to intra-organizational communication through video calls, class notices, direct messaging, and appointments with lecturers, program coordinators, SPARK participants, and learners. These tools facilitate the coordination of interactions to enhance interaction between face-to-face and virtual participants (Martin et al., 2018).

FigJam boards by Figma are very useful for the development and documentation of projects; students can work together on tracking the processes of designs as well. These interactive boards facilitate discussions and the ability to review ongoing work in projects while documenting progress as well as highlighting the flow of an idea through the design phase and iterative changes through the use of conversations, documents, and other interactive elements (Brown & Thomas, 2021). Figma and Resolume Arena also help in creating prototypes for apps and augmented reality (AR) 3D experiences to help students understand how their apps fit into interactive installations. Furthermore, 3D mapping technology serves

the project branding since it brings about visual parallax for screen-based backgrounds and distinct other visual additions (Jones et al., 2020).

The applied structure fosters teamwork and innovation because it takes advantage of modern technologies to co-construct progress and apprentice work using efficient digital platforms while at the same time affording documentation (Smith & Taylor, 2021).

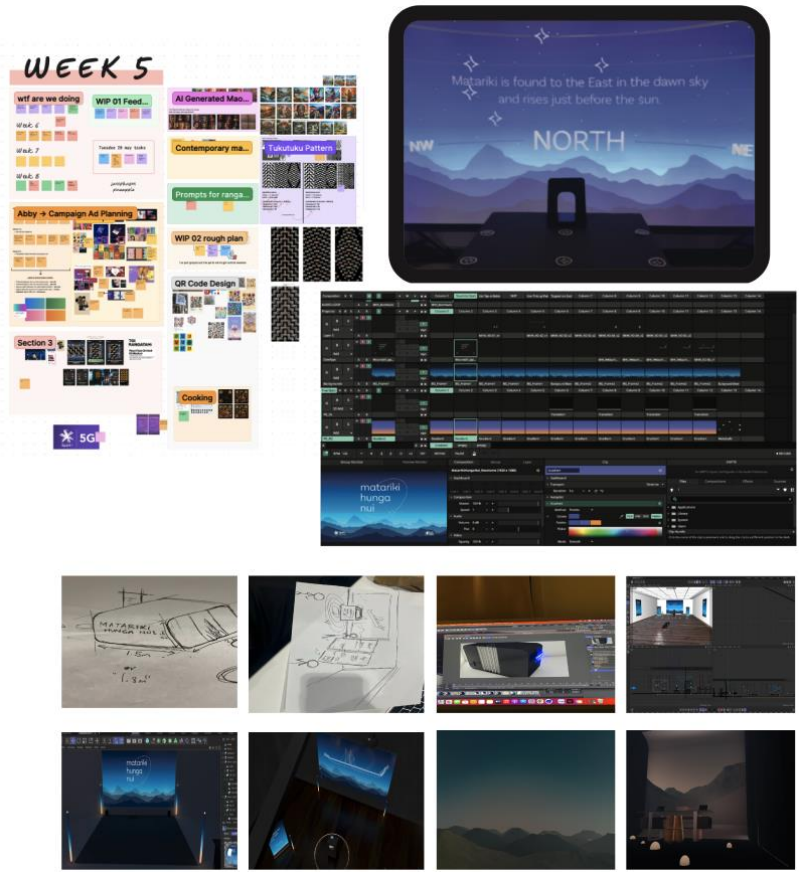

Figure 8: Screenshot Captured by Students of Digital Tools Used in the Project

4. Project Demo

Please view 'Matariki Hunga Nui' the documented augmented reality experience that brings people together under the stars of Matariki using this link or this address. https://bestawards.co.nz/toitanga/student-academic-toitanga/sam-oxford/matariki-hunga-nui/

5. Outcomes and Reflection

5.1 Effects of the Project's Creative Direction and Artefact Produced

The brand story was credible and emotionally appealing rather than only tied to the Matariki festival: it was an example of one Maori student's family culture. In essence, what remained essential to the telling of the entire story was togetherness and the joys of the now which, it indicates, preserves cultural identity. It added the value and importance of the star and which star form influenced the changing of the seasons in our lives, the meaning of the celebration.

Another important aspect of the project was the use of augmented reality: it was instrumental in the case of using the website. Thus, using graphics, the readers could follow the story at will by just finding and clicking on options, which gave them a great sense of ownership regarding how the story was exposed to the readers (Dodge et al., 2020). This interactive part was less boring than a traditional static text and combined the aspects of storytelling with a technical component.

In addition to the story, the project offered students valuable experiences of working in industry, realizing work cultures, and most importantly, exploring professional networks. It also helped them improve their design abilities and practice implementation during their studies by completing this task with time. The success of the project was also the result of its achievements at the 2023 NZ Best Design Awards where it was granted a 'Silver' in the Toitanga Student category.

Furthermore, the interaction made it easy to embrace consultative co-learning and co-teaching models within the course to promote a proactive and engaging learning culture (Bishop, 2011; Durie, 2003). Thus, students and educators all benefited from becoming a part of those collaborative efforts by getting a chance to create a much more developed and responsive learning environment with a shared value of knowing and valuing each other's perspectives.

Figure 9: A Photo Taken During Best Awards 2023 Dinner Night

5.2 The Role of the Lecturer in Collaboration

Building trust is especially important in a co-learning classroom, in which the lecturer is required to foster an environment where all students – online and face-to-face – are engaged. This includes encouraging interaction in terms of producing reasons, arguments and opinions where all the learners in the cohort feel they are part of the discussion. However, lecturers need to ensure that participants using the online platform may not be overshadowed or discouraged from expressing their opinions which may lead to silence. These dynamics may not be always obvious thus the need for constant interaction, and active listening to the experiences of all learners (Bovill, 2019).

Apart from giving their trust, lecturers are indeed instrumental in the solution-finding process of their classroom. When they discuss and plan the user testing, they contribute to difficulties generally associated with the storytelling and the technicality's implementation. This often involves a physically close interaction between the lecturers and the students to solve various

simple technical problems that may arise during their practical assessment exercises. Such active participation fosters a dynamic learning model that creates space for the spirit of innovation and creativity (Kafai & Burke, 2015).

The third function of the lecturer is the supervising or facilitating of the teaching process. This involves adopting an ecological learning approach, allowing for adjustments and improvisations based on the group's responses and the class's learning pace (Dewey, 1938). By remaining flexible and responsive, educators can create a more effective and engaging learning environment.

For some lecturers, particularly those from diverse cultural backgrounds, engaging in research and knowledge development can be challenging. This is especially true for migrant lecturers unfamiliar with te reo Māori and Te Ao Māori, who may struggle to integrate this knowledge into their teaching. Yet, this challenge presents an opportunity for co-learning with students in co-design settings, where both lecturers and students can develop new insights together, enriching the learning process for all (Grosfoguel, 2011).

Additionally, lecturers must evaluate the goals, values, and time commitments of stakeholders, such as SPARK, to fully understand the benefits of collaborative efforts. This evaluation extends to understanding the objectives and aspirations of students, lecturers, and program leaders alike. By aligning the goals of all parties involved, educators can create a sense of accountability and ownership, ensuring that collaboration is meaningful and productive. Navigating these varied perspectives encourages the development of a shared vision, ultimately enhancing the learning experience (Freire, 2000).

5.3 The Role of Industry in Collaboration

Riki and Manu wanted to encourage other youth to experiment with creative technology and for this reason, getting involved in Media Design School was instrumental in co-creating a project with the user during the undergraduate level. It was their vision that the results of this intention would ignite intent from future learners that studies in design and creative technology will propel a new generation of Māori youth. It was their first encounter with collaborative learning and collaborative designing in the academic environment and they were receptive to the idea. They adopted the different briefs, assessments and academic standards; devoting their time during the semester to engage in discussions and contribute useful feedback. Students' activities were motivated by their willingness to explore more from the pupils as well as share their experiences and knowledge with the pupils.

Much of the knowledge, Riki and Manu from SPARK shared with the participants was well-received concerning the combination of information technology strategies and Māori values. They were able to learn how young designers rehearse the object of study and their feelings towards SPARK because these learners use 5G technology in their products. For SPARK, it gave a chance to get to know the emerging designers' needs and concerns as well as to perceive the cultural and technological divide.

An important point of the project was the inclusion of the Te Ao Māori (Māori paradigm) in the professional environment. This was important in eradicating general whakamā (shyness or hesitation) that participants demonstrated during the interaction making it easier for all of them to express themselves. In as much as none of the students was fully conversant with Te Reo (Maori language) the undertaking served to reduce their tension over Maori interaction.

By engaging with Te Korowai Tupu (SPARK initiative), they were able to bring Te Ao Māori and Te reo Māori into their professional practice, enhancing their cultural knowledge as well as touching their design profession (Te Riele & Tamaaru, 2010). But more than just helping the students understand Māori undertones, it also provided a precedent for their future employment in creative and technological dimensions.

Figure 10: Group Photo Taken During the Second Installation at Spark Innovation Center, Auckland

5.4 Collaborative Process Model for Creativity and Execution in Design Courses

In design education, the students, lecturers and partners in industry, as well as the leaders of a program are all active participants in projects and negotiate their responsibilities within tasks based on the project context and the skills, knowledge and experience of all actors involved. Proposing an agile model (see figure) that acknowledges this element of creative and practical organization; one that breaks free from set conventions for a more diverse and productive approach to problem-solving that benefits the group's entire dynamic.

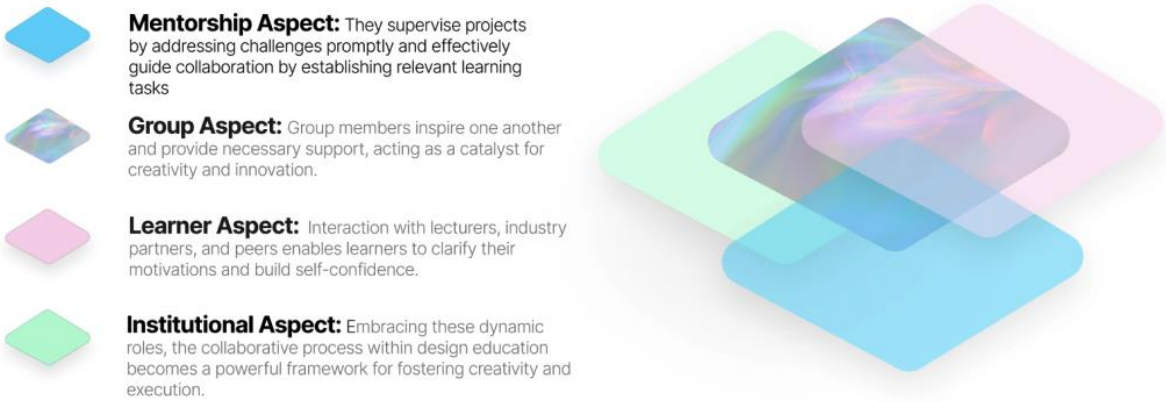

Figure 11: Visual Model of the Collaborative Process Creativity and Collaboration Effectiveness in the Design Course

Mentorship is a foundational component in this setting. Mentors set the tone of the group discussions and the directions of learning collaborations arising from their setup of special

tasks as well as tackling hiccups when they occur. The mentor's role can be shifted based on the individual's skills, knowledge and experience based on the task and discussion context of the project. This kind of mentorship makes the learners feel controlled and safe while also offering a map to further creativity and usefulness (Schön, 1983).

Within the functions of a group, team, or organization, individuals encourage their peers to be creative and innovative within the team environment. Work harmonization does not only stimulate the generation of new ideas, but it also increases the overall creative capital of a group since any given member relies on the input of other team members (Brown, 2009).

Each individual involved in the project is considered a learner. The programme leaders, lecturers, partners in industry and fellow students get the opportunity to develop learning opportunities and develop confidence in what they take away from the project. Communication is paramount to developing new capabilities in learners to escape the paradigm of traditional knowledge and develop innovative solutions for a given problem. Such interplay is a part of the identity formation process and enables students to become creative risk-takers (Buchanan, 2001).

Lastly, from an institutional perspective, the fluidity and flexibility that these roles entail augur well with an effective and potent paradigm for creativity and production in design education. The implementation of flexible roles means that not only the students and mentors, but also the specific industrial partners and leaders of corresponding programs are involved in the creation of a more innovative, skillfully applicable, and professionally beneficial learning environment. This model is not only beneficial for students in terms of content but also good for their practice when they must engage in real-life design problems.

Conclusion

In conclusion, the presentation highlights the collaborative impact of the "Matariki Hunga Nui" project, a case study that combined augmented reality and 5G technology in design education to celebrate Māori culture. This collaboration organized between Media Design School and SPARK New Zealand allowed students to grasp the principles of co-design, narratives, and new technologies, as well as upholding Māori culture.

Incorporating the use of Māori cultural tools, and knowledge regarding Matariki as part of the project helped students extensively learn cultural storytelling through technology as well as give technology a cultural touch. This also pointed to the question of the integration of disabled learners into design education. The expectation evolved from the typical knowledge-provider mode of teachers to guides and enablers who fostered a sense of ownership over their work among learners. Such set-up – studio-based, co-learning – enabled trust and interaction, generating an active, reciprocal learning environment. With the help of augmented reality and the 5G network, the students were able to create interactive and culturally engaging story narratives. Through this exposure, they were able to gain industry-related experiences and experience a broadening of their creativity.

The success and visibility of the project evidence the value of this approach in using co-design, cultural respect and advanced technology as the road map for subsequent projects in the fields of design and technology education. This included positioning educators as facilitators and SPARK's Māori Development team acted as the industry partners through which the project was located firmly with the Māori cultural narrative that was beneficial and

showcased how the industry can partner with academia to foster inclusivity and improvement in design. The award won at the NZ Best Design Awards 2023 created credibility for this educational paradigm that uses co-design, cultural responsiveness, and technology integration as the competency-based model for design and creative technologies education as exemplars for other similar initiatives to consider.

All in all, Matariki Hunga Nui reflects a good case demonstrating how cultural heritage and advanced technology can enhance the learning process and experiences by bridging academic and professional skills along with cultural perspectives. This project shows the benefits of integrating industry collaboration, identity, cultural relevance and technology for a more inclusive and impactful design education framework.

Acknowledgements

I would like to thank Riki Hollings, the Māori Development Lead at SPARK, and Manu Keung, the People and Culture Business Partner at SPARK, for their passion for mātauranga Māori (Māori knowledge) which motivated this effort. Their commitment to fostering Indigenous heritage through sharing whakapapa (ancestry), tikanga (cultural practices), and taonga (treasured heritage) brought immense value.

Special thanks go to Jim Murray, our Programme Leader, for his essential support in logistics, communication, and resources. Additionally, I am deeply grateful to my co-teaching partners, Don Chooi and Jocelyn Janon, for their expertise in brand identity, photography, and narrative studies, which enriched the project's academic and creative depth.

To our creative students, Sam, Salem, Gio, Solbi and Jinwoo, thank you for your dedication to research, data gathering, and design. Their hard work on augmented reality, visualization and user experience enhanced the project, making this collaboration effort both impactful and memorable.

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Contact email: tammie@mediadesignschool.com

The Realization of EFL Students' Cultural Interpretation About 'Unboxing K-Life' Program Towards Their Performance in Translation Class

Iin Rachmawati, STKIP PGRI Bangkalan, Indonesia

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
Translation become the basis of language teaching for a very long time. These days, translation can be used as a teaching technique or even as the teaching media in the classroom. This research tried to observe about the contribution of EFL students' cultural interpretation related to 'Unboxing K-Life' Program towards their performance in translation class. This research used embedded design strategy which is popular in mix method. Qualitative method used to answer about EFL students' cultural interpretation related to 'Unboxing K-Life' Program, while quantitative method used to answer if there was significant difference before and after students given 'Unboxing K-Life' Program. The results showed that cultural conceptualizations can be varied a lot according to people's conceptual experiences. Students who love to watch Korean dramas or act as K-pop lovers have better understanding in conceptualizing the cultural schemas. It is found that there were three different schemas of cultural conceptualizations through the students' translation result: image schema, proposition schema, and emotion schema. Also, it is found that there was an average difference between students' performance on pre-test and post-test which means there is an effect in the use of 'Unboxing K-Life' Program towards students' performance in translation class related to their cultural interpretation.

Keywords: Arirang TV, Cultural Interpretation, EFL Students, Translation Studies, Unboxing K-Life Program

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Introduction

Speaking of ELT methodologies, translation was become the basis of language teaching for a very long time (Sherzodovich & Kizi, 2020). This statement is in line with what Ergasheva (2016) said about translation as a significant missing part of ELT for a long time. Modern translation activities usually move from the source language (L1) to the target language (L2), although the opposite direction can also be seen in some lessons with more specific aims, have real cognitive depth and clear communicative aims to show high motivation levels as well as to produce impressive communicative results (Calafato, 2021).

Translation teaches learners about language and confined to the two language skills of reading and writing (Gautam, 2019). Moreover, by designed well translation activities in the classroom nowadays can practice the four basic language skills including reading, writing, speaking, and listening. During the translation process, students can enhance their ability to read in details, to understand the meaning of the original text by writing the ideas, to share or discuss the ideas with their partner or other students, and to listen to others' ideas and perceptions (Dose, 2020). Of course, by doing this, all of those basic language skills can be learned simultaneously. For more, the students will also learn about the original culture from the text they've read and translate. Nowadays, culture is also known as the fifth language skill that must be mastered by the students (Kornacki & Pietrzak, 2021). This way, it is hoped that translation can fulfill the impact on learning language: to develop cultural awareness as well as to ensure their cultural competence. In terms of communicative competence, they require accuracy, clarity, and flexibility as Uzbekistan (2022) said: 'Trains the reader to search (flexibility) for the most appropriate words (accuracy) to convey what is meant (clarity).'

Thus, it can be clearly said that translation is by its nature a highly communicative activity in learning a language (Frank, 2015). Translating in groups can encourage the students to discuss the meaning and the use of language at the deepest possible levels as they work through the process of understanding and also looking for the equivalency in another language (Paradowska et al., 2021). For more, many students living in either in their own countries or a new country need to translate language on a daily basis, both formally and informally (Nurminen, 2020). That's why translation is increasingly necessary with the growing importance of online information. Whether we encourage it or not, translation today is becoming frequently used strategy for students especially to understand foreign language in a classroom (Alhawamdeh, 2021).

Language translation subject is often considered as a trifling thing by most people in Indonesia. This condition is worsened by people's perspectives that in order to translate from one language to another language, they just need to look for the meaning of the source language in the target language and translate it. In relation to the practice of EFL students in translating the text, there have already been myriad studies done, including a study from Hu (2011) but there is still a few of them focusing on media in which using another language rather than English or in other words, most audio-visual translation focused on these cultural conceptualizations are primarily based on English and context (Petroniene, 2021).

The urgency of this research is to offer a new insight or idea about how to teach translation to EFL students in more entertaining way. Of course, this research is hoped to be implemented in other EFL classroom to promote how that cultural-based learning model may solve some problematic issues in EFL learning. Sari (2021) highlighted that in the era of technology,

students need something that can make them feel more enjoyable and more entertaining while learning language in the classroom. Many researchers around the world agreed that through the use of new media in teaching translation, students will be more interested in learning and it will also very helpful to enhance their motivation and perspective that translation can be such a fun activity in the classroom (Mirek, 2021).

There are several creative ideas that can be used to fulfill these students' need including offering cultural-based learning model in the form of TV programs (Mirek, 2022). A TV program 'Unboxing K-Life' from Arirang TV has been chosen because this program gives new insights from its simplicity and authenticity about Korean culture since it explores some daily activities and products related to Korean culture. Nowadays, there are more and more adolescents love to watch Korean entertainment program due to the massive exposure of Korean culture in Indonesia from K-dramas, K-movies, K-Pop music, K-Fashion, and many others. There are three episodes of 'Unboxing K-Life' Program used in this research because these episodes represent the whole episodes. These three episodes include topics about Korean technology, Korean food, and Korean beauty.

Based on the background of the study above, the researcher is meant to conduct the research with two research problems as follows:

1. Does EFL students' cultural interpretation about 'Unboxing K-Life' Program influences their performance in translation class?
2. How does EFL students' cultural interpretation about 'Unboxing K-Life' Program?

Cultural Conceptualizations

> "Human conceptualizations are as much a cultural as it is an individual phenomenon." (Sharifian, 2017)
>
> "Conceptualization itself is a cover term which refers to fundamental cognitive processes such as schematization and categorization. These cognitive processes naturally lead to the development of schemas." (Langacker, 2017)

Cultural groups are actually not only formed by the physical proximity of individuals, but also by participation of each individual in each other's conceptual world (Tivyaeva, 2021). Of course, there are always interaction happened to those cultural groups. This kind of interaction happened between the members of similar cultural groups and between the members of different cultural groups. Based on what Sharifian (2017) stated that the locus of this conceptualization is on the individual, but it does not mean that the cultural groups did not have the same proportion related to this conceptualization. In other words, cultural conceptualizations can be initiated in individuals' cognition and cultural groups' cognition (Liao & Thomas, 2020).

For more, Sharifian (2017) had also said that everyone has their own cultural conceptualizations. Someone from certain personal or cultural background may have different cultural conceptualizations with someone from other personal or cultural background due to the differences in knowledge, experiences, perspectives, educational background, values, and norms. For instance, a teacher cannot expect his or her EFL students to have the same cultural conceptualizations. When a teacher explained to the students about certain topic without giving any prior knowledge, it is possible that the students will have different cultural conceptualizations and perceptions toward the topic given (Kim, 2020).

Students who are familiar with the topic about feminism and masculinism tend to have different respond to those who are not too familiar with the topic or even those who do not have any idea about the topic.

Furthermore, the choice of 'conceptualizations' here related to the concept in which reflect and highlight the dynamic nature of such cognitive phenomena like the way people see the world (Raeff, 2020). That is why, there were the term cultural schemas and cultural categories to portray this conceptualization. These conceptualizations are negotiated and re-negotiated through time and across generations (Leung, 2015).

Sharifian (2017) explored more about numerous types of schemas in cultural conceptualizations including event schemas, role schemas, image schemas, proposition schemas, and emotion schemas. Event schemas are about people experience of certain events; role schemas are about knowledge of social roles which include sets of behaviors; image schemas are about providing structures for certain conceptualizations; proposition schemas are about models of thought and behavior; and emotion schemas are about social and cognitive in nature including the feeling of 'something' with certain situations.

Translation Studies

In the last few decades, there has been an increasing interest in the translation practice in EFL classroom. And recently, the teachers have also been reviving the use of translation for different learning purposes (Normand et al., 2018). It was found that translation activity could also be used for pedagogical purposes along with other traditional language teaching activities. Translation activity in the classroom can be modified into more interesting activities by combining it with other language skills or with new media. The media can be technological based or culturally based process (Risku & Rogl, 2022). The present study shows that translation has known as a method applied to language teaching practice induces deeper insight into the meaningful contents of the material to be precisely taught (Richards, 2014).

Translation is ultimately a human activity which enables human beings to exchange ideas and thoughts regardless of the different languages used (Lee & Briggs, 2021). Translation is not just about the activity of transferring from one language into another language, but it also involves the activity of understanding the culture of both the source language and the target language. Shreve and Lacruz (2017) views the phenomenon of translation as a legitimate offspring of the phenomenon of language, since originally, when humans spread over the earth, their languages differed and they needed a means through which people speaking a certain language would interact with others who spoke a different language (Xie, 2017).

(Dagilienė, 2012) had once studied about translation as a learning method in English language teaching. This research project focuses on the use of translation in helping learners to acquire, develop, and strengthen their knowledge and competence in the English language through new media called as culturally based media. The problem conducted in this study is about the relevance of translation for enhancing foreign language skills as clearly stated by Mart and Guerra (2022) that 'translation today has become one great strategy to teach language and culture to EFL students.' There are still many learners out there who tend to face some difficulties in mastering foreign language especially for the four basic language skills: speaking, reading, listening, and writing. Translation activity can be one specific way

to help those learners to be able to easily adapt with learning culture in translation class by using culturally based media of "Unboxing K-Life" Program.

Research conducted by (Dolmaya, 2017) in Translation and Interpreting Studies is focused on using 'reacting to the past' as a pedagogical approach of role-playing games into the classroom and demonstrate how it could be adapted for translation studies courses. She uses two games from two different time period: one game is set in England in the early 1500s and focuses on William Tyndale's English translation of the Bible and the other is set in Canada in 2007, focuses on the development of the Canadian standard for translation services.

Methods of the Study

The population from which the sample was drawn in this research is students from English Education Department in the sixth semester with total 44 students. The participants were between 20-25 years old. All those participants were taking 'Visual Translation' class. All participants watched three chosen episodes of "Unboxing K-Life" Program from Arirang TV channel without subtitles except for the Korean dialogue part.

Moreover, this research uses the embedded design strategy which is popular in mix methods (Cresswell & Clark, 2011). This strategy used because the researcher mostly uses qualitative method and at the same time the researcher also takes quantitative data and analyze it in order to develop the result gotten through qualitative method (Creswell, 2011). The data was collected by asking the participants to answer a questionnaire after they have watched three episodes of "Unboxing K-Life" Program. The questionnaire consists of two parts. Part 1 included questions on the participants' perceived understanding of the TV program they have watched. The participants' answers were coded based on two categories: *declared understanding* (when the participants respond 'understand' of the content of the TV program), and *declared non-understanding* (when the participants respond 'do not understand' of the content of the TV program).

The Embedded Design

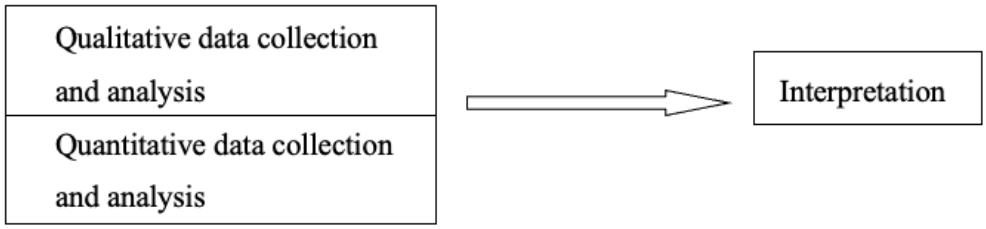

Figure 1: The Embedded Design
(Source: Creswell & Clark, 2011)

Then, part 2 were interpretation questions referring to each scene in which cultural conceptualizations appeared. In this second part, the participants' answers were also categorized into two different coding: *matching* (when the answers matched the previous background information given in the subtitles), and *non-matching* (when the answers do not match or slightly different from the one provided in the subtitles). This activity will create what is called as frequency data in which allowed the researcher to examine patterns of behavior to see if there were any significant differences regarding the participants' understanding related to cultural conceptualizations appeared in that TV program.

For the data analysis technique, after collecting the data from the questionnaire, create the coding, matching and validating the students' responses through personal interview, the researcher started to analyze the data using SPSS to know more about the significant arise in students' score before and after the treatment using 'Unboxing K-Life' Program. Then, it is continued to interpret the data using cultural conceptualizations theory in order to understand more about cultural aspects that may arise in the "Unboxing K-Life" Program in relation to translation pedagogy. These personal interviews were being conducted by taking some samples using convenience sampling method due to limited time.

Results and Discussions

The Use of 'Unboxing K-Life' Program Influences EFL Students' Performance in Translation Class

Paired sample t test is a parametric test that can be used on two paired data. The purpose of this test is to see if there is an average difference between two paired or related samples. In order to answer the second question, paired sample t test is being used because the research compared two variables: pre-test students' scores and post-test students' scores.

Table 1: Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre Test	68.22	44	4.832	.728
	Post Test	80.99	44	2.226	.336

Question 1: Does EFL students' cultural interpretation about 'Unboxing K-Life' Program influences their performance in translation class?

To answer this research question, the following tables indicates students' cultural interpretation about 'Unboxing K-Life' Program influences students' performance in translation class. The table shows that mean for pre-test result is 68.22 and mean for post-test result is 80.99. The total participants used in this research is about 44 students. For Std. deviation value in pre-test is 4.832 and in post-test is 2.226. And the last Std. error mean in pre-test is 0.728 and in post-test is 0.336.

Due to the result of mean in pre-test 68.22 < post-test 80.99, it means that descriptively, there is an average difference or effect of students' performance in translation class between pre-test result and post-test result. Next, in order to prove that the difference is quite significant or not, we need to interpret the paired sample t test results.

Table 2: Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre Test & Post Test	44	.261	.087

The output above shows correlation test results or the relationship between those two data or the relationship between pre-test variable and post-test variable. Based on the output above, it is known that the value of the correlation coefficient is 0.261 with significance value (Sig.) is 0.087. Due to the significance value of 0.087 > probability 0.05, it can be said that there is no relationship between pre-test variable and post-test variable.

Table 3: Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre Test - Post Test	-12.777	4.762	.718	-14.225	-11.329	-17.797	43	.000

This third output is considered to be the most important output because in this part, we can find the answer to the question: Does EFL students' cultural interpretation about 'Unboxing K-Life' Program influences their performance in translation class?

Thus, based on the output table 'Paired Samples Test' above, it is known that Sig. value (2-tailed) is 0.000 < 0.05, H0 rejected and Ha accepted. So, it can be concluded that there is an average difference between students' performance on pre-test and post-test which means there is an effect in the use of 'Unboxing K-Life' Program towards students' performance in translation class about their cultural interpretation.

The output table of 'Paired Samples Test' above also contains information about 'Mean Paired Differences' value is -12.777. This value indicates the difference between pre-test result average and post-test result average or 68.22 – 80.99 = -12.777.

Moreover, this result can be an indicator that students feel a lot more motivated and interested in learning translation because they are now finding the fact that translation can be an entertaining course with the right material that fulfills the students' needs. As translation has become the basic source of language teaching for years, it should be fun. By combining translation studies and cultural studies, it can be such meaningful course in EFL teaching and learning. Once students can feel happy and enjoy in translation class, they might be able to enjoy other English language skills since learning in translation class also means that they also learn reading, writing, listening, and speaking.

EFL Students' Cultural Interpretation About 'Unboxing K-Life' Program

This "Unboxing K-Life" is a television program by Arirang TV South Korea that is aired from 2019. The TV program which had been premiered in Arirang TV used as the media for cultural-based learning model. This Unboxing K-Life program informed the viewers about some of Korean local industries and products through a game of unboxing the box. There are two presenters who are expert in both speaking English and Korean and they will guide the viewers in unboxing the box. Inside the box, there is a paper written about what things they should explore that day.

This Unboxing K-Life program uses English subtitles in which being translated both when the speakers speak English and Korean. Each of the episode of "Unboxing K-Life" Program has the duration of 7-10 minutes and in each episode, it uses two languages: English and Korean. English has been used by the presenters and Korean has been used by the keynote speaker or the guest star from the local industries. For more, there are three episodes that fall under three different topics (Korean technology, Korean food, and Korean beauty) with title '*Unboxing K-Life: Multipurpose Leisure Boat made with Eco-friendly Aluminum*'; '*Unboxing*

K-Life: Tteokbokki Sauce and Convenient Cup Tteokbokki'; and '*Unboxing K-Life: Vegan Product made by Koreas Top-Notch Beauty Company.*'

There are 44 students who joined translation class as the participants to fulfill the questionnaires. After all those students finished watching three episodes of 'Unboxing K-Life' Program, they were given questionnaires and answered the questions related to their understanding and interpretation of the program. The result showed that there are 32 students (72%) who categorized as '*declared understanding*' in part 1 of the questionnaire. The categorization of '*declared understanding*' was given to those who respond 'understand' of the content of the TV program. And there are 12 students (28%) who categorized as '*declared non-understanding*' as they give respond 'do not understand' of the content of the TV program.

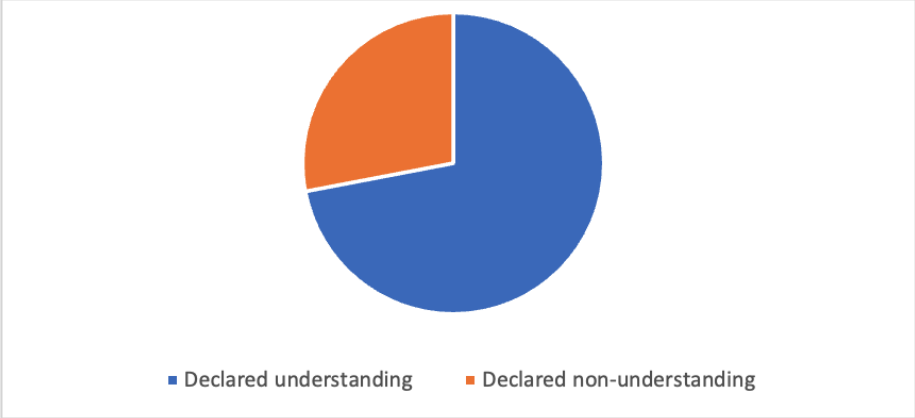

Figure 2: Coding of 1st Section From Questionnaire

Furthermore, in part 2 of the questionnaire, there are about 79% of the total population (35 students) who fall under the coding *'matching*' and 21% of the total population (9 students) are categorized under the coding '*non-matching*' as presented in figure 3 below:

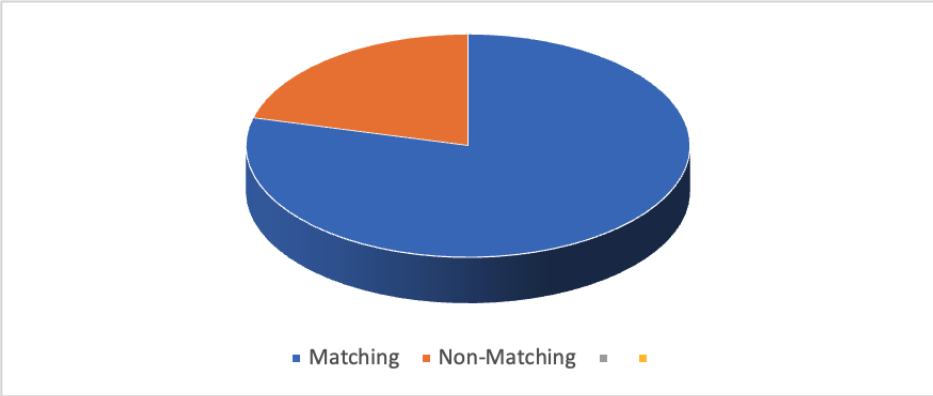

Figure 3: Coding of 2nd Section From Questionnaire

In this section, the students are being asked several interpretation questions referring to each scene in which cultural conceptualizations appeared in the program such as 'the statement related to the cultural reference about Korean culture.' There are two sample comments from the students as follows:

> "I'd just known about this program. I think this is very interesting because it talks about Korean industries but in more fun way. You can see and understand what is behind Korean industries easily. The purpose of those Korean industries is a little bit different from the purpose of our national industries in which the main purpose still referred to the use in the local industry." (Statement from SN)

> "The Unboxing K-Life program gives us new insight into understanding Korean culture in certain ways. This program shows Korean products that are globally recognized and used in some countries. Korean companies were really aware of the quality of their products. These products can be a form of introducing Korean culture to the whole world." (Statement from SR)

Those two sample comments considered to represent most of the sample comments who stated '*declared understanding*' because these comments showed that they are fully understood general content of 'Unboxing K-Life' program as a TV program that tried to promote Korean products and industries to the world. Based on the theory of cultural conceptualizations as proposed by (Sharifian, 2017), the difference in understanding the general content of that TV program is due to the differences in students' cultural backgrounds. In this case, it can be seen from different cultural schemas where certain events of schema such as local industries can also be associated with categories like boat industry. Even though the schema for event of this Korean local industries is similar to Indonesian local industries, but the main purpose of those industries is different. It can be seen from the first video talking about technology in boat industry in South Korea, where the captain of the boat, Im Sung-Sik, explained about what's his company's product about while asking the presenter to join him to try to drive the boat:

> "Aluminum boats are safer for the environment and better as it can be recycled compared to composite boats. The boat has also had super nice well-made look, has simple design, as well as great for fishing with a couple of friends." ('*Multipurpose Leisure Boat made with Eco-friendly Aluminum*' minutes 03:48 – 04:06)

From the first video, it can also be found the fact related to Korean culture that Korean people are supposed to call their original products with the adding of 'K-' in front of the noun (product). It is mentioned in the video the fact that K-boat is fast like the light rail transit with the maximum speed of 80km/h. Moreover, this K-boat is also described to have amazing performance in three points: speeds through the waves, no vibration, speeds up quickly (minutes 05:20). Based on what Sharifian (2017) stated about image schema, people around the world will definitely have the image schema of 'Korean product' to capture their conceptualization of 'K-boat.' The same image schema also appeared in the mind of all students in Translation class. Even though they come from several different cultural backgrounds, they can interpret this image schema of K-product (K-technology).

> "I'm interested in a part of discussing the boat technology which told us a lot of information aluminum boat. It is said that '*aluminum boats are different from FRP (Fiber Reinforced Plastics) in that it can cut through waves, doesn't retain water when it floats and has good mileage. It's light so it has good fuel mileage. It's a lot lighter than boats made with FRP material.*' This part is actually discussing much about Korean recent technology that is tried to affect the world. They tend to build something great that is different from others so that the whole world will know about what is called as K-technology." (Statement from FJ)

When it comes to respond to perception and interpretation, different people will certainly have different opinion regarding their own social and cultural backgrounds (Shafiei, 2022). In translation study, sometimes it is related to culture in some ways, especially when the translators are about to translate the text which was originally from slightly different cultural backgrounds (Andarab, 2015). It is substantial to having the ability to understand both language and culture in those source languages and target languages (Chen & Thuy 2019). At the end of the first video, the presenter gives reviews for global viewers that he would recommend this K-boat and company in which it has been perceived and agreed by those global viewers (students).

Then, there is a statement from the student related to the second video about Korean food as follows:

> "When discussing about K-food (instant Tteokbokki), the presenters said about the 'soul of Korean culture' as can be seen in the statement '*Tteokbokki is a soul food for all Koreans.*' This statement is interesting for me because Tteokbokki is very popular around the world today, but actually this food has already been a part of Korean people since Joseon era." (Statement from MS)

> "My comment about the statement '*Tteokbokki is a soul food for all Koreans*' is that I've just known that this is a soul food for Korean people because as far as I know this food is just like any other Korean food, like *jajjangmyeon, kimchi, bibimbap, eomuk, tokkebi, hotteok, bungeoppang, kimbap*, etc. I mean, this is Korean street food." (Statement from AJ)

From the statement above, it can be related to proposition schema as stated by Sharifian (2017) which defined as abstractions that act as models of thought and behavior. It is about the concepts and the relations which hold among them. The example of proposition schema of '*Tteokbokki is a soul food for all Koreans!*' must be noted that a single sentence like that, is merely partial, linguistic representation of proposition schema. Cultural conceptualizations can be varied a lot according to people's conceptual experiences (Teng & Crezee, 2022).

Students who love to watch Korean dramas or act as K-pop lovers have more understanding in conceptualizing a single sentence like the one formulated above. It is shown in some statements which merely stated that Tteokbokki is considered to be an important part of Korean culture since Joseon era and this food also has historical value with the existence of Tteokbokki museum in Daegu, South Korea. Nowadays, Tteokbokki has been transformed into Korean street food as we can see in most Korean dramas and reality shows. Also, it is shown in the second video that this Tteokbokki has transformed into an instant food today.

> "Now, an instant convenient cup of Tteokbokki has long expiration date of 14 months as well as it is very easy to take when traveling or go camping. This convenient cup of Tteokbokki is the first product manufactured with powdered sauce in six levels of spiciness from the mild flavored to the highest level one." ('*Tteokbokki Sauce and Convenient Cup Tteokbokki*' minutes 02:10 – 02:34)

Furthermore, there is another example of proposition schema found in this video: '*Also, beer and soju are a huge part of Korean culture as well*' in which indicated that this may provide a basis for different patterns of reasoning across cultural groups. In other words, this proposition schema reflects Korean culture and worldview. Thus, it is clear that there is a

difference in understanding about this proposition schema between those who love Korean culture and those who are not aware of it.

Moreover, the third video is talking about K-beauty products of vegan collagen ampoule vitamin shot. The content of the video can be best analyzed using emotion schema of cultural conceptualizations by Sharifian (2017). When it comes to discuss beauty products, of course the term 'trust' should be one of the most essential things to consider. If there is no trust to certain beauty product, people won't use it. The best thing about this vegan collagen ampoule vitamin shot is that it is 100% plant-based product and it is packaged with four variations of collagen extract: avocado to moisturize the skin; green tangerines to maintain water and oil balance; sea buckthorn to give whitening care; and pomegranate to boost the elasticity of the skin. People can choose the product depending on their skin type. Based on the description and review of that vegan collagen ampoule vitamin shot, the company thinks of consumers' trust from the very first time as they promote eco-friendly product with the combination of vitamin and collagen to make positive effect in collagen synthesis. This is proved from the experiment that the company did an efficiency test for the skin elasticity which has been improved in just 4 weeks.

> "This program is great. You can learn about Korean culture through its global products with the English subtitles to make it easier to be understood. For instance, South Korea has already known all around the world about their K-beauty and fashion and one video shows us about vegan collagen and vitamin shot. This product has already had its certification with vegan ampoule of 86% of collagen extract with the variation of Pomegranate, Green Tangerines, Sea Buckthorn, and Avocado. It is discussed the Charmzone as Korea's leading beauty company since 1984. Their vegan collagen ampoule and shot is very unique since serum and shot are packaged separately so that the users can apply it depending on their skin types and skin conditions, also their products are vegan friendly." (Statement from RR)

This concept of 'trust' reflects to the fact that this emotion schema is rooted and associated with certain conceptualizations, which may prove to be culturally specific. Members of cultural group usually possess numerous degrees of awareness of their cultural conceptualizations. As a matter of fact, different cultural groups may produce something unique and authentic for instantiating their own cultural conceptualizations (Frank, 2017). In relation to Korean culture, it is widely known that Confucianism plays a substantial role in South Korea and this Confucianism teaches about trustworthiness. This is considered to be an important value in Korean culture and it affects a lot in most of the societies' life including a virtue of 'remaining true to your words.' Thus, trust always plays an essential role in South Korean and it has been the foundation to the relationship with other people including in business area (Koehn, 2001).

Conclusion

There are myriad researches out there discussing about teaching EFL students in translation classroom, but there are still few of them focusing on media in which using another language rather than English and there are no studies using alternative media like 'Unboxing K-Life' Program. This research offered two research questions: (1) What is the use of 'Unboxing K-Life' Program influences student's translation performances? and (2) How is EFL students' cultural interpretation about 'Unboxing K-Life' Program?

This research used embedded design strategy because it has the main purpose to know more about students' perspectives in learning translation using 'Unboxing K-Life' Program, then trying to conduct personal interviews with the sample students to gain more insight of their responses on the questionnaire's results. This embedded design strategy is used when quantitative and qualitative data are collected simultaneously, however qualitative data is embedded within the quantitative data.

The results showed that there is a significant difference between students' pre-test result average and post-test result average. Also, based on the results of students' questionnaire, most students got the result of 'declared understanding' and categorized as 'matching.' It means that the students feel more motivated and interested in learning translation using 'Unboxing K-Life' Program as new alternative media. This media is proved to help students to understand the material better and help to increase their score in translation.

Then, based on the result of students' personal interviews, it is found the fact that there are three schemas by Sharifian (2017): (1) image schema (in K-technology or K-boat episode), proposition schema (in K-food episode), and (3) emotion schema (in K-beauty episode). In fact, different cultural groups may produce something authentic and unique for instantiating their own cultural conceptualizations (Frank, 2017).

At the end, 'Unboxing K-Life' Program can be a good media to lecturers of English Education Department or English Department to teach other language skills such as listening, writing, reading, and speaking, or even to teach other translation skills like voice-over or dubbing. It would be very beneficial for the development of EFL teaching and learning in the future.

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The Development of Science Activity Packages Learning on "The Impact of Particulate Matter 2.5 Micrometer (PM.2.5)" for Mathayomsuksa 1. Students

Onanong Thongpan, Sriboonyanoon School, Thailand

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
There were three Purposes of the study: 1) to development and identify educational quality of science activity packages learning on "The Impact of Particulate Matter 2.5 Micrometer (PM.2.5)". 2) to study learning outcomes; knowledge and science process skills of Mathayomsuksa 1. (Grade 7) Students by science activity packages learning on "The Impact of PM.2.5" and 3) to study attitude toward environment of MS. 1. Students by science activity packages learning on "The Impact of PM.2.5". The study was accomplished through two stages of operation; 1) development and quality evaluation of science activity packages learning by the experts and conducting a teaching experimentation with a group of three students and nine students successively. 2) performing experimental teaching by employing the science activity packages learning with the sampling coming up with a group in one class (from 4 class of 40 MS.1 of Sriboonyanon school) for 14 periods (50 minutes a period) for the experimental teaching. The results were as follows:
1. The science activity packages learning were at higher educational quality good level.
2. Learning outcomes of students exposed to instruction utilizing the developed science activity packages learning were found positive: 1) students' post-test scores on knowledge were significantly higher than their pre-test scores. 2) students' post-test scores on science process skills were significantly higher than their pre-test scores.
3. Students' post-test scores on attitude toward Environment designated as "good level".

Keywords: Science Activity Packages Learning, Impact of Particulate Matter 2.5 Micrometer, Attitude Toward Environment

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Introduction

Air pollution has emerged as a critical global environmental issue, particularly in developing countries. The extensive use of machinery in construction, industrial processes, and agriculture has led to widespread health and ecosystem impacts. Among various air pollutants, fine particulate matter (PM2.5) has garnered significant attention due to its severe adverse health effects on humans. In Thailand, like many developing countries, has experienced rapid industrialization and urbanization, leading to a deterioration in air quality. PM2.5, consisting of tiny particles with a diameter of 2.5 micrometers or less, poses a serious threat to public health. The primary sources of PM2.5 in Thailand include industrial emissions, vehicular exhaust, and biomass burning. These emissions contain harmful substances such as heavy metals, organic compounds, and sulfates, which can penetrate deep into the respiratory system and cause a variety of health problems.

Solving the problem of PM2.5 pollution is a complex environmental challenge that requires cooperation from various stakeholders. Multi-faceted strategies are important at multiple levels. At the government level, stringent regulations and policies should be implemented to reduce air pollution, promote sustainable energy sources, and invest in the research and development of pollution-reducing technologies. In the private sector, businesses should be encouraged to adopt environmentally friendly practices, such as using green technologies and promoting public transportation among employees. At the community level, individuals can play a key role in reducing polluting behaviors, including limiting the use of private vehicles, avoiding the burning of agricultural waste, promoting waste segregation, and actively participating in community tree-planting programs. These efforts are essential to further improve air quality and create a sustainable environment over time.

As schools should play an important role in teaching about the impact of PM2.5 so that students have knowledge and understanding of how to improve air quality through various methods to reduce the impact of PM2.5 by preparing such content to be inserted in related subjects, especially science, which has experimental equipment ready for students to seek knowledge appropriate to the content. Teachers should develop a set of learning activities on science about the impact of PM2.5 to be used as a guideline for students' learning. Students will learn by themselves and put it into practice until they achieve success and self-esteem, which will inspire students to try to seek the truth, resulting in knowledge, thinking skills, scientific process skills, and promoting students' creativity in developing knowledge and attitudes towards environmental conservation.

As a researcher who is a science teacher of MS.1, I saw the importance of this problem. Therefore, I created a set of science activities for learning on the topic of "The Impact of PM2.5 Micrometer (PM.2.5)", which is divided into 7 units: 1) Sources of PM2.5, 2) Impacts of PM2.5 on Living Things, 3) Methods of Measuring PM2.5, 4) Methods of Preventing Danger from PM2.5, 5) Equipment for Preventing Danger from PM2.5, 6) Testing Plants That can Absorb PM2.5, and 7) Proposing Science Projects to Improve Areas Affected by PM2.5. The researcher expects that the set of science activities will help students gain knowledge and understanding in preventing dangers from PM2.5. In addition, students will have more scientific process skills and attitudes towards environmental conservation, which will result in being able to solve the PM2.5 problem in the community sustainably.

Research goals:

1) To development and identify educational quality of science activity packages learning on “The Impact of Particulate Matter 2.5 Micrometer (PM.2.5)”.
2) To study learning outcomes; knowledge and science process skills of MS. 1. Students by science activity packages learning on “The Impact of Particulate Matter 2.5 Micrometer (PM.2.5)”.
3) To study attitude toward environment of MS. 1. Students by science activity Packages learning on “The Impact of Particulate Matter 2.5 Micrometer (PM.2.5)”.

Methods

The study was accomplished in 8 steps:

1) Development of the science activity packages learning on “The Impact of Particulate Matter 2.5 Micrometer (PM.2.5)” were divided into 7 units: 1) Source of PM.2.5, 2) Effects of PM2.5 on living organisms, 3) Methods of measuring PM2.5, 4) How to prevent danger from PM.2.5, 5) Equipment to protect against PM 2.5 hazards, and 6) Testing plants that can absorb PM2.5, and 7) Propose a science project to improve areas affected by PM 2.5.
2) Determination of the quality of the science activity packages learning on “The Impact of Particulate Matter 2.5 Micrometer (PM.2.5)”, by specialist science teachers. A total of 5 people evaluated five areas: 1) contents, 2) using language and illustrations, 3) learning activities, 4) experimental kit, and 5) post-test. Each area was evaluated with one of the following ratings:
   1.00 -1.50 = very low
   1.51-2.50 = low
   2.51- 3.50 = medium
   3.51-4.50 = good
   4.51-5.00 = Very good
3) The evaluation results of the science activity set “The Impact of Particulate Matter 2.5 Micrometer (PM.2.5)” were used to adjust and revise its quality. This process was guided by expert advice until the evaluation results reached at least "Good." The revised activity set will then be used for experimentation with groups of 3 and 9 students.
4) Evaluation of the science activity packages learning by specialist science teachers, by conducting a teaching experimentation with a group of three students and nine students successively, before the real trial.
5) Performance of experimental teaching by inviting a single sample group (sampled from 4 classes of 40 MS. 1 (grade 7) students, from Sriboonyanoon school, Nonthaburi, Thailand) for 14 periods (50 minutes a period) with the following details: 1.) Source of PM.2.5, 1 periods, 2) Effects of PM2.5 on living organisms, 2 periods, 3) Methods of measuring PM2.5, 2 periods, 4) How to prevent danger from PM.2.5, 2 periods, 5) Equipment to protect against PM 2.5 hazards, 2 periods, 6) Testing plants that can absorb PM2.5 well, 2 periods, and 7) Propose a science project to improve areas affected by PM2.5., 3 periods. Every activity will use the method of teaching and learning by searching for knowledge using scientific methods, from observation, from experimentation, from searching online, and then discussing together to summarize new knowledge points and discussing together how to use such knowledge to solve the problem of PM.2.5.

Figure1: Students Experiment With Using PM2.5 Measuring Devices to Measure Dust Levels in the School Area Near the Chao Phraya River

Figure 2: Students Experiment With Using a PM2.5 Measuring Device to Measure Dust Levels in a Garden Area Inside the Classroom

Figure 3: Students Presented Their Learning Outcomes Through Each Learning Activity Set

6) Assessment of students' knowledge gained from learning in the science activity packages learning on, "The impact of particles of 2.5 micrometers (PM.2.5)", which divides the assessment of the desired behavior into 4 areas: 1) knowledge, 11 points,

2) comprehension, 12 points, 3) Process of scientific inquiry, 8 points, 4) Application of scientific knowledge, 9 points, total 40 points.

7) Assessment of students' scientific process skills gained from learning in the science activity set on "The Impact of 2.5 Micrometer Particles (PM.2.5)", which divides the assessment of desired skills into 8 areas: 1) Observation, 3 points, 2) Measurement, 4 points, 3) Calculation, 5 points, 4) Classification, 8 points, 5) Hypothesis, 6 points, 6) Data analysis, 3 points, 7) Experimental skills, 8 points, 8) Interpretation data and conclusion skills, 3 points, total 40 points.
8) Evaluation of attitude toward environment, through learning in science activity packages learning on “The Impact of 2.5 Micrometer Particles (PM.2.5)”, which divides the assessment of desired skills into 3 areas: 1) Environmental conservation awareness, 2) Environmental conservation behavior, 3) Efficient resource utilization behavior. Tests to measure attitudes toward environment used three levels as follows: 0 = low, 1 = medium, 2 = good. The evaluation criteria were set at 2.00 (good level) or higher.

Figure 4: The Assessment of Students’ Scientific Process Skills Gained From Learning in the Science Activity Set on “The Impact of 2.5 Micrometer Particles (PM.2.5)”

Results

The results of the research were as follows:

1. The quality of the science activity packages learning on “The Impact of 2.5 Micrometer Particles (PM.2.5)” were divided into six units: 1) Source of PM.2.5, 2) Effects of PM2.5 on living organisms, 3) Methods of measuring PM2.5, 4) How to prevent danger from PM.2.5, 5) Equipment to protect against PM 2.5 hazards, and 6) Testing plants that can absorb PM2.5, and 7) Propose a science project to improve areas affected by PM.2.5, by a total of five specialist science teachers, who evaluated five areas: 1) contents, 2) using language and illustrations, 3) learning activities, 4) experimental kit and 5) post-test. The details are shown in Table 1.

Table 1: The Quality of the Science Activity Packages Learning on "The Impact of 2.5 Micrometer Particles (PM.2.5)", Evaluated by a Total of Five Specialist Science Teachers

Areas / **Units**	Contents	Using language and illustrations	Learning activities	Experimental kit	Post-test	$\overline{X}$	Levels
Source of PM.2.5	4.62	4.52	4.62	4.44	4.52	4.54	very good
Effects of PM2.5 on living organisms	4.80	4.48	4.65	4.60	4.46	4.59	very good
Methods of measuring PM2.5	4.48	4.45	4.47	4.53	4.45	4.47	good
How to prevent danger from PM.2.5.	4.46	4.45	4.58	4.45	4.40	4.47	good
Equipment to protect against PM 2.5 hazards	4.40	4.51	4.53	4.40	4.43	4.45	good
Testing plants that can absorb PM2.5	4.52	4.52	4.52	4.43	4.48	4.49	good
Propose a science project to improve areas affected by pm2.5.	4.80	4.46	4.55	4.48	4.43	4.54	very good
Total average	very good 4.58	good 4.48	very good 4.56	good 4.47	good 4.45	**4.50**	**good**

Table 1 shows the average quality of the science activity packages learning on "The Impact of 2.5 Micrometer Particles (PM.2.5)" evaluated by specialist science teachers. Quality was evaluated across five areas: contents, using language and illustrations, learning activities, experimental kit and post-test. The respective averages of each area were as follows: 4.58 very good, 4.48 good, 4.56 very good, 4.47 good, 4.45 good, while the total average across all areas was 4.50 good.

2. Achievement of learning outcomes among students who used the science activity packages learning on "The Impact of 2.5 Micrometer Particles (PM.2.5)" was assessed using the average pretest and post-test scores. The details of the results are shown in Table 2.

Table 2: The Comparison of the Achievement of Learning Outcomes Among Students Who Used the Science Activity Packages Learning on "The Impact of 2.5 Micrometer Particles (PM.2.5)", Assessed by Pre-test and Post-test

Average score	n	$\bar{x}$	SD	df	t
Pre-test	40	20.89	1.49	39	4.30 *
Post-test	40	28.48	1.58	39	

Table 2 compares the average achievement of knowledge learning outcomes among students who used the science activity packages learning on "The Impact of 2.5 Micrometer Particles (PM.2.5)" assessed by pre-test and post-test. The increase in post-test scores on pre-test scores was statistically significant .05.

3. The achievement of learning outcomes with regard to science process skills in the science activity packages learning on "The Impact of 2.5 Micrometer Particles (PM.2.5)" was assessed by comparing the average pretest and post-test scores. The details are shown in Table 3.

Table 3: The Comparison of the Average Achievement of Learning Outcomes, With Regard to Science Process Skills, Among Students in the Science Activity Packages Learning on "The Impact of 2.5 Micrometer Particles (PM.2.5)" This Was Assessed Using Pre-test and Post-test

Average score	n	$\bar{x}$	SD	df	t
Pre-testt	40	20.29	1.48	39	4.33*
Post-test	40	29.53	1.32		

Table 3 compares the average student achievement of learning outcomes, with regard to science process skills, the science activity packages learning on "The Impact of 2.5 Micrometer Particles (PM.2.5)", using pre-test and post-test scores. The increase in post-test scores on pre-test scores was statistically significant .05.

4. Evaluation of attitudes toward water resources among students learning in the science activity packages learning on "The Impact of 2.5 Micrometer Particles (PM.2.5)". The details are shown in Table 4.

Table 4: The Average Post-test Score on Attitude Toward Environment Among Students Learning in the Science Activity Packages Learning on "The Impact of 2.5 Micrometer Particles (PM.2.5)"

Average score	n	$\bar{x}$	SD	μ=2	df	t
Post-test	40	2.78	0.45	2	39	2.26*

Table 4 shows the average post-test score of on attitude toward Environment among students learning the science activity packages learning on “The Impact of 2.5 Micrometer Particles (PM.2.5)”. The average value of 2.78 (good level) was higher than the criteria set at 2.00, and was statistically significant .05.

Conclusions

The results were as follows:

1) The science activity packages learning on “The Impact of 2.5 Micrometer Particles (PM.2.5)” were of a high educational quality (good level).
2) Learning outcome achievement among students exposed to instruction utilizing the developed the science activity packages learning on “The Impact of 2.5 Micrometer Particles (PM.2.5)” was found to be positive: 1) Students’ post-test scores on knowledge were significantly higher than their pre-test scores. 2) Students’ post-test scores on science process skills were significantly higher than their pre-test scores.
3) Students’ post-test scores on attitude toward environment, among students learning in the science activity packages learning on “The Impact of 2.5 Micrometer Particles (PM.2.5)”, were designated as at a “good level.”

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Contact email: onanong.t@sb.ac

Analysis of Tasks Presented in an EFL Textbook 'Practise Your English Competence' Through Coursebook Analysis Framework

Ayu Lestari, Universitas Pendidikan Indonesia, Indonesia
Yanty Wirza, Universitas Pendidikan Indonesia, Indonesia

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
Tasks presented in a textbook are one of the aspects which should be evaluated since the textbook should provide a variety of materials and assignments to help students in engaging with the language used in communication. This research delves into an analysis of the tasks in EFL textbook "Practise Your English Competence" for grade 8 used by a junior high school in Sumatera, Indonesia, with a specific focus on evaluating its alignment with level 2 subject analysis of Littlejohn's coursebook analysis framework. The study aims to discern whether the tasks incorporated in the textbook adhere to the standards proposed by Littlejohn and explore the perspectives of both teachers and students regarding their experiences with the textbook. Mixed-methods of research combining content analysis, questionnaire, and semi-structured interview were applied to achieve the objectives of the study. The result showed that the tasks presented in the textbook have fulfilled some of the criteria featured in the framework. The tasks provide a good process of learning discourse in the aspect of turn-take, language focus, and mental operation which are supported by the users of the textbook in this study. However, there should be some improvements such as language use, classroom participation and oral contents to be well adjusted for students in the tasks of the textbook.

Keywords: ELT, Indonesia, Littlejohn, Textbook Analysis

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Introduction

English is a language which is used internationally and has become a foreign language that needs to be learned for several countries in the world. The use of textbook is one of the crucial methods needed for the development of English teaching and learning for non-native speakers. According to Cunningsworth (1995), a textbook is a source for students to practice and perform activities which are vocabulary, pronunciation, grammar, listening, reading, speaking and writing. In this era of globalization, thousands of textbooks are published and are even accessible everywhere by learners of any area of education which sometimes can lead to the misconceived information and interpretation on the language learning. For these reasons, enhancement of standardized textbooks is necessary.

Sheldon (1998) mentioned the exigency of textbook evaluation; it will support the teacher or program developer in deciding and selecting the desirable and well-qualified textbook to be used and the educator will be accustomed to the probable merits and demerits of a textbook. Additionally, Ayu & Indrawati (2018) stated that textbook evaluation should be considered by the perspicuous answer whether it meets the requirements of curriculum's objective, student's context, and other features. By examining the textbook, the teacher knows the content of the textbook, its strengths, and weaknesses.

Task presented in a textbook is one of the aspects which should be evaluated since the textbook should provide a variety of materials and assignments to help students in engaging with the language used in communication. Nunan (1988) defines task as a piece of classroom activities in comprehending, directing, constructing, or interacting in the target language involving the learners while the meaning is paid more attention than the form. Students are expected to apply the materials that are learned by doing the exercises presented in a certain textbook. On that account, having an evaluation of the textbook's assignment addressed in the EFL textbook is also required to substantiate the quality of the learner's knowledge resources.

"Practise Your English Competence" is an English textbook published by Erlangga following the 2013 curriculum of education in Indonesia. It presents materials and varieties of exercises and tasks in one textbook. Many aspects of this textbook have been evaluated and reflected by researchers. However, the tasks of this book have little been examined to evaluate whether it is appropriate or not for certain students. In the framework of Littlejohn's (2011) 3- level coursebook analysis, three things have to be taken into consideration as an essential part of task analysis. The following three factors must be considered: how; the process by which learners and their teacher are to engage in learning, including classroom participation of whom they will work as well as what content should concern them most. As Grant (1987) mentioned that perfect book does not exist, the writer would like to investigate and conduct a mini-research on the critical analysis of the tasks and assignments displayed in the first semester of EFL textbook of 'Practise Your English Competence grade 8' used by a junior high school in Sumatera, Indonesia. This research aims to determine whether the tasks set out in the EFL textbook "Practice Your English Competence" have met good standards laid down by Littlejohn's theory. The writer also would like to find out about the experiences of the textbook users, a teacher and the students, to know the perception of the analyzed textbook.

Literature Review

The Role of EFL Textbook in Teaching and Learning

According to The Collins English Dictionary (1998), "textbook" is a book that is a basic source of information relating to one subject. In the classroom of English as a foreign language, textbooks play an important role. They are an excellent source of information to teachers and students that provides structure and guidance in the learning process. Shannon (2011) in Wen-Cheng (2011) stated as follows:

> 'Textbooks are commodities, political objects, and cultural representations and, therefore, are the site and result of struggles and compromise in order to determine how and by whom they will be produced, how and by whom their contents will be selected, how and to whom they will be distributed, and how teachers and students will make use of them.' (p. 1149)

Cunningham (1995) stated that teachers' educational material has a major impact not only on the content of their teaching but also how they teach it. Textbooks contribute to the maintenance of consistency in education to ensure equal access to the same basic knowledge for students in all of their classes, schools and countries by applying set standards and curricula. Also, the purpose of the textbooks is usually to meet the objectives of a particular course or an education programme in terms of curriculum and language proficiency. They are helping to make sure teachers and students are equipped with the required content and language skills. Textbooks are often used as a complement to classroom instruction. Teachers will be able to give students reading from their textbooks in order to reinforce classroom discussions and prepare them for exams which can enhance the learning experience. Parrish (2004) furthermore describes the benefits of using a textbook to meet a learner's needs or expectations of having something concrete to work with and to take home for further study.

Studies have shown that English language textbooks are applied in a wide range of ways depending on the variety of factors. Research conducted by Schallert and Kleiman (1979) showed that teachers had four unique advantages over textbooks; they could tailor information for the level of understanding of their students and use knowledge from previous experiences when introducing new concepts, which allowed them to concentrate on a whole passage or just parts that were more interesting. Teachers also had an abundance of opportunity to examine student comprehension in order to assess what kind of information can be used as far as it is concerned. In summary, textbooks are a necessity to support educators and learners in EFL classrooms in the way that they assist teachers and students as they present materials, tasks, and activities for the language learning process.

Task for EFL Learning Process

Based on Van den Branden (2006:4), a task is an activity in which the students need to use the language in order to achieve the objective of language learning. Nunan (2004) also stated that task to be used as a part of class work that involves learners knowing how to manipulate the output or interaction in target language while their concentration is focused on mobilization of grammatical knowledge for expressing meaning, rather than manipulation of form. From these definitions, we can see that tasks help students in using the target language in the process of learning by understanding meaning and aspects in which they are used actively. Over the past decades, teachers around the world have become acquainted with the

basic principles of TBLT (Task-Based Language Teaching), and many countries have begun the activity with tasks in their classroom. A wide range of language specific tasks and activities that can be used by teachers in their teaching are frequently included in textbooks. In order to meet the specific needs and interests of students, such tasks can be modified. It contains a series of questions, tests and other evaluation materials to assess student progress and language skills.

Language learning tasks in an English as a foreign language textbook are generally characterised by certain characteristics, which help to foster the effective study of languages. Six basic criteria of the task are defined by He (2003) in Aryani (2018). It is scope, perspective form, authenticity, linguistic skills, psychology process and outcome. The scope shall relate to the teacher's work plan with regard to these tasks. In contrast to the semantic drills, it stresses pragmatic use of language. The perspective form looks for meaning in the performance of tasks by learners. The authenticity of the activities calls for a connection between tasks and student's lives beyond class. Linguistic skills are defined by focusing on the form of language, psychology is a process where learners use their mind to solve tasks and outputs in particular relate to specific products that they produce. Analysing tasks can be done in terms of the objectives, inputs, activities, settings, and role. According to Oura (2001), goals indicates the common purposes of the tasks for the learning process; input alludes to the starting information that contributes to the beginning point for the assignments; activities pass on the lesson that students will perform in respect to the input; settings influencing the task interaction in correlation to the classroom course of action, for instance, group or pair work activities; and role refers to the social or interpersonal connection between instructors and learners in a task.

English Textbook Selection and Evaluation

The evaluation of textbooks is important to improve the quality of the material given to learners in acquiring the knowledge. According to Cunningsworth (1995) and Ellis (1997), several procedures can be used in order to evaluate a published textbook, including pre-use, in-use, and post-use evaluations. The coursebook assessment can help teachers identify the books that are in line with their theories, and learn how to apply them for practical use at school (McDonough et al., 2013). The significance of textbooks in EFL Classroom have been investigated to show that it facilitates teachers and educators in determining the strategies and lesson plan as their guide in order to achieve the objective of EFL teaching and learning. There are three types of textbook evaluation according to the literature of English Language Teaching in Anjaneyulu (2014). Those are Pre-use predictive evaluation which involves making decisions about the potential value of materials for their users, In-use or whilst-use evaluation which involves measuring the value of materials while using them or observing them as being used, Post use evaluation measures the actual effect of the materials on the users. Previous relevant research had been done by Aryani (2018) conducting the tasks evaluation in "When English Rings A Bell" textbook. As a result of the study, it was found that the tasks outlined were relevant in terms of Littlejohn's requirements. Furthermore, another similar study by Ayu (2018) which was conducted to analyze the tasks and the substitutions of the textbook entitled Bahasa Inggris SMA/SMK/MAK Kelas X. The result also showed that the textbook has a good distribution of tasks in all chapters and the whole book.

EFL textbook "Practise Your English Competence" by Erlangga is a commercial EFL textbook used for secondary level classroom. It was written by Nur Zaida and published in

2017. This book was created based on the 2013 curriculum of Indonesia, 2016 revised edition, as a reference for teachers and students. This book is arranged systematically based on text type (genre). Vocabulary list and pictures are presented in this book. Each discussion starts from a short explanation that is easy to understand, then students will be faced with various types of questions from normative to predictive. In accordance with competency standards at each class level, this book was created to help students understand key concepts in English lessons while introducing characteristics of questions for school exams and national exams. As it is presented, tasks are the most highlighted in this textbook taking the highest percentage of the book contents.

The textbook analysis in this study is needed to ensure that tasks presented meet the criteria of a good textbook to provide students the best resource for their learning. Considering those aspects, Littlejohn's framework of coursebook analysis describes three levels which are built upon each other, from an objective description of materials to a more subjective extrapolation. The objective description of what is contained in the material shall be given at level 1. This includes the title and publication information, an explanation of what material is provided, description of each unit's subparagraph. An overview of one section of a student book shall be included in it. The second level is the subjective analysis, where teachers can determine what is required of students for each task. The teacher may check the boxes listed in the next three designated categories, "A" what the learners are expected to do and "B" who with and "C" what type of input and output is needed, when examining each task in one unit of the book. On the basis of levels 1 and 2, level 3 is a subjective assessment of the course book. This level enables teachers to infer the aims, selection, and sequencing of content, subject matter, types of activities, participation expectations, roles of teachers and learners, and role of the material as a whole.

Methodology

Research Design

This study aims to find out whether the textbook "Practise for English Competence" complied with the criteria according to Littlejohn's theory (2011) of coursebook analysis. This study employs a qualitative case study research design, combining qualitative and quantitative data collection and analysis approaches. The integration of content analysis, a structured questionnaire, and a recorded interview allows for a comprehensive exploration of the tasks presented in the textbook, fostering a deeper understanding of its impact on both students and the teacher in EFL context.

Data Collection

In the research, the textbook of "Practise for English Competence" The participants in this study are 1 English teacher who has used the book since 2021 and 20 students of grade 8 of a junior school in Sumatera. The book content consisting of 44 tasks was also analyzed to find out what learners are doing with psychiatric operations, as well as the type of input and output required in order to determine whether they meet the objectives of a course. The data was taken by considering the subsections in the framework which are turn take, focus, mental operation in teaching and learning process. The second is about class participation whether students are asked to work individually or in groups. Input and output to learners are the third to be analyzed emphasizing the focus of the task contents.

A five-point Likert scale questionnaire ranging from “5” (strongly disagree) to “1” (strongly agree) was applied based on the framework of Littlejohn to assess students’ perception of the effectiveness of the task presented in the textbook. It consists of 20 items of questions based on Littlejohn’s framework of Level 2 analysis. Furthermore, a semi-structured interview was designed in the study in order to investigate the teacher’s perspective on the appropriateness of task presentation in achieving learning objectives in the textbook.

Data Analysis

In order to reach the objective, content analysis was conducted in this research. As defined by Krippendorf (2022), it is a research method to generate replicable and valid inferences from text or other important matters when applied in the context of their use. In-use evaluation of a textbook is conducted which focuses on how well the book functions in the classroom and depends on monitoring the book while it is being used by collecting information from both teachers and students. Littlejohn’s framework of coursebook analysis presented three levels of analysis of learning material shown in the following table (Table 1).

Table 1: Levels of Analysis of EFL Learning Materials

The levels of analysis	
1 ‘What is there’	‘*objective description’*
- Statements of description	
- The physical aspect of the material	
- Main steps in the instructional sections	
2 ‘What is required of users’	‘*subjective analysis’*
- Subdivision into constituent tasks	
- An analysis of tasks: what is the learner expected to do? Who with? With what content?	
3 ‘What is implied	*‘subjective inference’*
- Deducing aims, principles of selection and sequence	
- Deducing teacher and learner roles	
- Deducing demands on learner’ process competence	

Littlejohn, 2011, p. 185

This research has led to the presentation of a level 2 analysis that is a subjective assessment. Pemberton (2019) stated that the second level describes the tasks in one unit of a course which are objectively assessed by assessing what teachers and learners actually need to do. The activities are divided into different tasks, and each of them will be assessed on an individual basis. The tasks to be analyzed under this level analysis with regard to what is expected from learners? who with? and with what content? and those will be further reviewed in subsection questions provided by Pemberton (2019).

Quantitative data from the questionnaire were analyzed by using descriptive statistics. Frequencies and percentages will be calculated to summarize participants' responses on the task’s presentation of the textbook. Furthermore, thematic analysis was applied to the qualitative data gathered from the interview with the teacher.

Findings & Discussions

Findings

The findings of the study found that the tasks in the textbook feature a good process of learning discourse, few classrooms participation and good content focus that should be integrated and adjusted by teachers and students to achieve the learning objectives.

What Is Expected From Learners.

The first subsection of the framework is related to processes which are divided into three aspects of the tasks. Turn-take is the first aspect consisting of how students are asked to initiate language and respond to the questions. The second is focus which examines whether the tasks focus on language rule, meaning, or system. Thirdly, an aspect of mental operation which refers to the cognitive process. The aspect from all of 44 tasks is presented in the following tables (Table 2 and 3) and descriptions.

Table 2: Analysis of 'What Is the Learner Expected to Do?'

1. What is the learner expected to do?	Total %
1.1 Turn-take	
Initiate language ● E.g., make a list; produce a text based on a sample or basic rhetorical frame	-
Respond ● In narrowly defined language/non-verbal response (e.g., identify picture; true/false; gap-filler; sequence words or sentences)	100
No action required ● E.g., read/listen—no other activity	-
1.2 Focus	
Language system (rules or form) ● E.g., practice forms/patterns; apply rules	66
Meaning ● E.g., comprehension exercises	32
Meaning/system/ form relationship ● E.g., consciousness-raising activity; prepare a report for presentation to the class	2
1.3 Mental operation	
Repeat identically	2
Repeat selectively	9
Repeat with expansion ● E.g., use a sample dialog but change the setting, retrieve from STM/working memory	5
Apply general knowledge ● E.g., use information learned in another subject	5
Decode semantic meaning ● Match phrases with meanings in L1	5

Select information	27
Categorize selected information	9
Hypothesize, infer meaning	2
Formulate language rule	-
● E.g., examine sentences and write partially formulated rule	
Apply stated language rule	23
Attend to example/ explanation	11
● Students are required to be alert, perhaps notice something.	
Express own idea/information	2

Table 3: Questionnaire Result of 'What Is the Learner Expected to Do?'

	Strongly agree (%)	Agree (%)
Turn – take	40	60
Focus	45	55
Mental Operation	48	52
TOTAL	44	56

The result of the aspect of what is the learner expected to do or the process of learning discourse in Table 2 showed that in the aspect of turn-take, the situation where students make a list, produce a text based on a sample or basic rhetorical frame, none of the tasks ask students to initiate language although one of the chapters discusses about recount text. All tasks require learners to respond in narrowly defined language responses such as identify picture, true/false, gap-filler, or sequence word or sentences (Figure 1). Based on six questions of the questionnaire regarding 'what is the learner expected to do', it showed that 40% strongly agree and 60% agree to the aspect of turn-take assigned to them during the exercise (Table 3).

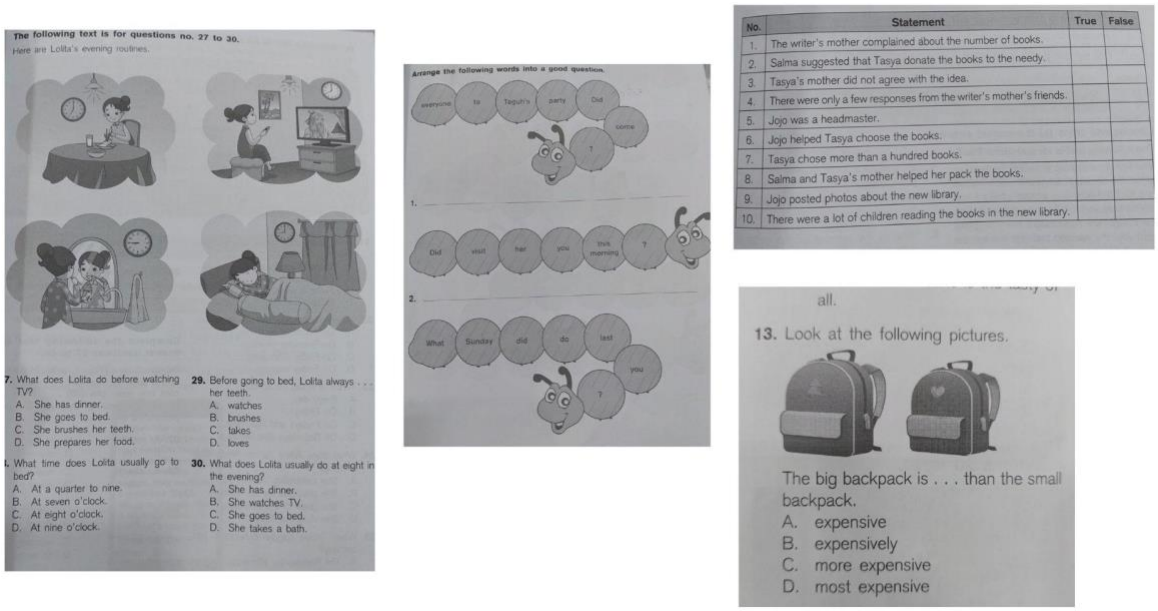
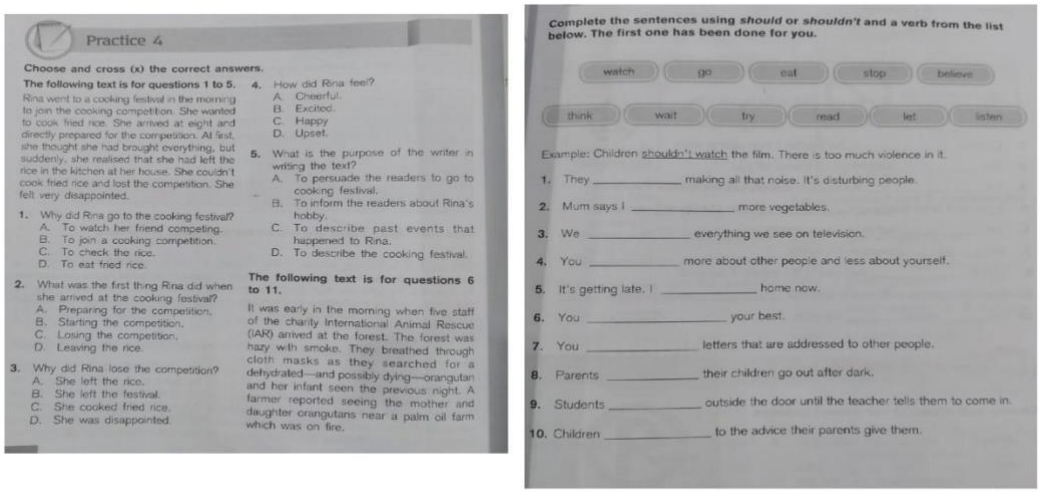


Figure 1: Turn-Take Questions Sample

In terms of focus, 66 % of tasks focus on language systems where students practice forms or patterns and apply rules while 32% tasks focus on meaning or comprehension exercises.

There are only 2% tasks that focus on students to form relationships such as consciousness-raising activity or preparing a report for presentation to the class which are shown in Figure 2. The students also responded positively in this aspect with the percentage of 45% and 55% students strongly agreeing and agreeing respectively (Table 3). The question type examples are presented in the following (Figure 2).



Practice 4

Choose and cross (x) the correct answers.

The following text is for questions 1 to 5.

Rina went to a cooking festival in the morning to join the cooking competition. She wanted to cook fried rice. She arrived at eight and directly prepared for the competition. At first, she thought she had brought everything, but suddenly, she realised that she had left the rice in the kitchen at her house. She couldn't cook fried rice and lost the competition. She felt very disappointed.

1. Why did Rina go to the cooking festival?
   A. To watch her friend competing.
   B. To join a cooking competition.
   C. To check the rice.
   D. To eat fried rice.
2. What was the first thing Rina did when she arrived at the cooking festival?
   A. Preparing for the competition.
   B. Starting the competition.
   C. Losing the competition.
   D. Leaving the rice.
3. Why did Rina lose the competition?
   A. She left the rice.
   B. She left the festival.
   C. She cooked fried rice.
   D. She was disappointed.
4. How did Rina feel?
   A. Cheerful.
   B. Excited.
   C. Happy
   D. Upset.
5. What is the purpose of the writer in writing the text?
   A. To persuade the readers to go to cooking festival.
   B. To inform the readers about Rina's hobby.
   C. To describe past events that happened to Rina.
   D. To describe the cooking festival.

The following text is for questions 6 to 11.

It was early in the morning when five staff of the charity International Animal Rescue (IAR) arrived at the forest. The forest was hazy with smoke. They breathed through cloth masks as they searched for a dehydrated—and possibly dying—orangutan and her infant seen the previous night. A farmer reported seeing the mother and daughter orangutans near a palm oil farm which was on fire.

Complete the sentences using *should* or *shouldn't* and a verb from the list below. The first one has been done for you.

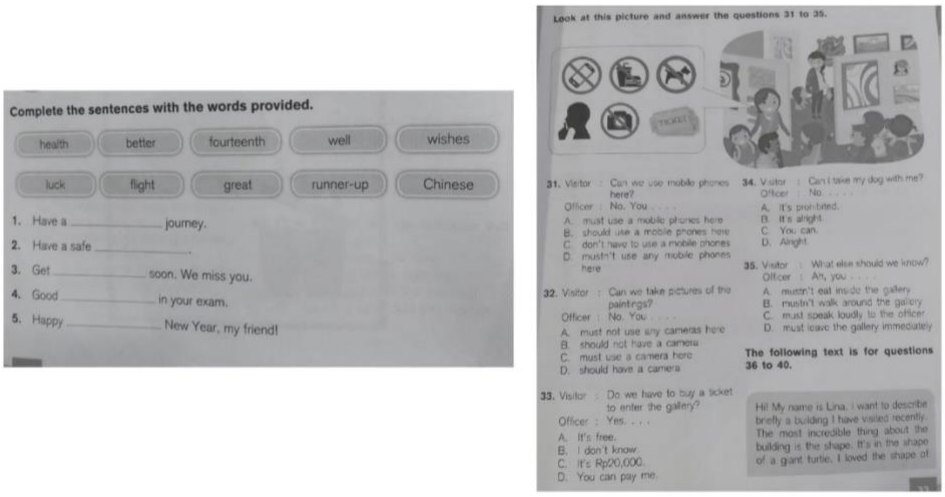
watch | go | eat | stop | believe
think | wait | try | read | let | listen

Example: Children shouldn't watch the film. There is too much violence in it.

1. They _____ making all that noise. It's disturbing people.
2. Mum says I _____ more vegetables.
3. We _____ everything we see on television.
4. You _____ more about other people and less about yourself.
5. It's getting late. I _____ home now.
6. You _____ your best.
7. You _____ letters that are addressed to other people.
8. Parents _____ their children go out after dark.
9. Students _____ outside the door until the teacher tells them to come in.
10. Children _____ to the advice their parents give them.

Figure 2: Focus Questions Sample

The state of mental operation showed that the tasks mostly ask students to select information and apply language rules for about 50 %. There are also 11% of tasks that require learners to be alert to examples which are provided. Students need to repeat for only 2% identically, 9% respectively and 5% extendedly in the tasks. Then, students are assigned to apply general knowledge which is learned in another subject and decode semantic meaning for 10%. Lastly, 13% of tasks demand learners to infer meaning, categorize information, and express their own idea or information. The examples are provided in Figure 3. Additionally, all of the students also agree to the focus of the tasks presented in the textbook. About 48% of them agree strongly that the tasks presented and encourage them to do the mental operation aspect described in Table 3.



Complete the sentences with the words provided.

health | better | fourteenth | well | wishes
luck | flight | great | runner-up | Chinese

1. Have a _____ journey.
2. Have a safe _____.
3. Get _____ soon. We miss you.
4. Good _____ in your exam.
5. Happy _____ New Year, my friend!

Look at this picture and answer the questions 31 to 35.

31. Visitor : Can we use mobile phones here?
    Officer : No. You . . . .
    A. must use a mobile phones here
    B. should use a mobile phones here
    C. don't have to use a mobile phones
    D. mustn't use any mobile phones here
32. Visitor : Can we take pictures of the paintings?
    Officer : No. You . . . .
    A. must not use any cameras here
    B. should not have a camera
    C. must use a camera here
    D. should have a camera
33. Visitor : Do we have to buy a ticket to enter the gallery?
    Officer : Yes. . . . .
    A. It's free.
    B. I don't know.
    C. It's Rp20,000.
    D. You can pay me.
34. Visitor : Can I take my dog with me?
    Officer : No. . . . .
    A. It's prohibited.
    B. It's alright.
    C. You can.
    D. Alright.
35. Visitor : What else should we know?
    Officer : Ah, you . . . . .
    A. mustn't eat inside the gallery
    B. mustn't walk around the gallery
    C. must speak loudly to the officer
    D. must leave the gallery immediately

The following text is for questions 36 to 40.

Hi! My name is Lina. I want to describe briefly a building I have visited recently. The most incredible thing about the building is the shape. It's in the shape of a giant turtle. I loved the shape of

According to the interview, the teacher mentioned that the tasks are based on the objectives of the lesson topic when asked about the alignment of the textbook with the learning objectives. She explained "… For example, in the topic of greeting cards, there are three purposes of the lesson, which are to identify social function, to identify structure, and to identify detailed info. In the tasks, the student is asked, what is it? When do you send it? Whom do you send it to? and why do you send it? and it is provided with the greeting card…". Furthermore, the tasks always require students to be active in understanding the material of the topic discussed in each chapter. For example, compiling the blank space, arranging sentences, or understanding the meaning of the picture or conversation.

Who the Assignments Were Done With.

The second subsection of the framework is related to classroom participation of the learners while performing the assignments. It examines whether students work individually, in pairs, or in groups. The aspect from all of 44 tasks is presented in the following tables (Table 4 and 5) and descriptions.

Table 4: The Analysis of 'Who With'

2. Who with?	Total %
Teacher and learner(s) ● E.g., teacher-fronted question and answer sessions	-
Learners (Individual/Pair/Group)	100
Learners in pairs/groups simultaneously	-

Table 5: Questionnaire Result of 'Who With'

	Strongly agree (%)	Agree (%)
Teacher and learner(s)	60	40
Learners	53	47
Learners in pairs/groups simultaneously	58	42
TOTAL	**57**	**43**

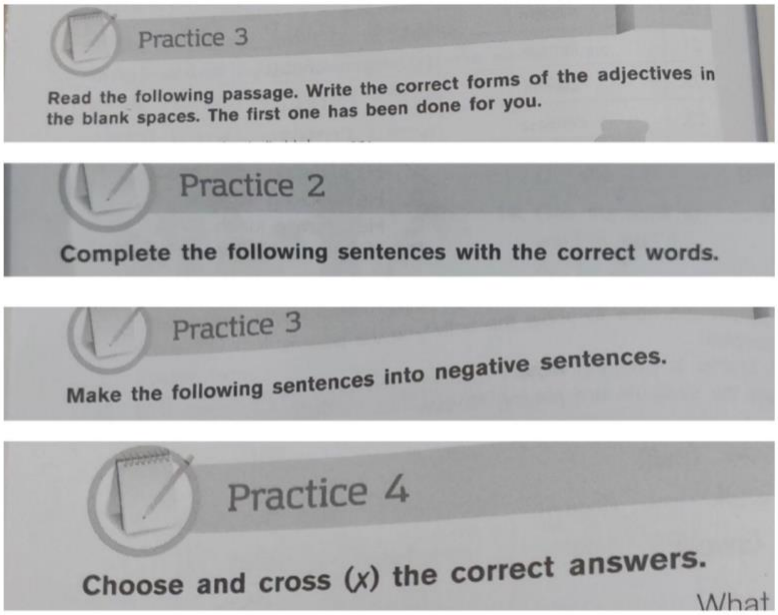


Figure 4: Mental Operation Questions Sample

It is shown in Table 4 that all tasks presented in the textbook required learners to work individually by having a percentage of 100% as it is shown in Figure 4. Furthermore, five questions from the questionnaire were administered to students in this subsection of the tasks presented in Table 5. The result showed a contrast response which are positive responses regarding 'Who with?'. The table showed that 60% of them strongly agree that tasks are done with the interaction of teacher and students while 40% agree on this as well. They strongly agree and agree that they do the assignments individually for 53% and 47% respectively. All of them also agree that the tasks also encourage them to collaborate with other students simultaneously in finishing the assignments. All in all, most students agree that the tasks presented in the textbook motivated them to participate and collaborate with other people. Based on the interview, the tasks in this book are more about individual skills. The teacher said "… I try to modify the individual task into a pair or group task to improve the communication skills and also the cooperation of the students in the classroom…." However, it is necessary for her to help students by encouraging them to interact and give feedback while doing the tasks. By doing this, learners understand the material given by both the book and the teacher.

Content of the Tasks.

The last aspect of the framework is related to the content focus of the tasks. It examines input and output for students in the tasks presented. The aspect from all of 44 tasks is presented in the following tables (Table 6 and 7) and descriptions.

Table 6: Analysis of 'With What Content'

1. With what content?	Total %
A. FORM	
1.1. Input to learners	
Non-verbal (e.g., pictures to sequence)	20
Written: Words/phrases/ sentences	80
Oral: Words/phrases/ sentences	-
1.2. Expected learner output	
Non-Verbal; e.g., match items, check correct picture, draw	9
Written words/phrases/single sentence; e.g., fill in the blanks	91
Oral words/phrases/single sentence; e.g., respond to a drill	-
B. SOURCE Who decides?	
Materials (dialog/text)	10 0
Teacher	-
Learners (e.g., present results of own research)	-
C. NATURE	
Metalinguistic information (e.g., a grammatical rule with example sentences; explanations about the use of certain expressions)	71
Non-fiction	29
Fiction	-
Learners' personal information/ opinion	-

Table 7: Questionnaire of 'With What Content'

	Strongly agree (%)	Agree (%)
Form	35	65
Source	58	42
Nature	42	58
TOTAL	**45**	**55**

Table 6 presents that students are provided with 80% input of written words/phrases/ sentences in the task while the other 20% are non-verbal. The tasks required the output from the learners for 91% written words and 9% non-verbal. By nine questions administered, the result of questionnaire (Table 7) showed that students are provided with helpful images and are asked to answer in written words with the percentage of people who strongly agree for 35% and agree for 65%. The sample of the questions are given in Figure 5.

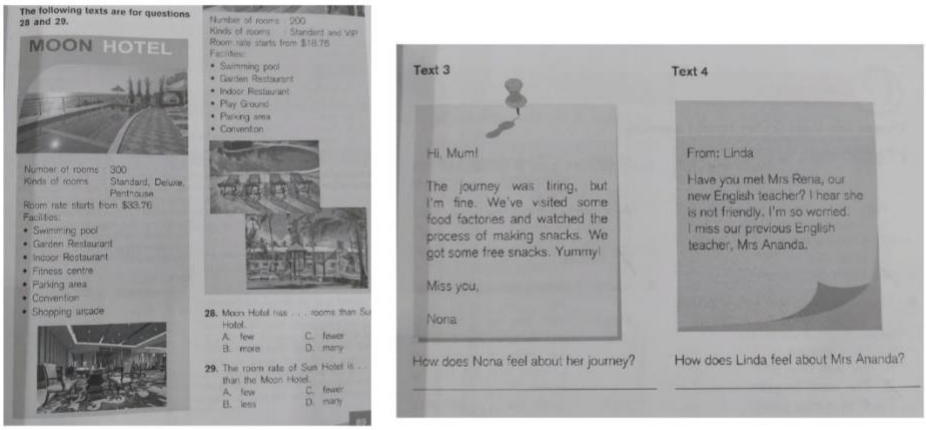


Figure 5: Input and Output Sample for Students

All of the sources in the textbook are provided in helping the learners to do the tasks in the form of materials such as conversation or text shown in Figure 6. The learner also agrees that the source given in the textbook helps them in directing the answer for 58% strongly agree and 42% agree.

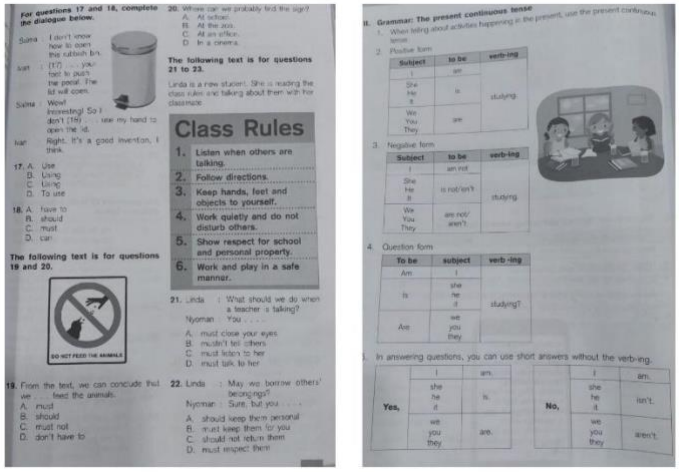
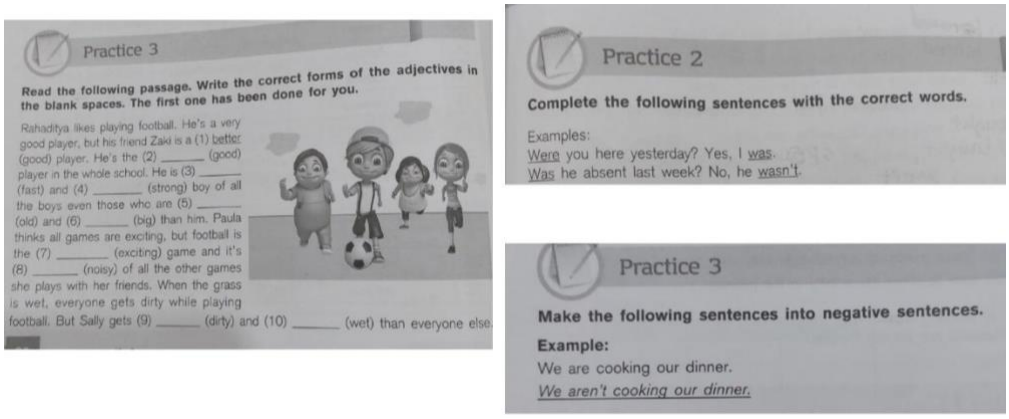


Figure 6: Written Source for Students

There are also 71% examples given related to metalinguistic information for the students while 29% others are non-fiction text or pictures as shown in Figure 7 below. The textbook delivers several examples which are strongly and fairly agreed by 58% and 42 students. Therefore, all students agreed that the sources in the textbook have a role in helping them to finish the tasks.


Practice 3

Read the following passage. Write the correct forms of the adjectives in the blank spaces. The first one has been done for you.

Rahaditya likes playing football. He's a very good player, but his friend Zaki is a (1) better (good) player. He's the (2) _____ (good) player in the whole school. He is (3) _____ (fast) and (4) _____ (strong) boy of all the boys even those who are (5) _____ (old) and (6) _____ (big) than him. Paula thinks all games are exciting, but football is the (7) _____ (exciting) game and it's (8) _____ (noisy) of all the other games she plays with her friends. When the grass is wet, everyone gets dirty while playing football. But Sally gets (9) _____ (dirty) and (10) _____ (wet) than everyone else.

Practice 2

Complete the following sentences with the correct words.

Examples:
Were you here yesterday? Yes, I was.
Was he absent last week? No, he wasn't.

Practice 3

Make the following sentences into negative sentences.

Example:
We are cooking our dinner.
We aren't cooking our dinner.

Figure 7: Nature Aspect of Source Example

The result of the interview revealed that the text or image that is presented is very clear and easy to understand by the teacher. In contrast, the majority of students in this school are at the beginner level of English mastery. Therefore, she described "…my students often have difficulty in understanding the words or phrases that they have just learned in English. In addition, the number of students who have a dictionary is only a few students." For this reason, the teacher always translates the new words into Bahasa Indonesia that can be understood by the students. The teacher thinks that "… the book should function as a dictionary in order for my students to practice language and finish the tasks because of their low ability of English mastery…." She also asked for the learners' output based on their ability level and lesson objectives and helped to explain in Bahasa Indonesia by connecting the material in the book with the context in school or in the student's daily life.

Discussions

This study analyses the tasks in an EFL textbook "Practice Your English Competence" that is currently used by grade 8 of a junior high school in Sumatra, Indonesia as a compulsory book for English lessons. This book follows the K-13 curriculum that focuses on the learners' competency. It aims to determine whether the tasks set out in the EFL textbook "Practice Your English Competence" have met good standards laid down by Littlejohn's theory. The study also would like to find out about the experiences of the textbook users, a teacher and the students, to know the perception of the analyzed textbook. In order to analyze the content in the textbook Littlejohn's framework (2011) modified by Pemberton (2019) is adapted. A Questionnaire and interview were also administered to delve deeper into the perspective of textbook users regarding the tasks presentation which is the focus in this study.

First, the section of tasks expected for the learners to perform. In turn-take, the students are mostly required to respond in narrowly defined language or non-verbal responses. For example, they are asked to produce a text, identify pictures, true or false, and sequence sentences. The tasks in the textbook do not ask students to only read or listen without any other activity. The tasks focus on the language system for the students to practice pattern and apply rule and meaning in a form of comprehension exercise. It is shown that only a few

times students are asked to present a report to the class. Mental operation described in the result interprets that the tasks frequently ask students to select information and applied language rules while the rest of the questions in the tasks necessitate other items such as repetition, meaning inference, and notice language use. On the other hand, there is no rule formulation that is asked in the tasks. The teacher and students also show positive responses on this aspect of tasks. They believe that the book provides tasks that engage critical thinking and problem solving in improving students' language skills.

The second part is regarding the people with whom students interact in finishing the tasks. The textbook fully asks students to work individually. There is no information that students are asked to do the task in pairs or groups. However, the students react positively to their interaction with other people. This reaction is because the teacher provided them to do the tasks in pairs or groups and give additional directions and insight. The teacher then graded students' results by discussing and giving feedback to the learners.

The last section concerning the input and output for the learners. The tasks in the textbook provide several inputs and outputs such as pictures to sequence and written form of words/phrases/sentences that fill in the blanks. The tasks do not provide oral input or output at all. In contrast, the teacher often discusses the task together with the students orally to improve their listening and speaking skills. The sources given in the tasks of the textbook are all in written form such as conversations and texts. The educator needs to giv more explanations and directions in order for students to understand more about the tasks because the textbook does not assign the students to present the results of their own research. The natural input which is metalinguistic information are given in the form of sentence examples and certain use of expressions. There are also non-fiction materials featured in the task. In addition, there is no material that comes from fiction and learners' personal information or opinion because the topic mostly talks about real-life situations. In this aspect, the teacher actively gives additional examples for the comprehension of the students. In conclusion, the input and output of the tasks in the textbook are adjusted and integrated by the teacher considering it mostly presents written contents.

Conclusion

The study focuses on the analysis of the tasks in the textbook of "Practise Your English Competence" used by grade 8 in a junior school in Sumatera, Indonesia. This research aims to determine whether the tasks set out in the EFL textbook "Practice Your English Competence" have met good standards laid down by Littlejohn's theory. The writer also would like to find out about the experiences of the textbook users, a teacher and the students, to know the perception of the analyzed textbook. Based on the data shown in the findings, the tasks have fulfilled some of the criteria featured in Littlejohn's framework. The tasks provide a good process of learning discourse in the aspect of turn-take, language focus, and mental operation which are supported by the users of the textbook in this study. Few classrooms participation is administered in the book since there is no clear explanation of the tasks that required the students to finish them in pairs or groups. For this result, teachers should actively and independently participate and give insight and knowledge as well as asking them to do the task in pairs or groups. Furthermore, the book tasks present good content focus based on the criteria that can be integrated and adjusted by teachers and students to achieve the learning objectives. In addition, both the teacher and the students agree that the tasks of the textbook are helpful and insightful for the language learning but the teacher also believes that there should be some improvements such as language use to be well adjusted for both higher

and lower level of students. Classroom participation and oral contents also need to be well administered on the tasks presented since most of the tasks only employ written forms of knowledge that can improve reading and writing skills, but cannot be enough for improving listening and speaking skills for a more integrated language learning.

Acknowledgements

The author would like to thank Universitas Pendidikan Indonesia (UPI) for providing the academic setting and materials that made this research possible. I am especially appreciative of the facilities and advice provided by the English Education Study Program. Additionally, I would like to thank Lembaga Dana Pendidikan Tinggi (LPDP) for its financial support which was crucial in allowing the researcher to carry out this research.

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Contact email: ayulestari24@upi.edu

Teachers' Work Motivation-Administrators' Leadership Styles Nexus

Jonaidah B. Hadji Said, Mindanao State University-Integrated Laboratory School, Philippines

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
This study focuses on the relationship between leadership styles and work motivation in five private and five public elementary schools in Marawi City, Lanao Del Sur. The research uses the Path-Goal Theory of Robert House to analyze the leaders' leadership styles and the relationship between teachers' work motivation and their leaders' leadership styles. The study found that private school teachers are between 20-25 years old, single, LET passers, English majors, and handling Grade III pupils. They moderately observe their principal's directive leadership style and prefer to follow standard rules and regulations. Public school teachers, on the other hand, are 41-45 years old, married, LET passers, English majors, handling Grade IV pupils, and Teacher I in rank. They prefer their principal to maintain friendly working relationships, listen receptively to teachers, and love their profession. The study found significant differences in perceptions, preferred leadership behavior, and work attitude and values between the two groups. Recommendations include increased open communication between administrators and teachers, employing 100% LET passers for teaching, and encouraging teachers to discern and be open with leadership styles.

Keywords: Work Motivation, Leadership Styles, Directive, Supportive, Participative, Achievement-Oriented

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Introduction

The popularity of leadership is due to the unprecedented changes faced by individuals, groups, and organizations. The literature on leadership has grown, but many individuals make strong assertions without understanding the full context and approaches. Understanding leadership requires more than just reading articles or fantasizing about great leaders.

The relationship between the leadership styles and the work motivation of the subordinates is often the main cause why most of the organizations or any agencies failed or succeed. This study is based on the Path-Goal Theory of Robert House, a contingency approach to leading subordinates, depending on the situation of the subordinate' atmosphere. In this study, the researcher attempted to determine the relationship of the administrators' leadership styles on the work motivation of the teachers in private schools and public schools in Marawi City, Lanao Del Sur. Specifically, it sought to answer the following questions: (1) What is the descriptive profile of the respondents in terms of their age, civil status, eligibility, field of specialization, grade level, length of service, rank, salary, and type of School?; (2) How do the respondents categorize the leadership styles of their administrators in terms of being directive, supportive, participative, and achievement-oriented leaders; (3) What are the respondents preferred leadership behaviours? (4) What are the respondents' work attitude and values?; (5) Is there a difference in the perception of the private and public school teachers on their administrators' leadership styles?; (6) Is there a difference between the private and public school teachers' preferred leadership behavior? (7) Is there a difference between the private and public school teachers' work attitudes and values; and (8) What leadership training program may be developed from the fields of the study?

Furthermore, this study utilized descriptive - inferential method of analyzing data was used by the researcher. It was designed to gather information about presenting existing conditions. This was used to describe the nature of situation as it exists at the time of the study and to explore the causes of particular phenomenon. Also, it was used to make a generalization, estimate prediction or decision. The data gathering was done through the use of self – constructed questionnaire. There were seventy-two (72) private school teachers in the first group of respondents and one hundred sixty-seven (167) in the second group of respondents in public school. The sampling was drawn by multi-stage sampling using Sloven formula and stratified sampling.

Theoretical Framework of the Study

The theoretical framework presents the theories upon which a study is based. This study ensues from the situation that the work motivation of the teachers is characterized or inspired by the administrators' leadership styles. This study was based on the Path - Goal Model of Leadership, which is derived from the Expectancy Model of Motivation developed by Victor H. Vroom. The theory suggests that leaders' roles involve structuring, supporting, and rewarding a work environment that helps employees achieve the organization's goals. They create a goal orientation and improve the path towards achieving these goals. The manager's role is to guide workers in choosing the best paths to achieve their goals and the organization's goals. Leaders must engage in different leadership behaviors depending on the situation, ensuring their goals align with the organization's objectives. Path-goal theory, a dyadic theory of supervision, focuses on the relationship between formally appointed superiors and subordinates, examining how they affect motivation and satisfaction. It is a

dominant paradigm in leadership studies since 1975, focusing on the effect of superiors on subordinates rather than leaders on groups or work units.

A leader's behavior is considered acceptable when it provides satisfaction and motivation to subordinates, and the leader facilitates, coaches, and rewards effective performance. The path-goal theory identifies four types of leader behaviors: directive, achievement-oriented, participative, and supportive. Directive behavior involves setting clear expectations and tasks, which is most beneficial when subordinates' roles and task demands are ambiguous and intrinsically satisfying. Achievement-oriented behavior involves setting challenging goals and showing confidence in subordinates' ability to meet these expectations, particularly in technical jobs, sales, scientists, engineers, and entrepreneurs. Participative leader behavior involves consulting with followers and asking for their suggestions before making decisions, especially when subordinates are highly personally involved in their work. Supportive leader behavior focuses on satisfying subordinates' needs and preferences, showing concern for their psychological well-being, especially in situations where tasks or relationships are psychologically or physically distressing.

The path-goal theory suggests that leaders can adapt their style to suit situations, with environmental factors and follower characteristics influencing the leader-outcome relationship. Effective leaders clarify the path, reduce obstacles, and compensate for shortcomings in the employee or work setting, resulting in improved employee performance and satisfaction. According to Northouse (1996), the theory is useful because it reminds leaders that their central purpose as a leader is to help subordinates define and reach their goals in an efficient manner.

Schematic Diagram of the Study

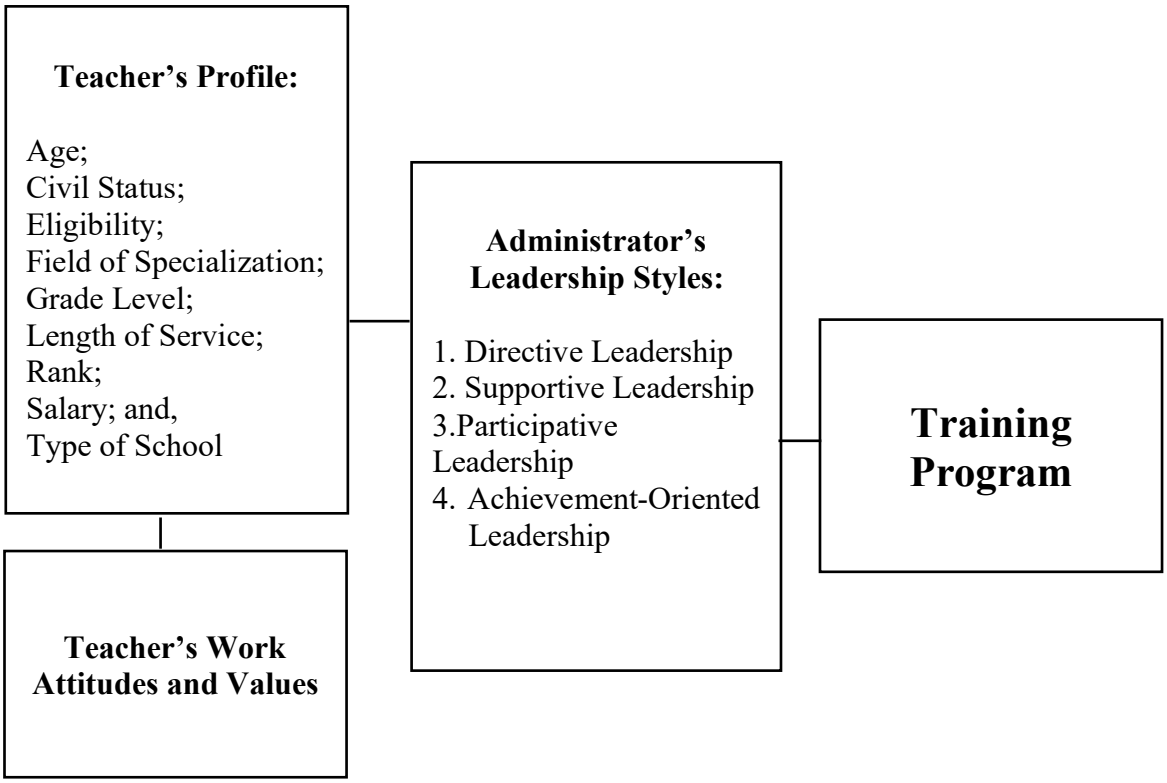

Figure 1: Schematic Diagram Showing the Variables of the Study

Null Hypothesis of the Study

The following null hypotheses were tested at 0.05 level of significance:

Ho1: There is no significant difference between the private and public-school teachers' perceptions on their administrators' leadership styles.
Ho2: There is no significant difference between the private and public-school teachers' preferred leadership behavior.
Ho3: There is no significant difference between the private and public-school teachers' work attitudes and values.

Findings, Conclusion and Recommendations

Findings

I. Descriptive Profile of the Respondents

The findings of the study revealed the following: many of the private school teacher-respondents are between 20-25 years of age, single, LET passers, English majors, and handling Grade III pupils. Furthermore, majority of them are 1-3 years in service and receiving a monthly salary of 8,000 php - 11,000 php. Moreover, the private school teachers moderately observed that their principal has more directive leadership styles; they prefer that their principal should ask teachers to follow standard rules and regulations; and, the best work attitude and values manifested by the private school teacher-respondents is showing interest and love to their pupils. For the public school teacher - respondents, many of them are belong to the age bracket 41 – 45 years, married, LET passers, English majors, handling Grade IV pupils, 16–20 years in service, Teacher I in rank, and receiving 16,000 php – 19,999.

II. Leadership Styles of the Administrators as Perceived by the Private and Public-School Teachers

In summary for the, the private school teachers moderately observed that their principal has more directive leadership styles while the public school teacher-respondents considered their principal to have highly manifested the directive leadership style.

Directive Leadership Style

In the private schools, the directive leadership style indicator that was moderately observed by the respondents is when the principal monitors the teachers for progress and specifies needed corrections to insure the quality of the output. In the public schools, as a directive leader, the respondents highly observed their principal is always asking teachers to follow standard rules and regulations.

Supportive Leadership Style

In the private schools, for the supportive leader style, the respondents moderately observed that their principal settles conflict when it happens. For the respondents in the public schools, as a supportive leader, the respondents highly observed their principal is helping the teachers accept their responsibility for completing their work.

Achievement - Oriented Leadership Style

In the private schools, for the achievement - oriented leader style, the respondents moderately observed their principals letting teachers know that he/she expects them to perform at their highest level. In the public school t the respondents highly observed that their principal believes he/she can lead; the teachers can lead themselves just as well.

Participative Leadership Style

For the participative leadership style, the respondents moderately observed their principals use their leadership power to help subordinates grow in the private school, while in the public schools, for the participative leader style, the respondents highly observed that their principal works best to help teachers build lasting personal strengths that make them more successful.

III. Respondents' Preferred Leadership Behavior

The private school teacher-respondents prefer that their principal should ask teachers to follow standard rules and regulations. For the public-school teacher respondents, they prefer that their principal should maintain a friendly working relationship with the teachers and should listen, receptively to teachers about what needs to be done and how it needs to be done.

IV. Work Attitudes and Values of Teachers

The best work attitude and values manifested by the private school teacher-respondents is showing interest and love to their pupils while the public-school teacher - respondents reveal that they love their profession.

This only implies that the success of the teacher will also depend upon his understanding of each learner as a unique individual who is responding to a very complex environment. Hence, the administrators should help the teachers to continually improve themselves with the teaching competencies which will guide the students learning.

V. Hypotheses Testing on the Difference of Respondents' Perceptions

Difference in Perception on Administrators' Leadership Styles

There is a significant difference between the private and public school teacher - respondents' perception on their administrators' leadership style.

The finding implies that the two sets of school administrators have different ways of leadership styles towards their subordinates. It may be because of the different environments and needs of the subordinates. The administrators apply different leadership styles, ranging from directive, supportive, participative to achievement-oriented.

Hence, the first null hypothesis (There is no significant difference between the private and public-school teachers' perceptions on their administrators' leadership styles) is rejected provided that there is a significant difference between the private and public school teacher - respondents' perception on their administrators' leadership style.

Difference Between the Respondents' Preferred Leadership Behaviors

There is no significant difference between the private and public school teacher-respondents' preferred leadership behavior.

This signifies that they are of a common frame of mind in the leadership behaviors of the administrators. In any institutions, teachers have the same in deep regarding what they want in their environment. Or in any agencies, workers prefer same styles of leading because they may feel same agony since they are working in one city that dominant of the inhabitants are Meranao.

Therefore, the second null hypothesis (There is no significant difference between the private and public-school teachers' preferred leadership behavior.) is accepted provided the two sets of groups share the same preferences in leading.

Difference Between the Respondents' Work Attitudes and Values

There is a significant difference between the private and p public school teacher - respondents' work attitude and values.

This means that there are some of the work attitudes and values of private school teachers and public school teachers are of difference as it was surveyed that in private school teachers love their pupils while in the public schools, teachers love their profession. In addition, one factor also that causes the two sets of schools to be significantly difference in their work attitudes and values is the salary they are receiving. Most people's motivation in their job comes from the money, they receive and stimulation and challenge- the chance to learn. Bringing an optimistic attitude to the workplace will create a culture of innovation. The creativity and stimulation of ideas will keep the workforce motivated and keen to learn. By this, the administrators may find ways to cultivate more the work motivation of the teachers to avoid or lessen the negative thought or attitudes of some teachers in their work. This may put in positive reinforcement like reward system and increment of salary, or, negative reinforcement like deduction of salary. This is one of the reasons why most of the administrators 'adopt directive leadership styles to specific standards required of their subordinates and exercise firm authority over them.

Hence, the, the third null hypothesis (There is no significant difference between the private and public-school teachers' work attitudes and values.) is rejected provided there is a significant difference between the two sets of groups in work attitudes and values.

Conclusion

Private school teachers, particularly those in early adulthood, are idealist, obsessive, and fanatical in their work attitudes. They prefer a directive leadership style to foster motivation and adapt to their physical and mental decline. Public school teachers, in middle age, expect clear, definite leadership and maintain friendly working relationships with teachers. Most teachers are single, allowing them to concentrate fully on their work. Monthly salaries for teachers in private schools should be increased to compensate for poverty. However, many school administrators use directive behaviors to ensure better outcomes, potentially restricting their potential and not valuing creativity and initiative. Different school administrators use different styles in leading depending on the situation.

Recommendations

Based on the findings and conclusion, the following recommendations are formulated: (1) The administrators should be more open with their subordinates. The best advantage of this is that everyone gets a chance to participate. This fosters a sense of equality within the subordinates and that helps everyone feel important as contributors. The school administrators should conduct a regular meeting with their subordinates to remind them about their work efficiency and effectiveness. Also, to ensure the quality quantity of learning-teaching process the school administration should employ hundred percent LET passers for their teaching force.; (2) Definitely, the school administrators and teachers should attend different trainings and seminars to acquaint themselves with their prior tasks. A seminar on leadership and work attitudes and values must be conducted to improve their work output. In this way also, their ideas and knowledge will be increased and they will be enlightened.; (3) The teachers should discern and be open with what leadership styles that the administration is practicing. This will also give them advice on what leadership style to adopt when the time comes for them to take the lead in their respective institutions.; (4) The students should be aware of the leadership's styles of the administrators where they are schooling. In this case, the students should be aware of what are the roles of the school administrators toward them.; (5) The parents should convey knowledge and work cooperatively regarding the situation of being a teacher and understand the limitations, rules, and regulations of the teachers inside the four corners of the classroom.; and, (6) A study of leadership styles as adopted by the administrators may be an interesting topic of further study by future researchers.

Appendices

Appendix 1. Suggested Training Program

Rationale

What are the virtues of a true leader? Are leaders born or made? Can one learn to be a leader? Leadership qualities are inborn in some people while others have to develop it. With this suggested training program, the administrators and teachers may be rouse with what they are facing in the present scenarios. The whys and wherefores of the administrators in having an effective way to nurture the work motivation of the teachers will be overheard.

The teachers may apprehend the reason why sometimes their administrators retain a directive behavior to their subordinates is because of multi-accountabilities and situations that need to be addressed and finished. There are also some subordinates who are lazy and need to be pushed with firm authority. This training is made to acquaint the leaders and teachers to be guided on what may be the best style of leadership to be used.

General Objective: To strengthen the relationship between the administrators and the teachers towards attaining the desired goals.

Specific Objectives:
1. To develop awareness among the administrators regarding their roles and functions.
2 To enhance expertise of the administrators in deciding what leadership styles they should preserve.
3. To elicit and address the negative attitudes and values of the teachers in their work
4. To encourage and motivate the teachers to work accurately to their fullest.

Target Clientele: Elementary Administrators and Teachers in Marawi City, Lanao Del Sur.

Time Frame: 3-Day Training Program

Funding/Resources: Participants will pay a meager amount as registration fee to defray the expenses like speakers' honorarium, handouts, snacks and others.

Appendix 2. Training Design

Day 1				
Time	Location	Topic	Person	Strategies/Activities
8:00 - 11:00am	Function Hall	Department Orientation Department's Role/Mission ➢ What department Does ➢ Job Description/Title ➢ Performance Expectation	Supervisor	There will be design programme for daily activities. At the beginning of the training there will be an exercise to be led by the young teachers (first assigned school) Each school has a Ice breaker and leadership style presentation
1:00 - 4:00pm	Function Hall	Overview of Duties/Responsibilities Open Forum	Supervisor	lce breaker (second assigned school) After an introduction of the duties and responsibilities of the teachers and administrators there will be a role play about duties and responsibilities to be presented by the assigned school.
Day 2				
8:00 - 11:00	Function Hall	The Art of Leadership	Guest Speaker	An exercise to be led by assigned school. There will be a discussion of the leadership and motivation of the teachers.
1:00 - 4:00pm	Function Hall	Ways to discover what motivates your subordinates	Guest Speaker	There will be a presentation of short movie about leaders The teachers will be given a checklist of what leadership styles they prefer. This will be discussed the next day.

Day 3				
8:00 - 11:00	Function Hall	The Use of Different Leadership Styles of |Administrators base on Path-Goal Theory Directive Leadership Participative Leadership Supportive Leadership Achievement Oriented	Guest Speaker	lce breaker to be led by the assigned school. Discussion of leadership style based on the activity given (checklist).
1:00 - 4:00pm	Function Hall	Open Forum Releasing of Certificate	Host/Emcee	Presentation of each leadership style in a role play. Training Evaluation (Participants will be given a form to assess and evaluate the training.) Comments and suggestions will be highly appreciated. Releasing of Certificate

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Contact email: hjonaidah@gmail.com

Beyond Idealism: Fostering Ethical Practices Among Preservice Special Education Teachers

Linda Oshita, University of Hawai‘i at Mānoa, United States
Shawna Ortogero, University of Hawai‘i at Mānoa, United States

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
Many preservice teachers enter their training programs with preconceived ideals of the qualities of a “good” teacher. Although some qualities are admirable, these ideals are vague and can potentially lead to problematic and complicated interactions between students and teachers. Establishing professional boundaries with students and their families is necessary for healthy and ethical relationships between teachers and students. Extant research suggests teachers who make instructional decisions based on ethical principles can better teach, manage student behaviors, and work more effectively with families (Able et al., 2017; Cartledge et al., 2001; Fiedler & Van Haren, 2009). These findings underscore the importance of teaching educator ethics to preservice teachers. In this qualitative exploratory study of 36 preservice special education teachers from a university teacher preparation program in the western United States, the authors examined preservice teachers’ perceptions of learning about the Model Code of Educator Ethics (MCEE). Results of this study suggest: (1) learning about MCEE creates a paradigm shift in preservice teachers’ conceptualization of teacher and student relationships; and (2) preservice teachers benefit from ethics instruction, including opportunities to explore professional boundary parameters and strategies for establishing and maintaining healthy professional relationships with students and families.

Keywords: Educator Ethics, Preservice Teachers, Preservice Special Education Teachers, Professional Boundaries

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Introduction

Care is the foundation of the teacher-student relationship (Noddings, 2012). It is a commonly held belief that a caring teacher can motivate and encourage students to achieve academic goals (Aultman et al., 2008; Noddings, 2012). Care for students is considered a critical value that "good" teachers possess, a belief that is deeply rooted in the teacher narrative. The desire to care for students who are in need is an often-cited reason for individuals who enter the teaching profession (Fray et al., 2018; Perryman et al., 2020).

According to Aultman et al. (2008), "demonstrating an "ethic of care" in teaching suggests ethical behavior [is inherent] in the act of caring" (p. 637). Indeed, students and their families have a reasonable expectation to trust that teachers are properly teaching and caring for students in their charge. Teachers exercise considerable autonomy in their daily responsibilities and are expected to make decisions that are in the best educational interests of their students, making it imperative that teachers understand and demonstrate the "ethic of care." However, "care" is a subjective concept that can be interpreted and enacted in various ways under different settings and conditions. This ethos of "care" breeds subjectivity, and it underscores the importance of teaching preservice teachers a common language and set of collective beliefs that the profession subscribes to, known as professional ethics (Hammonds, 2020).

As teachers establish and nurture "caring" relationships with students, they will likely find themselves in situations where they must draw boundaries between themselves and their students (Bernstein-Yamashiro & Noam, 2013). As Aultman et al. (2008) suggest teachers, particularly beginning teachers, struggle with establishing and maintaining appropriate boundaries with students. It is critical for teachers to maintain a balance between their care for students and upholding their professional responsibilities. A code of ethics is one tool that teachers can use to help them maintain professional integrity in their decision-making with regard to student care. Research findings in this area suggest that a teacher's knowledge and application of professional ethics to their decision-making positively impact their practice and their ability to interact professionally with families (Able et al., 2017; Cartledge et al., 2001; Fiedler & Van Haren, 2009).

Educator Ethics

A code of ethics is a set of principles that guide professionals in their decisions and interactions with clients, colleagues, and the general public. A code of ethics is one way to make transparent the values and expectations held by teachers (Maxwell, 2017). Historically, American professional educator associations have developed ethics codes for their constituents. For example, the National Education Association's Code of Ethics for Educators was developed in 1975 (NEA, 2018) and the Joint Committee on Standards for Educational Evaluation's Student Evaluation Standards was developed in 2010 (Bergman, 2018). In 2015, the National Association of State Directors of Teacher Education and Certification developed the Model Code of Ethics for Educators (MCEE). The MCEE is a set of principles and values deemed critical to teachers and provides a common language and belief system that allows teachers to make complex ethical decisions (Hammonds, 2020). However, the mere existence of an ethics code is not sufficient to ensure that teachers are making ethical decisions. Teachers, particularly beginning teachers, need to learn how to apply ethics to the daily situations they encounter in the classroom (Apgar, 2018; Combes et al., 2016; Decker et al., 2022).

Teaching Professional Ethics to Preservice Teachers

There is no one definitive way to teach preservice teachers how to apply ethical principles to their decision-making process. Several approaches exist, each with its benefits and limitations (Soltis, 1986; Strike, 2003; Warnick & Silverman, 2011). As such, teacher educators are tasked with finding models that best meet the needs of their preservice teacher population. Teacher educators may find that preservice teachers benefit from a mix of several approaches. In the next section, the authors describe two promising approaches to teaching preservice teachers the application of ethics.

Pedagogically Productive Talk

Pedagogically productive talk is a discussion format that involves using relevant profession-related scenarios and examples to encourage students to engage in collaborative discourse to strengthen their ability to make professional decisions (Lefstein et al., 2020). Pedagogically productive talk provides a means for preservice teachers to discover approaches to manage and respond to ethical challenges that they are likely to face in their profession. In this model, preservice teachers learn to interpret ethical scenarios and dilemmas and to use strategies to find ethically sound courses of action (Lefstein et al., 2014). When selecting scenarios and dilemmas for discussions, it is important to use examples that are realistic and depict situations that teachers may likely encounter on the job (Soltis, 1985; Lefstein et al., 2020). For meaningful discussions and learning opportunities, it is recommended to spend more time discussing seemingly benign situations that could result in ethical breaches as opposed to sensationalized cases reported in the media (Soltis, 1986; Warnick & Silverman, 2011). Preservice teachers benefit from repeated practice in using this model as it deepens their learning in identifying potential problems and builds their skills in proactively addressing ethical issues.

Mixed Approach

Warnick and Silverman's (2011) mixed approach method is another instructional strategy that can be used to teach ethical applications for preservice teachers. This method addresses the complexities of ethical issues and balances the need to understand various philosophical underpinnings with practical ethics application to situations. It utilizes an expanded framework for case analysis to engage preservice teachers in objective ethical decision-making. The steps include: (1) collecting relevant evidence, (2) considering the perspectives of various stakeholders, (3) defining the ethical dilemma, (4) outlining potential ethical courses of action, (5) examining philosophical theories related to these potential courses of action and the downstream consequences of both actions and inactions, (6) reviewing the teacher's roles and duties, (7) locating additional sources of information, (8) justifying the most ethical course of action, and (9) planning steps for follow-up and assessing the outcome of the decision.

Given the importance of teaching preservice teachers about educator ethics and its application to establishing and maintaining professional boundaries with students, it is imperative to understand preservice teachers' perceptions of student care and setting professional boundaries.

Purpose of Study

The purpose of this qualitative case study was to explore preservice teachers' perspectives on establishing and maintaining professional boundaries in their roles as teachers, following their training on the MCEE. The rationale for teaching the MCEE to preservice teachers in this study also has a practical purpose. The local teacher licensing board adopted the MCEE and requires all teachers, including the preservice teachers, to learn the MCEE principles as a licensure requirement. Results gleaned from this study will shape the MCEE curriculum and the development of future seminars for preservice teachers. This qualitative study was designed to answer the following research question: What are preservice teachers' perceptions about professional boundaries after learning about the Model Code of Educator Ethics (MCEE)?

Method

Thirty-six (n = 36) preservice teachers enrolled in a special education teacher preparation program in the western United States participated in this study. The majority of participants (n = 30) identified as female, with only six participants identifying as male. Participants ranged in age from 23 to 61 years old with many of the participants sharing that they were in their thirties (n = 17). Eight participants were in their twenties, seven in their forties, three in their fifties, and one participant was in their sixties. The participants represented diverse ethnic backgrounds, with the majority identifying as White (n = 9). Seven participants identified as Asian, five as Native Hawaiian or other Pacific Islander, five as of mixed ethnic backgrounds, and one as African American. The ethnicities of the remaining nine participants were unspecified (see Appendix A for participant demographics).

Sampling Procedures

Purposeful sampling was used to identify and select study participants. Purposeful sampling enables the selection of well-informed participants with firsthand experience of the phenomenon under study, allowing for in-depth insights into the topic of interest (Patton, 2002). All preservice teachers in this study were required to attend MCEE seminars to meet program requirements, making them prime candidates to share insight into their perceptions of professional boundaries after attending MCEE seminars.

At the start of the first seminar, preservice teachers were informed of the research study and voluntarily consented to participate with the understanding that electing to participate or not had no benefit or consequence to them. Participants were informed that they could drop out at any point during the study, with no penalties. The university's Institutional Review Board approved all procedures.

Setting

Participants attended a 90-minute MCEE Zoom seminar each semester over four semesters. They spent a total of six hours in synchronous activities on Zoom and approximately eight hours of asynchronous self-directed work (e.g., assigned readings, videos) before and after each seminar. Participants had access to seminar materials (e.g., Google slides, readings) before, during, and after each seminar.

MCEE Seminar Facilitators

Three faculty members facilitated the seminars each semester. These facilitators were trained by MCEE specialists. Prior to teaching in higher education, all seminar facilitators taught PreK-12 special education in local public schools.

Seminar Focus

The objective of the MCEE seminar series was to teach participants about the MCEE and its application to teaching. To achieve this purpose, elements of the pedagogically productive talk model, in which purposeful discussions with peers and instructors about relevant, job-specific scenarios were embedded into instruction, allowing participants to develop and practice critical thinking and application skills. Over time and with practice, the intention was for them to develop a deeper understanding of ethics and learn how ethical principles are applied to help them make ethically sound decisions.

The seminar content was structured and scaffolded for participants. First, seminar facilitators introduced the five MCEE principles. Participants read relevant material and watched videos that introduced the topic. Next, facilitators taught participants how to analyze ethical scenarios. Participants were then assigned to small groups, with each group assigned to analyze an ethical scenario and come up with an ethically justifiable course of action. Each small group shared their findings with the whole class, and the faculty facilitated reflective discussions about each group's process for determining the most ethically appropriate course of action to address the various ethical scenarios. After completing each seminar, participants submitted a required reflection paper (see Appendix B for the seminar overview).

Outcome Measures

Qualitative data were collected from recorded MCEE seminar discussions and MCEE reflection papers. The recorded MCEE seminar discussions were transcribed. The MCEE seminar discussion prompts and reflection paper prompts were created based on the seminar objectives and informed by research on effective approaches to preparing preservice professionals in professional ethics.

MCEE Seminar Discussions

The seminar discussions were semi-structured and based on questions such as: (1) Why is it important to have an ethics code for educators? (2) What do these MCEE principles mean for teachers? (3) What types of risks are associated with this ethical dilemma? (4) Using the MCEE principles as a guide, how can you mitigate ethical risks? (5) How might you justify the courses of action your group recommended?

Additionally, facilitators taught participants to use a case study analysis framework to analyze and discuss ethical scenarios. The framework included questions such as: (1) What is the dilemma? (2) What MCEE principles apply to the dilemma? (3) Identify potential professional risks to the teacher, student(s), and the school community associated with the dilemma, and (4) Discuss possible responses to the dilemma that mitigate the risks by using MCEE principles (see Appendix C for the framework).

During the first three MCEE seminars, facilitators assigned participants ethical scenarios to analyze and discuss. Seminar facilitators and the authors of this paper purposefully designed and selected scenarios that best illustrated each MCEE principle. They also ensured the scenarios were relevant and job-embedded (Soltis, 1985; Lefstein et al., 2020) and did not include sensationalized cases reported in the media (Soltis, 1986; Warnick & Silverman 2011). At the final seminar, participants brought written descriptions of professional ethical dilemmas or scenarios they encountered or observed in their field experience classrooms for class discussions.

MCEE Reflection Papers

After each seminar, participants were required to submit a written reflection that addressed the following questions: (1) Describe your prior knowledge/understanding of MCEE before you attended this seminar, (2) What new MCEE information did you learn from this seminar?, and (3) Describe ways you will apply MCEE to your teaching.

Study Design and Analysis

In this exploratory qualitative study, participants were intentionally chosen to provide detailed, real-world insights based on their experiences with the topic over time (Creswell, 2007). Multiple data sources were examined to provide a comprehensive description of a shared event (i.e., MCEE seminars) as experienced by different individuals (Creswell, 2007).

The authors employed a constant comparative method of data analysis, which involves examining data to identify emerging categories until saturation is reached (Creswell, 2007). The authors followed a three-step coding process. First, they conducted open coding to identify patterns and form categories (Creswell, 2007). Second, they used axial coding to create a visual model that grouped related themes from the initial categories (Creswell, 2007; Strauss & Corbin, 1990). Finally, they applied selective coding to refine and validate the relationships identified in the axial coding process (Creswell, 2007; Strauss & Corbin, 1990).

Validity & Reliability

Prolonged engagement and triangulation were used as validation strategies (Creswell, 2007). The authors spent two years working closely with participants in various roles (e.g., academic advisor, course instructor, clinical supervisor). This extended relationship allowed the authors to establish rapport, and gain an understanding of the participants' culture, which helped co-create the phenomena and limit data distortions (Creswell, 2007). Triangulation was employed to validate the findings by using multiple data sources (reflections, seminar discussions), a method that draws on different types of evidence to bring a theme or perspective to light (Creswell, 2007).

To enhance the reliability of this study, the two authors utilized peer debriefing, where they reviewed the data interpretations through each phase of coding and discussed data points to reach 100% intercoder agreement. Notes were taken during peer debriefing sessions for accountability and used in the constant comparative method and selective coding phase.

Results

The purpose of this qualitative study was to explore teacher candidates' perceptions about professional boundaries after learning about the MCEE with regard to the following research question: What are preservice teachers' perceptions about professional boundaries after learning about the Model Code of Educator Ethics (MCEE)?

Two major themes emerged from the data. First, preservice teachers recognized the importance of establishing and maintaining professional boundaries between themselves, their students, and their families after learning about the MCEE. Second, preservice teachers perceived that learning about the MCEE was beneficial as it offered them opportunities to explore professional boundary parameters and strategies for establishing and sustaining professional boundaries with the multiple stakeholders with whom teachers are required to engage.

Theme 1: Paradigm Shift in Conceptualization of Teacher and Stakeholder Relationships

Participants expressed that the MCEE seminars changed their perceptions about their relationships with students and their families. This paradigm shift appeared to move from feeling obligated to establish deep personal relationships with their students and families to better understanding the importance of establishing professional parameters to prevent ethical risks. Participants alluded to their perceptions of what they thought was expected of teachers, such as being available to students and families 24 hours a day and being more lenient with rules and expectations when a deep personal relationship existed with a student. For example, a participant shared that "...sometimes people within the community feel as if there should be more leniency because we are all neighbors, know each other, are good family friends, or are even blood-related." Another participant shared "I have found that a lot of students really want to know their teachers on a more personal level, but I think that can be considered as inappropriate after attending the MCEE seminar." One participant stated "I have a much clearer understanding of how important boundaries and professional responsibility is as an educator. [However] [w]ith everyone having the idea that I am available 24/7, it can be challenging to set those boundaries…."

Many participants expressed their shift in thinking from what they thought was expected of teachers to the desire to establish more professional boundaries after learning about MCEE and reflecting on their experiences.

One participant stated:

> Although I do care for them and want the best for them, and although I believe teaching to the whole student is a powerful and effective way to carry out these goals, it must also include wise boundaries like always including parents in conversations and plans with students, keeping a professional distance by resisting urges to drive a late student home or offer to tutor students outside of the school setting.

As expressed in the following participant statement, the concept of establishing clear parameters between one's personal life and professional responsibilities as a teacher began to crystallize as a result of the seminars.

> Another key point that was emphasized in the last seminar is that it is extremely important to set a boundary between our work and personal life. It seems that more severe violations occur when educators forget to set clear boundaries between our professional and personal matters. I learned in the previous seminar that we should purposefully keep those boundaries separate.

Learning about the MCEE principles seemed to give participants a solid foundation that fostered a new sense of confidence on which to base their decisions when establishing professional boundaries. For example, a participant shared "One area I will immediately begin applying the principles is through my interactions with parents and setting boundaries." Participants seemed to find comfort in being absolved from making decisions about boundary setting based on personal reasons and instead grounded their decisions based on MCEE principles that are reflective of educator professional norms. In addition to recognizing the importance of setting professional boundaries with students and their families, participants also learned strategies for developing the skills to establish and maintain professional boundaries with stakeholders.

Theme 2: Benefits of Learning Strategies for Establishing Professional Boundaries

The second theme that emerged centered around the benefits of learning how to establish and maintain professional boundaries with stakeholders. Participants perceived learning about the MCEE to be beneficial and shared that after learning about MCEE they gained the following strategies to add to their "toolbox" of establishing professional boundaries: (a) strategic communication methods with students and their families, (b) communication with colleagues to discuss potentially difficult situations; and (c) using MCEE as a framework to assess risk and make ethically justifiable decisions.

Strategic Communication

Participants valued the importance of strategic communication for establishing professional boundaries when interacting with students and their families. Using work email accounts and work phone numbers as a mode of communication, documenting communications, and explicitly communicating clear parameters to students about professional boundaries were mentioned by participants as methods for strategically communicating with students and their families in a way that honors professional responsibilities while simultaneously maintaining professional boundaries. For example, a participant said, "It is important to document forms of communication to protect yourself and to handle things right away." Another participant shared that emailing students and their families allows teachers to preserve communication while maintaining professionalism and can foster collaborative problem-solving. One participant highlighted the importance of using professional email accounts and phone numbers to establish professional boundaries as providing families with one's personal contacts can create unrealistic expectations.

> I…learned that setting boundaries is important and using your personal cell phone as communication with parents is not a good device for communication, instead [sic] using your classroom phone or your [work] email is recommended! I need[ed] to set office hours and provide my email if they ever needed it…I had to deal with various ethical situations from parents calling me after hours to students finding me on social media. I need[ed] to set boundaries and stay professional!

One participant described the strategy of sharing the MCEE with students and communicating explicitly to them the importance of professional boundaries:

> In my future classroom, I can promote the use of the MCEE into my teaching by making sure there is a very clear line between me and my students. They must know that I am only their teacher and that there are certain things that are considered out of bounds and inappropriate…Although building strong professional relationships with your students is important, they should know what is considered appropriate, too, not just the teachers.

In addition to communicating about the MCEE and the relationship boundaries with students, communicating with colleagues was another strategy that participants shared they learned from the MCEE seminars to assist them with boundary setting.

Relying on Colleague Support

The structure of the MCEE seminars created opportunities for participants to engage with their peers. Participants were put in groups and assigned an ethical scenario with the task of discussing and collaborating with their peers to arrive at ethically justifiable responses. Through this process, participants discovered that their classmates and future colleagues were invaluable resources to whom they could turn when faced with ethical dilemmas involving a range of perspectives, including stakeholders. One participant stated, "If we have an opportunity to talk with our colleagues, we can remind ourselves to learn strategies from each other on how to prevent risky situations…" Participants seemed to relish in perspective-taking, learning from one another, and building on one another's ideas as they navigated through the ethical dilemmas together. For example, one participant shared "I did gain some 'aha' moments and some gainful insights from my peers when going through the different discussion scenarios." Learning about the MCEE under conditions that encouraged collaboration with others allowed participants to have meaningful conversations about professional ethics with their peers and helped them create collegial relationships that encouraged them to continue these conversations in the future. One participant stated, "After the seminar, I buddied with a couple of new teachers to form an alliance to look out for each other when we're approaching potential ethical areas or saying something potentially unethical."

Relying on the MCEE in Decision-Making

Participants found the value in relying on the ethical norms of the teaching profession (i.e., MCEE) rather than relying on their personal morals and beliefs. A participant shared "Like most people, teachers follow their own morals or values…However, those morals could be biased and influence the way teachers make decisions." Learning about MCEE also seemed to unite the participants in using the MCEE as a guide when making decisions and modeling skills for their students.

A participant noted that:

> I didn't expect this seminar to invoke so many thoughts and feelings about how ethics is a necessary tool that we can implement in our profession. We can use the principles as guides to help us make decisions and choices to meet our personal goals of the

> teachers and people we want to be. We can use and model the principles to teach our students the skills that will help them succeed in life.

Another participant expressed the following:

> MCEE principles are not the rules but the guidance to find the right path that validates our professional identity and protects us from making unethical decisions…That is why MCEE principles are critical because it guides us to look at the problem from multiple perspectives to make appropriate decisions with ethical choices while individualizing the unique needs.

The questions posed to participants also allowed them to consider multiple perspectives and served as a framework to help with decision-making. It helped them analyze ethical scenarios and arrive at ethically justifiable decisions, which seemed to bode well with participants. The MCEE seminar questions "will help me to think through a situation. Identifying the risks will help to get clarity about it. The risks will also inform me of possible solutions…" said one participant. The ethical scenarios provided to participants helped them to reflect and leverage the MCEE principles as expressed below by a participant.

> As we learn about various scenarios and stories of how decisions can directly and indirectly affect the outcome of your circumstances, you gain the knowledge of how to make better choices. I appreciated the opportunity during the Model Code of Ethics for Educators (MCEE) seminar to reflect and think about how the different situations that we can find ourselves in can be misinterpreted or misconstrued.

These findings suggest that participants developed a more nuanced understanding of their professional responsibilities and how they may conflict with others' (e.g., parents, students) expectations. They learned strategies to uphold professional integrity and responsibilities while developing and maintaining collaborative relationships with students and families.

Discussion

As Aultman et al. (2008) shared, beginning teachers are likely to struggle with establishing and maintaining appropriate professional boundaries with families; sentiments that were expressed by the participants in this study. A reason for this may be due to the assumption that, as one participant wrote, "teachers must treat students as if they are their own [children]." Participants described situations where they gave their personal cell phone numbers to parents or they received requests from parents to tutor their child outside of school hours, which suggests these instances are not uncommon. These findings showcase the inevitable professional boundary conundrum that teachers eventually face as they are entangled in the teacher's ethos of care (Bernstein-Yamashiro & Noam, 2013) and suggest the importance of understanding the professional ethics code and having the skills to apply it to the situations they encounter in teaching.

A paradigm shift must occur for preservice teachers to understand the ethical implications of unclear boundaries. As the results of this study suggest, participants were surprised to learn about the possible ethical problems that may arise when professional boundaries become blurred. This finding is supported by the work of several scholars (Able et al., 2017; Cartledge et al., 2001; Fiedler & Van Haren, 2009), and it suggests the need for ethics instruction for preservice teachers. Providing preservice teachers with opportunities to

explore and discuss professional boundary parameters and strategies for establishing and maintaining healthy professional relationships with students and families can positively impact a teacher's instructional decisions, classroom management practices, and ability to collaborate with stakeholders ethically and professionally (Able et al., 2017; Cartledge et al., 2001; Fiedler & Van Haren, 2009).

Results of this study also suggest that preservice teachers benefit from the mixed approach and pedagogical productive discussion with their peers, as it allowed them multiple opportunities to analyze relevant, school-based scenarios for meaningful discussion and application using MCEE and guiding questions as a decision-making framework. This finding is supported by Bergman (2018) and Lefstein et al.'s (2020) research. Purposeful and intentional discussions that allow preservice teachers multiple opportunities to analyze, discuss, and apply MCEE to relevant, school-based scenarios are key in helping them understand the complexities and context-based nature of the MCEE and its application to establishing professional boundaries in their teaching practice. Preservice teachers should also have opportunities to practice their ability to view scenarios from different stakeholder perspectives that are grounded in professional ethics and identify competing tensions under various contexts. Discussions with peers who have diverse life and school experiences should be encouraged and included as part of the professional ethics instruction, as it can deepen their understanding of how to navigate ethical dilemmas that deal with boundary setting and provide them with approaches to strategically communicate, establish, and maintain professional boundaries rooted in the ethical norms of the teaching profession.

Conclusion

In conclusion, the findings of this study emphasize the importance of providing preservice teachers with structured opportunities to learn about professional ethics so that they can explore and practice professional boundary setting within an ethical framework. The challenges preservice teachers face with navigating personal connections with stakeholders (e.g., families, students) and understanding the potential ethical dilemmas of blurred boundaries, highlight the need for intentional ethics instruction in teacher preparation programs. Purposeful discussions grounded in pedagogically productive talk that fosters peer collaboration, and scenario-based learning can be effective tools to help preservice teachers grasp the complexities of professional ethics and boundary maintenance. By incorporating ethics training that emphasizes context-based decision-making and perspective-taking, teacher preparation programs can better prepare preservice teachers to manage the nuanced challenges of maintaining professionalism while fostering positive relationships with students, families, and other stakeholders.

Appendices

Appendix A

Overview of Participant Characteristics

Gender (*n*)	Ethnicity (*n*)	Age Range (*n*)
Female = 30 Male = 6	White = 9 Asian = 7 Native Hawaiian or Other Pacific Islander = 5 African American = 1 Unknown = 9	Twenties = 8 Thirties = 17 Forties = 7 Fifties = 3 Sixties = 1

Appendix B

Overview of MCEE Seminar Series Design

Semester & Seminar	Duration/Format	Topics & Activities	Student Workload
1	1.5 hours/online synchronous Zoom platform; approximately 2 hours of asynchronous self-directed activities	Code-based instruction-overview of MCEE and rationale Direct instruction on MCEE Principle I-Responsibility to the Profession, Principle II-Responsibility for Professional Competence, & Principle III-Responsibility to Students Introduction to a framework for analysis of semi-structured Socratic questioning Application of framework for analysis-Pedagogically Productive Talk and case study analysis related to MCEE Principles I, II, and III	Pre seminar-read MCEE brochure, and watch Rationale for MCEE (5 minutes) During the seminar-active participant discussion Post seminar-reflection paper

2	1.5 hours/online synchronous Zoom platform; approximately 2 hours of asynchronous self-directed activities	Code-based instruction-direct instruction on MCEE Principle IV-Responsibility to the School Community & Principle V-Responsible and Ethical Use of Technology Application of framework for analysis-Pedagogically Productive Talk and case study analysis related to MCEE Principles IV and V	Pre seminar-review MCEE brochure, watch Teaching Cyber Ethics to Prospective Teachers (1 hour, 7 minutes) During the seminar-active participant discussion Post seminar-reflection paper
3	1.5 hours/online synchronous Zoom platform; approximately 2 hours of asynchronous self-directed activities	Review of MCEE Principles Application of framework for analysis and MCEE to situational risks in field-Pedagogically Productive Talk and case study analysis	Pre seminar-watch What Are Educator Ethics (22 minutes), discuss the video with colleagues or a mentor teacher, and be prepared to give a short overview of this discussion at the seminar During the seminar-active participant discussion Post seminar-reflection paper
4	1.5 hours/online synchronous Zoom platform; approximately 2 hours of asynchronous self-directed activities	Review of MCEE Principles Application of framework for analysis and MCEE to individual risks in field-Pedagogically Productive Talk and case study analysis	Pre seminar-identify possible ethical issues in day-to-day teaching, ways to minimize risks, and be prepared to share and discuss in small groups during the seminar During the seminar-active participant discussion Post seminar-reflection paper

Appendix C

Ethical Scenario Analysis Framework

IDENTIFY

1. What is the **ethical** violation in this scenario?

2. What MCEE Principles(s)/CEC ethics are in question?
    - Principle 1: Responsibility to the Profession
    - Principle 2: Responsibility for Professional Competence
    - Principle 3: Responsibility to Students
    - Principle 4: Responsibility to the School Community
    - Principle 5: Responsible and Ethical Use of Technology
    - Council for Exceptional Children (CEC) Code of Ethics

3. Identify the type(s) of conflict(s) in this situation. Explain why the MCEE and/or CEC principle(s) selected above are in question considering the following types of conflicts:

    - **Law/policy violation**
    - **Conflict of interest**
    - **Non-school employment or business conflict** (paid employment that may be viewed as a conflict with values of school, education)
    - **Membership/Affiliation conflict**
    - **Misuse or abuse of position**
    - **Misuse of technology, other forms of media**
    - **Other: _____**

STAKEHOLDERS PERSPECTIVES

4. Who are the people involved in this situation?

5. Consider the different perspectives of the people involved in this scenario. What harm might occur and to whom? What might individuals gain from this situation? What might they lose in this situation? How might they want this to be resolved?

COURSE OF ACTION

6. Consider the following in making your decision:
    - **The Golden Rule:** How would I want to be treated in this situation?
    - **Rule of Benevolence:** Act in ways that produce the greatest good for the

greatest number of people OR results in the least harm to the greatest number of people

- **Rule of Universality:** Would it be acceptable if everyone did this?
- **Rule of Publicity:** Would this be acceptable if everyone knew about this?

7. Taking into account your role and responsibility as a special education teacher, how would you approach this situation? Consider the consequences and implications of your decision. Why did you choose this course of action?

Adapted from: Mackenzie, S. V., & Mackenzie, G. C. (2010). *Now what? Confronting and resolving ethical questions: A handbook for teachers*. Corwin Press.

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Contact email: lindao@hawaii.edu

Maria Firmina dos Reis's Ursula: Voices From a Black Brazilian Writer in the Nineteenth Century

Jeanine Luciana Lino Silva Couto, Winston-Salem State University, United States

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
In this study, I analyze how the novel *Ursula*, written in the 1850s, gives voice to the search for social justice in nineteenth-century Brazil before the abolition of slavery in 1888. Similarly to Uncle Tom's Cabin in the U.S.A., the book provides the reader with a heartfelt testimony and plea for social justice. Through the light of sociologists and critics such as Patricia Hills Collins, Leyla Perrone-Moisés, and Lélia Gonzalez, I intend to highlight that a Black Brazilian point of view was neglected for years but has recently resurfaced and can teach the contemporary reader much about the resilience and honor lived by former enslaved Brazilian people.

Keywords: Brazil, Nineteenth Century, Slavery, Enslaved, Place of Speech

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Introduction: The Author

Maria Firmina dos Reis was born in 1825 in São Luís do Maranhão, Brazil. Régia Agostinha da Silva considers Reis's main quality "o caráter audacioso de sua obra [the audacious character of her work]." She was thirty-four years of age at the time of the publication of *Ursula* and knew her place in the male-dominated Monarchic Northeastern Brazilian traditionalistic society. She was a biracial schoolteacher who practically apologizes to the reader in the Prologue for presenting the book to them:

> I know this novel is worth little because it was written by a woman—a Brazilian woman, moreover, with little education and without the refinement and experience of illustrious men used to discussing, advising, and correcting others. This woman has had very little instruction, knows only her mother tongue, and isn't well-read. In sum, her intellectual capacity is practically null. (Reis & Pinto, 2021)

Reis is asking for support not only for herself as a new writer but for other women writers, better authors who will come after her. Nonetheless, I know many readers and researchers are thrilled by *Ursula* and other stories Reis published that have survived times and remain available today. They contain remarkable clues to understanding the dynamics of social life in nineteenth-century Brazil.

Further, as Silva points out, Reis:

> figura como uma das poucas mulheres negras abolicionistas no século XIX, pois sabemos que a campanha abolicionista no Brasil, principalmente na segunda metade do século XIX, foi perpetrada por abolicionistas homens, em sua grande maioria, brancos, filhos da elite escravocrata, que se formaram no exterior e voltaram ao país com os ideários positivistas, liberais e abolicionistas, pois, só livrando o país da "mancha negra da escravidão," poderia o Brasil figurar no rol das nações desenvolvidas.
>
> [She is one of the few black women abolitionists in the 19th century, as we know that the abolitionist campaign in Brazil, mainly in the second half of the 19th century, was perpetrated by male abolitionists, the vast majority of whom were white, sons of the slave-owning elite, who were educated abroad and returned to the country with positivist, liberal and abolitionist ideals, as only by freeing the country from the "dark stain of slavery" could Brazil be included in the list of developed nations.] (Reis & Pinto, 2021)

A woman who opened a school for boys and girls in the interior of Maranhão was able to publish and give voice to slaves who spoke about times of freedom in Africa and how noble they were despite not having any means is truly remarkable.

The Black Characters in *Úrsula,* Lelia Gonzalez, and Patricia Hill Collins

Tulio, Black/Aunt/Mother Susana, and Antero are the three characters that receive the most attention and development in the novel. Tancredo and Black Susana are portrayed very nobly whereas Antero reveals certain flaws, which are realistic according to historical facts. In the 1850s Brazil had laws prohibiting transatlantic traffic consistent with the Eusébio de Queirós

Law but slavery remained legal until 1888 when the final *Lei Áurea* [Golden Law] was signed.

Tulio is a young black man who is innocent of any wrongdoing and good at heart. The title of Chapter 1 is fitting "Two Generous Souls." Túlio's actions are noble, and he is portrayed as a generous soul, just like the hero Tancredo's main character. Túlio has a strong name, the name of a leader, and becomes free, even if only for a short time. Remarkably in the mid-nineteenth century, he is a black man with a voice, a man who is loyal to Tancredo, the man who ends up giving him his freedom (by giving him money to purchase it) due to his loyalty and services when he was almost dead.

The narrator's voice is that of an abolitionist—remembering that those times were the pre-abolition of slavery times in Brazil. In the following beautiful yet sad discourse, the reader understands the message in Reis's book:

> Poor slaves! They have nothing, not even the right let out a heartfelt cry of agony! Lord God! When will Your sublime teaching, "Love thy neighbor as thyself," resound in men's hearts? When will men stop oppressing with such reprehensible injustice their fellow creatures… men and women who were also free in their own country… who are their brothers and sisters?! (Reis & Pinto, 2021)

Such a speech was written before Castro Alves wrote the famous pro-abolition poem *Navio Negreiro* [*Slave Ship]* in 1880.

Lelia Gonzalez has a strong *Afrolatina* voice. Black Susana represents the strength of African femininity as Gonzalez explains:

> Como sabemos, nas sociedades africanas, em sua maioria, desde a antiguidade até a chegada dos islames e dos europeus judaico-cristãos, o lugar da mulher não era de subordinação, o da discriminação. Do Egito antigo aos reinos dos Ashanti ou dos Yorubá, as mulheres desempenharam papéis sociais tão importantes quanto os homens.
>
> [As we know, in most African societies, from ancient times until the arrival of Islam and the European Judeo-Christians, women's place was not one of subordination, but of discrimination. From ancient Egypt to the kingdoms of the Ashanti or the Yoruba, women played social roles as important as men.] (Gonzalez, 1998)

Black Susana is the rock that supports Tulio when his mother perishes. She was born and taken from Africa in her youth, just like Tulio's parents. Susana remembers the times when she was free: "Freedom! Freedom! How I enjoyed it in my youth! … no one enjoyed it more fully; there wasn't a happier woman than me" (Reis & Pinto, 2021).

Gomes and Oliveira point out through the light of Foucault's notion of resistance as the power that Susana and Túlio resist the system of oppression as they form a bond that helps them survive and not break completely. Remembering that part of the system of oppression that existed still in the nineteenth century was not allowing the formation of black families. Those were constantly split apart as they are in Reis's novel.

In sum, Túlio and Black Susana have many positive characteristics. Régia Agostinho da Silva notices such a trait in dos Reis's ouevre: "O escravo firminiano, como já disse, não é apenas vítima passiva da escravidão, é dotado de humanidade, de caráter, e saudoso de uma mãe África ausente" [The Firminian slave, as I said, is not just a passive victim of slavery, he is endowed with humanity, character, and longs for an absent African mother] (Reis & Pinto, 2021).

The Sociologist and Black Feminist Patricia Hill Collins proposes the concept of intersectionality, which she seeks a definition as "the critical insight that race, class, gender, sexuality, nation, ability, and age operate not as unitary, mutually exclusive entities, but rather as reciprocally constructing phenomena" (Collins, 2015). Intersectionality can be applied in Reis's novel even though it is a very fluid concept. It is easy to see how the white rich men Fernando and Tancredo's father, another "old evil man" as Reis describes, are the most powerful characters in the novel. Tancredo is good at heart and thankful to Túlio, granting him freedom, but unfortunately does not achieve a happy ending with his beloved Úrsula. Collins states that:

> Racial formations have distinct configurations of racial projects for which interest groups advance various interpretations of racial inequality. Within racial formation theory, ideas matter, not simply as hegemonic ideologies produced by elites by also as tangible, multiple knowledge projects that are advanced by specific interpretive communities. Because groups aim to have their interpretation of racial inequality prevail, knowledge lies at the heart of racial projects. (Collins, 2023)

I believe that Reis knows that perhaps she does not know that she has such an awareness. She is a woman ahead of her time because she can point out racial, class, and gender inequalities even without naming them.

The wheel of power/privilege is in some ways comparable to the notion of intersectionality. The language of the colonized and enslaved as well as their religions and cultures were completely taken away from them. With few exceptions and through many hardships they were able to preserve some of those and many Afro-Brazilians long to learn the languages, beliefs, and everything that was stolen from their ancestors not so long ago. Thanks to Maria Firmina dos Reis and other writers such a process is becoming somewhat viable.

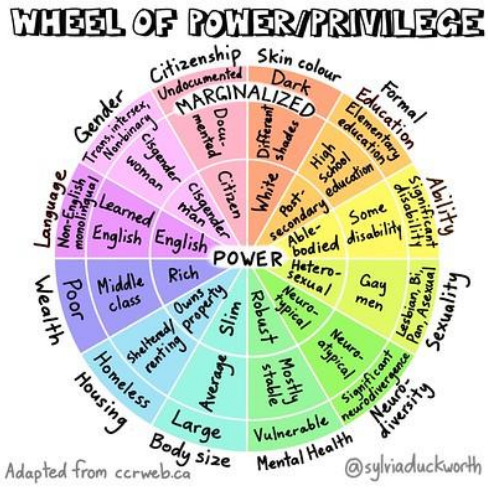

Figure 1: Wheel of Power/Privilege

Language and Literature: Leyla Perrone-Moisés on Committed Literature

The title of this work highlights the importance of voices. Voices and language are interconnected. Leyla Perrone-Moisés notices how that occurs in literature in her article *Literatura Engajada [Committed Literature]*: "O conhecimento de línguas e culturas hegemônicas pode, portanto, ser subvertido como fator de libertação" [The knowledge of hegemonic languages and cultures can, therefore, be subverted as a factor of liberation] (Perrone-Moisés, n.d.). Similarly, the language the enslaved people speak in the novel *Ursula* is Portuguese, a language imposed by the colonizer. Perrone-Moisés emphasizes that she does not see that through a negative lens. She defends the view that "essas línguas europeias são adotadas pelos ex-colonizados não por serem 'superiors,' mas por serem meios de comunicação mais poderosos" [those European languages are adopted by the ex-colonizers not for being superior, but for being more powerful means of communication] (Perrone-Moisés, n.d.). The enslaved people in dos Reis's novel—Tancredo, Aunt Susana, and Antero, speak exclusively in Portuguese. It is widely known that the Africans brought to Brazil were from various parts of Africa and spoke different languages. Some of the vocabulary has been incorporated into Brazilian Portuguese spoken today, but for the most part, Portuguese has taken over. It keeps changing as well, as expected. The future of literature and language is taking new directions, that is certain.

Conclusion

I have shown how Maria Firmina dos Reis could portray black characters in her Romantic 1851 novel *Ursula* in a mostly positive light. To do that, she had to create characters who have strong morals and a passion for doing what is right and ethical. Despite their situation of slavery, they do not lose their bonds of friendship and love. One of the characters, though, is not strong enough to endure the pains of slavery and his character reveals flaws that hurt himself and others and make him an ally of the cruel master. Reis published several literary pieces in the northeastern state of Brazil not knowing that her work would become a testimony to the horrors of that system and be studied almost two hundred years after its publication.

Moreover, two of the characters, Susana and Túlio, develop a mother-son bond when Tulio's mom is taken away and kept apart from him until her death. Black Susana becomes a true mother to Túlio and that is resistance in a period in which such bonds are not allowed by masters, who fear the organization of the enslaved. *Ursula* gives voice to the oppressed sadly and remarkably.

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Contact emails: coutojl@wssu.edu
jeaninelcouto@gmail.com

Science Education Initiatives in Tanzania: Review of the National Interventions From 1960's to 2020's

Francis Kyambo William, The University of Dodoma, Tanzania
Prosper Gabrieli, The University of Dodoma, Tanzania

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
Investment in science education is crucial for the economic development of any country. This systematic review examines science education initiatives in Tanzania by focusing on the key areas of the interventions, challenges and strategies for improvement. A critical question is: What are the short, medium, and long-term strategies Tanzania could rethink for science education to foster the growth of a skilled and capable STEM workforce? The review incorporates projects' documents and reports encompasses the period from the 1960s to 2020s. The Education for Self-Reliance, School Science Project, Tanzania UNICEF-UNESCO Educational Reform Project, Secondary Education Development Programme, and Language Supportive Pedagogy are among the initiatives reviewed. Findings indicate the enhancement of the teaching resources, development and the implementation of curriculum, improvement of assessment systems, and infrastructure development as the key focus of the initiatives. The review highlights the persistent inadequate teacher qualifications, tensions between quantity and quality of education, a mismatch between education and job market needs, a shift from inquiry-based learning towards a more lecture-based instruction as the major obstacles in science education development in Tanzania. The review suggests improving teacher education, striking a balance between quantity and quality, bridging the gap between education and job market demands, and promoting inquiry-based learning. Despite the limitations of relying on existing literature and secondary data, the review provides insights into the current state of science education initiatives in Tanzania. It highlights the importance of continued investment in comprehensive interventions and sustainable initiatives to improve science education for the country's economic development.

Keywords: Comprehensive Review, Science Education, National Interventions, Initiatives

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Background of the Study

Investment in science education is pivotal to the economic endeavours of any country (Ottenbaker & Klee, 2022). Despite efforts to improve science education in Tanzania, recent studies have highlighted challenges associated with it. Inadequate teacher qualifications (Umar, 2019), tensions between the quantity and quality of education, a mismatch between education and labour market needs, a shift from inquiry-based learning towards a more lecture-based instruction (Aslam et al., 2023) are some of these challenges. Teachers often lack subject expertise, which contributes to low academic performance (Holvio, 2022; Baker et al., 2009). Stakeholders recommend significant changes in science education, focusing on enhancing teachers' roles and motivation (Kapanadze et al., 2015). To promote science education, it is crucial to provide a specialised training for science and technology teachers (Klemenčič et al., 2023). The ongoing debate about the nature of science and science learning continues to shape perspectives on science education (Semali & Mehta, 2012).

Science, Technology and Mathematics (STEM) teachers play a critical role in students' learning experiences (Huang et al., 2022). Science and innovation can improve the teaching-learning process, requiring teachers to develop scientific and innovative thinking (Perez Sierra et al., 2022; Gao & Zhang, 2020). The integration of industry and education is crucial but lacks empirical research (Gao & Zhang, 2020). Inadequate and unsustainable funding has led to deteriorating quality of education in Tanzania (Semali & Mehta, 2012). Addressing challenges in education requires strategies to improve teacher qualifications, balance quantity and quality, align education with labor market needs, promote inquiry-based learning, and offer comprehensive teacher training. Despite various initiatives implemented in Tanzania, science education still faces challenges, and further improvements are needed (Aslam et al., 2023).

Objectives of the Review

The objective of this review is to provide a comprehensive overview of national interventions made from 1960s to 2020s to inform readers about the existing initiatives and propose interventions that can enhance their implementation, including the development plans. By critically examining the past efforts, this review seeks to contribute to the advancement of science education in Tanzania and support the effective implementation of various initiatives. A critical question driving this review is: What are the short, medium, and long-term strategies Tanzania could rethink for science education to foster the growth of a skilled and capable STEM workforce?

Methods

A comprehensive literature review was conducted to investigate Science education initiatives in Tanzania to pave a way of proposing possible interventions. The data were collected from official reports, academic publications, and government documents. A systematic search across academic databases, online repositories, and official websites using specific keywords related to science education initiatives, challenges, and interventions were performed. The criteria for selecting official reports, academic publications, and government documents for this review were based on their relevance to science education initiatives in Tanzania, specifically those that provided comprehensive insights into the challenges faced and the proposed future interventions. Thematic analysis was employed to analyse the gathered data and identify common themes, challenges, and possible future interventions. The study

acknowledges its limitations, including its reliance on existing literature and secondary data sources, which may introduce potential bias. Additionally, the absence of firsthand perspectives from stakeholders is noted. Nevertheless, the findings aim to provide a comprehensive overview of the current state of science education initiatives in Tanzania and serve as a basis for future research and policy-making in the field.

Review of Science Education During Between 1960's and 2020's

Since the 1960s, Tanzania has implemented a range of science education initiatives aimed at enhancing the quality of both primary and secondary education. Notable projects include the School Science Project and School Mathematics Project, Mpango wa Tanzania UNICEF/UNESCO (MTUU), known in English as the Tanzania UNICEF/UNESCO Primary Education Reform Project, the School Science Project of East Africa, and the Science Education in Secondary Schools Project. Additional efforts, such as the Teacher Education Assistance in Mathematics and Science, the Education II Project, and the Enabling Science Teaching and Learning in Rural High Schools in Tanzania Project, have also played significant roles. Other important initiatives include the Teacher Education Support Project, the Science and Technology in Higher Education Project, the introduction of a Diploma in Science Mathematics and ICT, and language-supportive teaching and textbooks in science and mathematics.

The School Science Project and School Mathematics Project

Formal science education in Tanzania began during the colonial era focusing on memorizing concepts and the works of foreign scientists, with little emphasis on contributions from local context. In 1967, Tanzania implemented the Education for Self-Reliance (ESR) policy, which aimed to develop three key skills in children: inquiry, learning from others, and critical thinking. This policy sought to align the educational system with national development needs (Rutayongororwa, 1987). The philosophy of "Socialism and Self-Reliance" aimed to integrate work and education, but initial efforts were inadequate, with the ESR system focusing more on passing national examinations than on applying knowledge in real-life contexts. Additionally, limited access to resources further impeded science education. The Musoma Resolutions in 1974 mandated the integration of work and education and the inclusion of manual work in the secondary school curriculum. Vocational secondary education was introduced to equip students with both academic and practical skills, preparing them for further education, employment, and productive participation in their communities.

In 1968 Tanzania borrowed educational materials such as "Thinking Science" from the USA and "Nuffield Science" from the UK (Osaki, 2007). These materials were adapted and developed into packages like "Elimu ya Kufikiri", the School Science Project of East Africa (SSP), and the School Maths Project (SMP). However, these programmes faced numerous challenges, including language difficulties, a lack of laboratory resources, issues related to examinations, curriculum constraints, teacher training, and the high cost of science equipment, along with a scarcity of textbooks, leading to their phase-out in the mid-1970s.

During a subsequent latent period, local materials were designed, but they tended to prioritize memorization over experimentation (Chonjo et al., 1996). This situation underscored the need for a shift towards inquiry-based learning and a stronger emphasis on practical application in science education in Tanzania. In 1995, Tanzania implemented a liberalization policy, which led to the emergence of several STEM projects aimed at reintroducing a practical approach to

science education. This resulted in many students lacking the necessary skills and aspirations for employment in industry or manufacturing after completing secondary schools (Semali & Mehta, 2012).

The Tanzania UNICEF-UNESCO Educational Reform Project

According to Mhaiki (1986), during the 1980s, science education in Tanzanian secondary schools faced several challenges, including declining student interest, poor examination results, and a shortage of qualified teachers. The emphasis was primarily on academic achievement rather than practical and career-oriented preparation, which diverged from a scientific approach to learning. Galabawa (n.d.) noted that the implementation of ESR in Tanzania encountered its own challenges. However, various actions were taken to align the education system with ESR's goals. These actions included establishing a curriculum development team, MTUU, and the School Science Project (SSP) of East Africa to advocate for primary education reforms, integrating practical activities in schools and colleges, assessing practical work alongside academic evaluations, and nationalizing educational institutions to increase government control. Ishumi (1994) emphasized that the Tanzanian government recognized the importance of science education in fostering technological development and societal progress. According to Mushi (1996) gender disparities in science performance were observed, with girls facing misconceptions and perceived lower abilities compared to boys, particularly in physics and mathematics. Female teachers viewed biology as the subject where girls excelled, while male teachers believed boys were most competent in physics. These perceptions affected girls' confidence and motivation in pursuing science. Cultural practices, ethnic rituals, and societal expectations were identified as factors influencing girls' false perception of their science abilities.

According to Kassam (2000), the guiding country policy emphasized the importance of education in promoting the collective welfare and achieving social objectives, such as equitable resource distribution and a sense of societal commitment. The restructuring of schools involved changes in teaching methods and attitudes, integrating theory with practice and mental with manual labour. Students' evaluation systems were aimed at considering academic abilities and contributions to the school and community. The orientation of education systems was geared towards rural life, with productive activities and student involvement in decision-making. The curriculum incorporated productive work for meaningful learning experiences, and examinations were de-emphasized.

Teacher Education Assistance in Mathematics and Science

Teacher Education Assistance in Mathematics and Science (TEAMS) introduced in 1995, supported by the Nuffic Foundation in the Netherlands, aimed to restructure the undergraduate teacher education programme at the University of Dar es Salaam (UDSM) to incorporate more practical teaching experiences and an understanding of the philosophy of science. TEAMS also developed in-service education and training programmes for science and math teachers, as well as a master's degree programme in science and math education. The project had practical contributions, such as computer-based micro-laboratory experiments (Tilya, 2003), teaching of probability (Kitta, 2004), and Micro-scale experimentation (MSE) in school chemistry (Mafumiko, 2006). The project successfully addressed challenges in secondary science education, expanded teacher training programmes and aligned with government educational plans. It improved curricula, teaching approaches, and programme design while emphasizing long-term strategies and sustainable development.

The project benefited from supportive institutional structures and career prospects. Despite the challenges, overall, the TEAMS project played a significant role in enhancing science and mathematics education in Tanzania.

The Secondary Education Development Programme

Tanzania's Development Vision 2025 recognizes the importance of education in fostering a well-educated society and achieving desirable attributes such as a high standard of living, peace, unity, good governance, and a competitive economy. Despite this vision, higher education in Tanzania faces significant challenges, including low student enrolment, gender disparities, inadequate funding, proliferation of unregulated tertiary institutions, and lack of recognition for academic programmes. Mkude (2003) pointed out that gender disparities in education become more pronounced as students' progress from primary to secondary levels in Tanzania. Girls tend to have lower academic performance, especially in subjects like mathematics, and there is an increasing trend of social inequalities in school selection, with more students enrolling in private secondary schools.

To realize the development vision, Tanzania aimed to transform from a least developed nation to a middle-income country with high levels of human development. Education is seen as a crucial driver for mindset transformation and addressing development challenges. The education system requires substantial restructuring to emphasize creativity and problem-solving skills. A strong economy and good governance are crucial for achieving the vision, and the emphasis is placed on basic sciences, mathematics, and science and technology education to enhance productivity and meet the demands of the modern era. Information and communication technologies are considered important tools for attaining the development vision.

According to Wedgwood (2005) the Secondary Education Development Programme (SEDP) in Tanzania aimed to improve access, equity, and quality in secondary education. It implemented various strategies, including constructing new schools, reducing fees, increasing scholarships, optimizing teaching resources, expanding distance learning, renovating schools for students with disabilities, providing grants, enhancing teacher training, and improving curriculum, library facilities and examination systems. Despite these efforts, challenges arose in ensuring qualified teachers, raising concerns about education quality. Tensions between quantity and quality. Higher education faced issues of access, quality, and funding, with overcrowded lecture halls and a mismatch between education and labour market needs. Incorporating vocational training encountered obstacles like teacher shortages and limited resources, prioritizing academic subjects over technical ones. Concerns existed about low numbers of high-achieving graduates, teachers lacking subject competence, and graduates lacking employable skills.

Science Education in Secondary Schools Project and the Science Teacher Improvement Project

The Science Education in Secondary school Project (SESS) established in 1996 and jointly funded by Tanzania and Germany, aimed to improve secondary science and mathematics education (Osaki, 2007). It focused on enhancing textbook access and laboratory facilities in 15 pilot schools and initiated a Training of Trainers Program. An internal review in 2000 identified minimal changes in classroom practices, leading to improved project management.

By 2003, SESS had produced trained resource personnel, many of whom became school inspectors, and was integrated into the Ministry of Education by 2006.

The Science Teacher Improvement Project (STIP), funded by GTZ and starting around 1995, shared similar goals with SESS but focused on introductory experiments before new topics. It conducted trial workshops in church schools and concluded in 2003, with its ideas incorporated into SESS and the Ministry of Education's in-service training.

The Education II Project

The Education II Project, funded by the African Development Bank, focused on developing in-service education materials and programmes to enhance the pedagogical knowledge and skills of STEM teachers in schools and colleges (URT, 2007). This project was mainly carried out by TEAMS graduates and produced educational packages that are still in use today. However, studies conducted after the projects ended revealed persistent weaknesses in practical science education Kibga (2013). The National Examinations Council of Tanzania suspended science practical examinations in O level due to resource constraints, leading to a shift towards theoretical teaching and a lack of practical skills among students. Similar problems were observed in teacher education programmes at universities, where teaching methods were predominantly theoretical (Ottevanger et al., 2005). The challenges included a lack of laboratories, poorly trained teachers, and insufficient technical support staff (Eskola, 2009). These factors negatively impacted student performance in science subjects. The need for systematic professional development programmes and improved infrastructure and resources in science education was evident during this period.

Enabling Science Teaching and Learning in Rural High Schools in Tanzania Project

Enabling science teaching and learning in rural high schools in Tanzania (ENSCIENCE) project, a collaborative effort between the University of Dar es Salaam, University of Dodoma, Swiss Federal Institute of Technology, and the Centre of Science and Mathematics Education at Rehovot, Israel, aimed to enhance science education for advanced-level (A-level) secondary education in Tanzania. It focused on developing integrated Chemistry modules for A-level science instruction and assessing their impact on scientific knowledge and analytical skills (William et al., 2014). Although funding from the Swiss Government Science Fund ended in 2012, the project yielded several conference publications. Schools that implemented the project's materials witnessed substantial improvements, including one school achieving top performance in A-level national examination results in 2015. Overall, the ENSCIENCE Project made significant contributions to science education in Tanzania at the A-level (William, 2012).

Teacher Education Support Project

The Japan International Cooperation Agency (JICA) implemented interventions in science and mathematics education in Tanzania. These interventions included training science and mathematics teachers abroad, developing practical and teacher guides, creating videos to support practical implementation in schools facing shortages, establishing in-service teacher training centres, implementing teacher education programmes such as the Teacher Education Support Project (TESP), providing science kits and micro-scale experiments, introducing science in secondary schools, and setting up laboratories in secondary schools across

Tanzania. These interventions aimed to enhance the quality of science and mathematics education in the country.

Science and Technology in Higher Education Project

The Science & Technology in Higher Education Project (STHEP) in Tanzania, launched in 2007, aimed to strengthen science education in higher education institutions. The project among others, addressed challenges of shortages of science teachers and technical personnel, and limited access to telecommunication facilities. Although the project encountered challenges, particularly regarding the high costs associated with training staff abroad, overall, STHEP made substantial contributions to the advancement of science education in higher education institutions in Tanzania. It improved access to quality education and resources in the field of science and technology, thereby fostering the development of human capital and supporting the country's socio-economic growth.

Following the STHEP, Tanzania implemented a retooling programme that utilized the ICT resources developed during STHEP to enhance the training of science and mathematics teachers in schools. The programme aimed to improve Science education by fostering collaboration between universities and schools, with universities taking on the responsibility of raising educational standards in schools. However, there is currently no available evaluation of the programme's outcomes.

Introduction of Diploma in Education-Science Mathematics and ICT

To combat the shortage of science teachers, Tanzania introduced a Diploma in Education-Science Mathematics and ICT (DESMICT) programme in 2014. The objective of this programme was to produce science teachers from O-level school finalists who could then fill teaching positions in schools. However, the programme faced challenges, and no students have graduated from it thus far. Consequently, the programme had to be transferred from the University of Dodoma to teachers' colleges. While the specific impact and effectiveness of the retooling programme and the Diploma in Science Education programme remain unclear, these initiatives demonstrate Tanzania's ongoing efforts to address the shortage of qualified science teachers and enhance Science education in schools. Evaluating and refining these programmes will be crucial for their success in improving science and technical education in the country.

Language Supportive Teaching and Textbooks in Science and Mathematics

The Language Supportive Teaching and Textbooks (LSTT) in Tanzania project was initiated in 2014 aiming to support students in transitioning from primary school to secondary school in Tanzania, where the language of instruction changes from Kiswahili to English. Many students face difficulties in learning due to low levels of English language proficiency (Brock-Utne et al., 2010). While private primary schools offer English-medium education, they are only accessible to a minority of students in urban areas who can afford the fees. LSTT is a collaborative effort involving three universities, namely the University of Bristol's Graduate School of Education, the University of Dodoma's College of Humanities and Social Sciences and Faculty of Education, and the Aga Khan University East Africa Campus' Institute for Educational Development. The project also partners with the Tanzania Institute of Education (TIE).

Previous research conducted by the University of Dodoma focused on developing bilingual classroom strategies for teachers of Standard 7 and Form 1 (Rubagumya et al., 2011). During this research, it was observed that the textbooks used in Tanzanian secondary schools were too challenging for Form 1 students to comprehend. This finding was replicated in studies of primary school textbooks in Ghana and Rwanda (Barrett et al., 2014; Clegg & Afitska, 2011), indicating that textbook design and publishing across sub-Saharan Africa face similar issues. In most African upper primary and secondary schools, students are expected to learn in a European language that is not their first language and is not commonly spoken in their communities. However, the textbooks used in these schools do not consider this linguistic context. They are written with a level of language complexity that would not be suitable in countries like the United States and England, where English is the first language for the majority of students. To address this issue, the LSTT project supported the development of five Form 1 textbooks (English, Mathematics, Physics, Chemistry, and Biology) that are accessible to the majority of Form 1 students in Tanzania.

These textbooks aim to serve as a model for designing books that consider the needs of second language learners. They are expected to be valuable for curriculum developers and publishers not only in Tanzania but also across East Africa and other English-speaking countries in sub-Saharan Africa. While textbooks play a crucial role in supporting teaching and learning, they are not sufficient on their own to improve the quality of education. Textbooks designed to be accessible to students have the greatest impact when they are in the hands of teachers who can implement teaching and learning strategies that support language acquisition. These strategies include encouraging student communication in both Kiswahili and English(Clegg & Afitska, 2011) allowing students to use Kiswahili to understand and process new ideas and express their own thoughts in both languages through spoken and written English. This involves providing opportunities for reading, writing, speaking, and listening in the classroom.

The University of Dodoma's previous project successfully transformed the teaching methods of Standard 7 and Form 1 teachers to better support English language concept learning through short workshops and follow-up support. As a result, the LSTT project examined existing in-service training programmes to determine the integration of language supportive pedagogy and identify opportunities for its enhancement. For example, a study by (William & Ndabakurane, 2017) revealed that in Tanzania, learners struggle with mathematics due to the sudden shift from Kiswahili to English terminology upon entering post-secondary education. This language barrier, coupled with the complexity of mathematics textbooks, poses challenges for Tanzanian secondary school students.

Key Findings From the Review

During the period from the 1960s to the 1990s, science education in Tanzania faced significant challenges. Declining student interest, poor examination results, and a shortage of qualified teachers were key issues. To address these challenges, interventions such as science innovation programmes and borrowing materials from international sources were implemented. Programmes such as NSTP, SSP, Elimu ya Kufikiri, SSP, and SMP aimed to enhance practical and career-oriented science education.

Educational reforms in Tanzania during this period resulted in notable achievements. Work and education were integrated, manual work was included in the secondary school curriculum, and vocational secondary education was introduced. The establishment of a

curriculum development team and MTUU supported these reforms. Practical activities were successfully integrated into schools and colleges, and practical work assessment was included alongside academic evaluation. Government control over educational institutions increased through nationalization. However, challenges such as language difficulties, limited laboratory resources, and a focus on memorization persisted, hindering the effective implementation of practical education.

Since the 1990s, Tanzania has undertaken various initiatives to enhance science education and ensure that students develop the necessary competencies and skills. These initiatives include projects such as TEAMS, SESS, STIP, and the Education II Project. Their goals were to shift secondary school science education towards inquiry and experimentation, instil the values of the scientific method, and offer professional development for teachers. Although these programmes have positively influenced the quality of science education, the primary challenge is to effectively reorient teachers through both pre-service and in-service training, overcrowded classrooms, a mismatch between education and job market needs, teacher shortages, limited resources, and a tendency to prioritize academic subjects over technical ones, all of which affected the quality of education.

Although various projects, including the ENSCIENCE Project, TESP, STHEP, the retooling programme, the DESMICT Education programme, and the LSTT project, aimed to enhance science education, challenges persisted. The SEDP implemented various strategies to address educational challenges, such as constructing new schools, reducing fees, optimizing teaching resources, expanding distance learning, renovating schools for students with disabilities, enhancing teacher training programmes, aligning the curriculum with job market needs, improving library facilities, and enhancing examination systems. However, despite these initiatives, challenges in science education continued to exist.

Discussion

The implementation of science education in Tanzania and the quality of mathematics education in East Africa face numerous challenges that have significant implications for disparities, employment opportunities, and poverty levels (Sarungi, 2016). These challenges encompass various aspects, such as the neglect of indigenous knowledge, the predominance of a Western perspective in science teaching, inadequate curriculum that fails to establish connections between subjects and daily life, limited knowledge of the outcomes of reform efforts, disparities in academic achievement between urban and rural areas, overcrowded classrooms, lack of resources, and teacher-centered patterns of interaction (Semali & Mehta, 2012; Kajoro, 2016; Tennant & Sarungi, 2016;).To address these multifaceted challenges, comprehensive reform efforts are crucial, which should prioritise the value of cultural contexts, promote practical applications, foster creativity, and address funding issues (Semali & Mehta, 2012). In order to achieve high-quality science and mathematics education, it is essential to harmonize efforts across the region, evaluate teaching methods, provide inclusive and engaging curricula, and invest in teacher training and professional development (Kajoro, 2016; Tennant & Sarungi, 2016).

Teacher training and professional development play a crucial role in improving the quality of mathematics education (Kajoro, 2016). Initiatives such as the SMASSE programme in Kenya and JICA collaborations in Tanzania have demonstrated positive impacts on teachers' classroom practices (Sarungi, 2016). These initiatives are designed to enhance the teaching and learning of mathematics and science in East Africa, with ongoing efforts to improve

mathematics teacher education practices across the region (Tennant & Sarungi, 2016). In the context of science education, external agencies such as UNESCO, UNICEF, and the World Bank have provided financial aid, equipment, books, teachers, experts, and training to support science education in the surveyed countries (Mhaiki, 1986). Collaboration among various stakeholders, including scientists, teachers, government officials, school administrators, curriculum developers, and the national examination council, is crucial for developing a scientifically valid and culturally relevant science curriculum (Mhaiki, 1986).

Although there are challenges in implementing inquiry-based teaching, successful examples have shown its effectiveness. Meta-analysis of empirical studies also supports the use of inquiry in science classrooms. Teacher educators are crucial in preparing student teachers for inquiry-based science teaching by aligning expected student outcomes with psychological consistency, personal goals, and ecological consistency (Semali & Mehta, 2012).

In the context of mathematics education, it is necessary to address the constraints faced by teachers in posing non-routine questions and expecting open-ended answers from students. The article discusses various constraints that affect the learning environment, including the cultural climate, teachers' experience, curriculum demands, and a focus on quantity rather than quality in student learning outcomes. To overcome these challenges, the authors suggest using innovative teaching approaches like metaphorical thinking. They argue that such approaches can improve students' mathematical questioning skills and help tackle the mentioned obstacles (Hendriana et al., 2017). The rapid implementation of education policies in Hong Kong without considering the local context has resulted in dissatisfaction and challenges. According to Poon and Wong (2008) the introduction of Direct Subsidy Scheme schools and "through-train" schools has raised concerns about equity and social stratification. These reforms have generated uncertainty and anxiety among students, parents, and teachers, and the new curriculum and assessment methods have necessitated adjustments in teaching strategies and resources. However, teachers were not adequately prepared for these changes, and the new admissions mechanisms have increased competition and pressure on students to perform well.

Studies have shown the benefits of problem-based learning (PBL) in mathematics (Owusu & Antwi, 2022). Practical work in chemistry has positive impacts on students' conceptual understanding, although challenges such as lack of resources need to be addressed (Iyamuremye et al., 2023; Mukaniyonsenga et al., 2023). Inquiry-based learning improves student interest and attitudes, but effective implementation requires teacher training and resources (Hang & Srisawasdi, 2021). Challenges exist in implementing STEAM education, highlighting the need for teacher professional development. Teacher training, technology integration, and instructional strategies (Lekhu, 2023)are crucial for enhancing teaching competencies (Mamlok-naaman, 2015). Effective science teaching necessitates teacher awareness, self-knowledge, and understanding of teaching methods (Lekhu, 2023).

When it comes to curriculum reforms, it is imperative to strike a balance between incorporating local cultural knowledge and practices with global scientific and mathematical concepts (Semali & Mehta, 2012; Halai & Tennant, 2016). Integrating indigenous knowledge systems into the curriculum can actively engage students and make learning meaningful (Semali & Mehta, 2012). This approach helps students perceive the relevance of science and mathematics in their everyday lives and fosters a sense of ownership and pride in their cultural heritage. Furthermore, the provision of adequate resources such as textbooks, laboratory equipment, and technology is essential for effective science and mathematics

education (Kajoro, 2016; Tennant & Sarungi, 2016). Access to quality resources can enhance students' understanding and practical skills in these subjects (Tennant & Sarungi, 2016). While the 2023 Education and Training Policy place greater emphasis on developing skills that are relevant to the changing job market, such as critical thinking, problem-solving, communication, and digital literacy (URT, 2014)investment in infrastructure and facilities, particularly in rural areas, is necessary to address the disparities between urban and rural education (Halai & Tennant, 2016).

In summary, improving the quality of mathematics and science education in East Africa, including Tanzania, requires comprehensive and coordinated efforts. These efforts should focus on culturally relevant curriculum development, teacher training and professional development, provision of resources, integration of inquiry-based and problem-based learning approaches, and addressing the disparities between urban and rural areas. Collaborative partnerships among stakeholders, including governments, educational institutions, and international organizations, can contribute to the successful implementation of reforms and the promotion of high-quality Science education in the region. For these to be achieved short-, medium- and long-term strategies have to be considered:

Short Term Strategies

1. Tanzania should address the shortage of science teachers and enhance Science education by retaining and recruiting qualified teachers through incentives and contracts for retired educators, ensuring experienced professionals in schools.

2. Expanding the Diploma in Science Education programme and strengthening science teacher education colleges will improve the training of future science teachers, enhancing their capabilities to deliver quality instruction.

3. Promoting exchange programmes with successful education systems can facilitate knowledge sharing and improve science education practices, enabling Tanzania to learn from the experiences of other countries. Additionally, providing necessary science teaching resources in schools, particularly in science-focused institutions, will enhance the quality of science education.

Medium- and Long-Term Strategies

Facilitate the institutions focused on STEM teacher education and training, as well as strengthen science education programmes at universities and teacher colleges. Further improvements are needed, particularly at the universities that produce secondary school science and mathematics teachers. Implementing these strategies would contribute to the production of well-trained science teachers and educators, leading to an overall improvement in science education throughout Tanzania.

Conclusion

In conclusion, tackling the shortage and quality of science teachers in Tanzania necessitates a comprehensive approach. By allocating responsibilities among institutions, enhancing training facilities, establishing specialized programmes for laboratory technicians, creating a favourable career trajectory, and implementing long-term in-service education initiatives, significant progress can be made. Strengthening institutions and implementing these

strategies will not only enhance Science education but also foster the growth of a skilled and capable STEM workforce in Tanzania.

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Contact email: fkyambo@gmail.com

Developing an Educational Program for Caregivers of Stroke Patients: Integrating Well-being and Basic Psychological Needs

Piriyanath Munyod, Srinakharinwirot University, Thailand
Sittipong Wattananonsakul, Srinakharinwirot University, Thailand

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
The objective of this study was to develop an educational program tailored to the needs of adult informal caregivers of stroke patients, focusing on enhancing caregivers' well-being through the integration of principles of psychological capital and basic psychological needs satisfaction. Drawing on quantitative data from 100 adult caregivers, the study investigated the correlation between psychological capital, basic psychological needs satisfaction, and psychological well-being. Additionally, qualitative data collected through focus group interviews with a subset of adult caregivers informed the development of the educational program. Thematic analysis of the interviews identified key themes related to autonomy, competence, relatedness, and psychological well-being, guiding to design program. The program was informed by theoretical frameworks such as Stress and Coping Theory and Self-Determination Theory. The educational program aims to empower adult caregivers by addressing their autonomy, competence, and relatedness needs through sessions focused on stroke understanding, communication skills, practical caregiving abilities, coping strategies, and support network development. Adult caregivers are equipped with the knowledge, skills, and support necessary to navigate caregiving challenges while maintaining their well-being. This research contributes to a deeper understanding of caregiver well-being and underscores the importance of considering adult caregivers' psychological needs in educational interventions. By recognizing the mediating role of basic psychological needs and incorporating curriculum design & development principles. The study offers insights into effective strategies for supporting adult caregivers and promoting their well-being in the context of stroke care.

Keywords: Caregivers of Stroke Patients, Well-being, Basic Psychological Needs, Educational Program

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Introduction

Stroke is a significant public health issue and the second leading cause of death globally. In addition to its high mortality rate, stroke often leaves survivors with chronic disabilities, requiring long-term care and support from caregivers (Donkor, 2018). Informal caregivers, often family members, play a critical role in assisting stroke survivors with activities of daily living. However, the sudden onset of stroke means that these caregivers frequently assume their roles without adequate preparation or training, leading to increased stress and burden (Byun & Evans, 2015). Research by Liu et al. (2020) highlights that caregiving burdens negatively affect both the quality of patient care and the well-being of caregivers, manifesting in increased strain, anxiety, emotional problems, poor health status, reduced quality of life, social isolation, and diminished psychological well-being.

Informal caregivers are essential to the recovery of stroke patients as they are deeply involved in every aspect of care. However, caregivers often report needing more support from healthcare systems throughout the caregiving process to improve care delivery and maintain their health and well-being (Tseung et al., 2019). To address this, several studies have explored the needs of stroke caregivers at various stages of recovery to design effective educational programs. Such programs are critical because caregivers require the knowledge, skills, and resources necessary to manage stroke patients effectively while also preventing psychological complications and supporting their well-being (Zhang et al., 2019).

Psychological well-being plays a vital role in enabling individuals to maintain normal lives, feel positive, and perform caregiving duties effectively (Huppert, 2009). Factors affecting psychological well-being primarily arise from internal characteristics, such as motivation and psychological needs (Bamrungjite, 2018; Kim & Kim, 2005; Kingmali et al., 2018; Leonardi & Harsono, 2022). These internal factors can be explained through Basic Psychological Needs Theory, which focuses on intrinsic motivation and the satisfaction of autonomy, competence, and relatedness needs. The fulfillment of these needs, within a supportive context, enhances an individual's well-being and quality of life (Deci & Ryan, 2000; Ryan & Deci, 2000; Vansteenkiste et al., 2020).

Similarly, psychological capital is a critical psychological resource that develops alongside individual growth and relates to intrinsic motivation. Psychological capital encompasses positive psychological states such as optimism, resilience, hope, and self-efficacy, which help individuals adapt to challenges and maintain well-being (Luthans & Youssef-Morgan, 2017). Studies have shown a significant positive relationship between psychological capital and psychological well-being. Psychological capital acts as a protective factor against negative emotion, supports cognitive mechanisms such as focusing and interpreting, and promotes balanced psychological well-being (Avey et al., 2010; Avey et al., 2011; Diener & Biswas-Diener, 2011; Hansen et al., 2015; Manzano-Garcia & Ayala, 2017; Newman et al., 2014; Prasath et al., 2022; Sweetman et al., 2011).

Given these findings, this study aims to develop an educational program tailored to the specific needs of informal caregivers of stroke patients. The program focuses on enhancing psychological well-being by integrating principles of psychological capital and Basic Psychological Needs Theory. By addressing the psychological needs of caregivers, the program seeks to improve their well-being, equip them with essential skills, and ultimately contribute to better caregiving outcomes.

Method

Participants

Data were collected from 100 informal caregivers of stroke patients to examine the correlation between psychological capital, basic psychological needs, and psychological well-being. Focus group interviews with 8 participants, including stroke caregivers and health professionals, were also conducted. Thematic analysis identified key issues related to the application of basic psychological needs and psychological capital in curriculum design and educational program development.

Instrumentation

A structured questionnaire was administered to assess psychological capital (Luthans & Youssef-Morgan, 2017), basic psychological needs (Ryan & Deci, 2000), and psychological well-being (Ryff & Keyes, 1995) among stroke caregivers. The questionnaire utilized a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), and was validated for both reliability and accuracy. To facilitate interpretation, scores were categorized into four levels: 1.00–2.00 (lowest level), 2.01–3.00 (low level), 3.01–4.00 (moderate level), and 4.01–5.00 (high level). The data collected were analyzed using Pearson's product-moment correlation coefficient to explore the relationships among the key variables.

In addition to the quantitative assessments, qualitative data were gathered through focus group discussions guided by a semi-structured interview framework. Thematic analysis was conducted to identify key themes and insights, providing a deeper understanding of caregivers' experiences and informing the design and development of the educational program. This integrated approach ensured a comprehensive analysis, combining statistical rigor with contextual depth.

Procedures

This study employed a mixed-methods design to develop an educational program tailored to the needs of informal caregivers of stroke patients. Ethical approval was obtained from the Srinakharinwirot University Ethics Committee (SWUEC-672025) for research involving human participants. The procedures were as follows:

1. Participant Selection and Quantitative Assessment

A total of 100 informal caregivers of stroke patients who met the inclusion criteria were selected. Participants were provided with detailed information about the study and asked to give informed consent. They completed questionnaires assessing psychological capital, basic psychological needs, and psychological well-being. The data were used to investigate the correlations among these factors and to develop a causal model.

2. Focus Group Interviews

Eight participants, including stroke caregivers and health professionals, participated in focus group interviews. These sessions included survey-type questions to gather basic demographic information, details about caregiving burden, the nature of caregiving activities (e.g., specific tasks and their frequencies), and the use of or need for health and supportive services.

Participants were also asked open-ended questions regarding caregiving challenges and their needs for information, education, and skill training. Field notes were taken during the discussions and transcribed for thematic content analysis.

3. Curriculum and Program Design

Insights from the quantitative and qualitative data were synthesized to design a curriculum and educational program. The program was structured to address caregiver needs by integrating the principles of psychological capital and basic psychological needs, ensuring its relevance and applicability to support informal caregivers in their roles.

Data Analysis

We used descriptive statistics to describe the sociodemographic characteristics of participants and used Pearson's product-moment correlation coefficient to analyze the correlation between factors. Then, a causal model was performed to estimate the influence of the variables. Open-ended responses regarding key issues about addressing the needs of informal caregivers of stroke patients in the caregiving process were summarized by a researcher to design a curriculum and educational program.

Results

Part I: Investigate the Correlation Between Psychological Capital, Basic Psychological Needs, and Psychological Well-being

The study consisted of 100 informal caregivers of stroke patients, most of them were female (70%), the mean age was 45.8 years (*SD* = 12.3), was the patient's husband/wife (54%), the average duration of caring was 12.9 months (*SD* = 11.6), the average hours caring for patients per day was 11 hours (*SD* = 4.9). Most of them had three duties in caring for patients (46%): taking patients to the hospital (83%), assisting patients in activities of daily living (80%), and assisting with patients' rehabilitation at home (78%), respectively.

Table 1: Pearson's Correlation Coefficient Between Psychological Capital, Basic Psychological Needs, and Psychological Well-being (*n*=100)

	PsyCap	Autonomy	Competence	Relatedness	PWB
PsyCap	1				
Basic Psychological Needs					
Autonomy	.492**	1			
Competence	.613**	.445**	1		
Relatedness	.463**	.414**	.435**	1	
PWB	.693**	.551**	.698**	.568**	1
M	4.20	4.00	4.12	4.13	4.18
SD	.55	.76	.64	.67	.57

** $p < 0.01$

The findings of this study present significant relationships between Psychological Capital (PsyCap) and Basic psychological needs—autonomy, competence, and relatedness—as well as their impact on psychological well-being (PWB). The findings are divided into several key points:

1. Psychological Capital as Determinants of Basic Psychological Needs

The findings of this study demonstrate that Psychological Capital—encompassing optimism, hope, resilience, and self-efficacy—significantly predicts all three basic psychological needs: autonomy, competence, and relatedness. These results provide critical insights into the role of psychological strengths in shaping individuals' perceptions of their abilities and relationships. Specifically, Psychological Capital was strongly associated with autonomy (Estimate = 0.68, $p < 0.001$). This indicates that individuals with higher levels of optimism, resilience, and belief in their capabilities are more likely to perceive themselves as independent and in control of their actions. These findings align with the principles of Self-Determination Theory (SDT), which emphasizes the essential role of autonomy in fostering intrinsic motivation and enhancing overall well-being.

In addition to autonomy, Psychological Capital showed a robust predictive relationship with competence (Estimate = 0.72, $p < 0.001$). Individuals with greater psychological resources were found to have a stronger sense of efficacy and confidence in managing tasks effectively. This underscores the importance of psychological strengths in enhancing perceived capabilities, which contribute to a sense of accomplishment and satisfaction in daily activities. Finally, Psychological Capital significantly predicted relatedness (Estimate = 0.57, $p < 0.001$). The positive influence of psychological strengths, such as hope and resilience, on relatedness highlights their role in fostering meaningful and supportive relationships. Individuals with high levels of Psychological Capital are better equipped to build and maintain connections, contributing to a more supportive social environment and fulfilling a critical psychological need.

2. Basic Psychological Needs as Determinants of Psychological Well-being

The analysis revealed that all three basic psychological needs—autonomy, competence, and relatedness—had significant positive effects on psychological well-being, highlighting their critical role in fostering overall mental health and life satisfaction. Autonomy was found to have a significant yet modest impact on psychological well-being (Estimate = 0.12, $p < 0.001$). This suggests that a sense of independence and control over one's actions contributes positively to well-being. However, the relatively smaller effect size indicates that autonomy likely interacts with other factors to produce a more substantial influence on overall well-being. These findings align with Self-Determination Theory (SDT), which emphasizes autonomy as a key component of intrinsic motivation and personal growth. Competence emerged as a strong predictor of psychological well-being (Estimate = 0.31, $p < 0.001$). Individuals who perceive themselves as capable and effective in managing tasks reported higher levels of well-being. This underscores the importance of fostering a sense of efficacy and skill development as a pathway to enhancing psychological health. These results highlight the pivotal role of competence in enabling individuals to achieve a sense of accomplishment and satisfaction in their daily lives. Relatedness also demonstrated a significant positive effect on psychological well-being (Estimate = 0.18, $p < 0.001$). This finding emphasizes the importance of meaningful interpersonal relationships in promoting psychological health. Feeling connected and supported by others contributes to a sense of

belonging, which is essential for maintaining emotional stability and overall well-being. These results further support the notion that social connections are integral to psychological health and satisfaction.

3. Direct Effect of Psychological Capital on Psychological Well-being

The findings further revealed that Psychological Capital had a direct and significant positive effect on psychological well-being (Estimate = 0.31, $p < 0.001$). This indicates that, beyond its role in influencing basic psychological needs, Psychological Capital independently contributes to an individual's overall well-being. This result aligns with prior research emphasizing Psychological Capital as a vital personal resource capable of buffering against stress and fostering positive mental health outcomes. Specifically, individuals with higher levels of optimism, resilience, hope, and self-efficacy reported greater psychological well-being, even when satisfaction with basic psychological needs was accounted for. This suggests that Psychological Capital serves as an intrinsic strength, enabling individuals to maintain higher levels of well-being regardless of external circumstances. The direct effect highlights its unique role in enhancing psychological health, demonstrating its importance not only as a mediator but also as an independent factor in promoting mental well-being.

These findings underscore the critical importance of developing Psychological Capital in interventions aimed at improving psychological well-being. Its direct contribution reinforces its value as a foundational resource that can complement the satisfaction of basic psychological needs to foster holistic mental health.

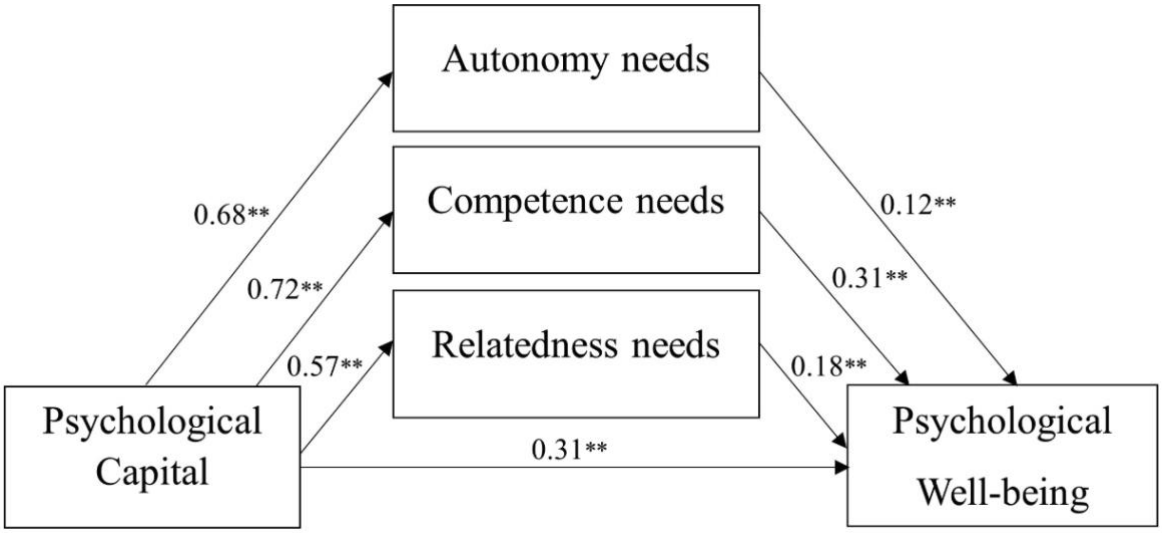

Figure 1: The Causal Model of the Influence of Psychological Capital on Psychological Well-being of Adult Informal Caregivers of Stroke Patients With Basic Psychological Needs as a Mediating Variable

Specifically, individuals with higher levels of optimism, resilience, hope, and self-efficacy reported greater psychological well-being, even when satisfaction with basic psychological needs was accounted. This suggests that Psychological Capital serves as an intrinsic strength, enabling individuals to maintain higher levels of well-being regardless of external circumstances. The direct effect highlights its unique role in enhancing psychological health, demonstrating its importance not only as a mediator but also as an independent factor in promoting mental well-being.

4. Implications for Practice

The results suggest several practical implications:

4.1 Interventions focusing on Psychological Capital: Developing interventions that enhance psychological capital (e.g., through resilience training, goal-setting workshops, or fostering positive thinking) could boost psychological well-being. Strengthening psychological capital can help individuals not only build internal strengths but also fulfill basic psychological needs, leading to improved well-being.

4.2 Supporting Basic Psychological Needs: Programs aimed at increasing autonomy, competence, and relatedness could be valuable for enhancing well-being. For instance, creating environments that support autonomy, recognize competence, and foster relationships can contribute to higher psychological well-being among individuals.

4.3 Holistic Approach: Given that psychological capital influences psychological well-being both directly and through the fulfillment of basic psychological needs, a holistic approach to well-being should consider both individual psychological strengths and contextual factors that help meet these basic needs.

Part II: Design a Curriculum and Educational Program That Is Consistent With Caregiver Needs Through the Integration of Principles of Psychological Capital and Basic Psychological Needs

Session 1: Understanding Stroke and Caregiver Roles
- Overview of stroke: causes, types, and common effects on patients
- Roles and responsibilities of stroke caregivers
- Importance of caregiver self-care and setting boundaries
- Promoting autonomy: Empowering caregivers to participate in care decisions and self-care practices

Session 2: Communication and Advocacy Skills
- Effective communication strategies for interacting with stroke patients
- Techniques for providing emotional support and reassurance
- Advocating for stroke patients' needs within healthcare settings
- Building competence: Practicing communication and advocacy skills through role-playing and real-life situation

Session 3: Practical Caregiving Skills
- Hands-on training in activities of daily living (ADLs) assistance, such as bathing, dressing, and feeding
- Safe transfer and mobility techniques for stroke patients
- Medication management and monitoring for potential complications
- Enhancing competence: Providing caregivers with practical skills and resources to confidently perform caregiving tasks

Session 4: Coping Strategies and Stress Management
- Recognizing and managing caregiver stress and burnout
- Techniques for coping with challenging behaviors and emotions in stroke patients
- Self-care practices to maintain physical and emotional well-being
- Fostering relatedness: Creating a supportive environment for caregivers to share experiences, offer peer support, and build resilience together

Session 5: Building a Support Network

- Connecting caregivers with community resources and support services
- Establishing peer mentoring relationships and ongoing support networks
- Strategies for maintaining social connections and seeking help when needed
- Promoting relatedness: Encouraging caregivers to cultivate meaningful relationships and networks for ongoing support and encouragement

Discussion

This study highlights the pivotal role of Psychological Capital and basic psychological needs in shaping psychological well-being. The findings underscore the multidimensional nature of well-being, demonstrating how both individual strengths and the fulfillment of basic psychological needs interact to promote holistic mental health. The results reveal that Psychological Capital, encompassing optimism, resilience, hope, and self-efficacy, not only influences psychological well-being indirectly through its impact on autonomy, competence, and relatedness but also has a significant direct effect (Estimate = 0.31, $p < 0.001$). This finding suggests that individuals with greater Psychological Capital possess intrinsic resources that buffer against stress and enhance their well-being, irrespective of the extent to which their basic psychological needs are satisfied. Such results align with prior research emphasizing Psychological Capital as a foundational personal resource for fostering positive mental health outcomes and stress resilience.

Among the basic psychological needs, competence showed the strongest predictive relationship with psychological well-being (Estimate = 0.31, $p < 0.001$), indicating that a sense of efficacy and the ability to manage tasks effectively is critical for improving well-being. However, autonomy (Estimate = 0.12, $p < 0.001$) and relatedness (Estimate = 0.18, $p < 0.001$) also played significant roles, highlighting the necessity of fostering independence and meaningful interpersonal connections. These findings align with Self-Determination Theory, which posits that the satisfaction of these three basic needs is essential for optimal functioning and mental health. Overall, the results emphasize that Psychological Capital serves as both a direct contributor to psychological well-being and a mechanism for satisfying basic psychological needs. Together, these factors create a comprehensive framework for understanding how to enhance mental health. The findings advocate for interventions that address both individual psychological strengths and contextual factors that support autonomy, competence, and relatedness.

This study also utilized a mixed-methods approach to examine the relationships between psychological capital, basic psychological needs, and psychological well-being among informal caregivers of stroke patients. The combination of quantitative data and thematic analysis of qualitative interviews provided a comprehensive understanding of caregivers' experiences and challenges. These findings were instrumental in designing an educational program tailored to address their specific needs. The discussion integrates the key findings with relevant theoretical frameworks and their practical implications.

Table 2: Educational Program for Adult Informal Caregivers of Stroke Patients

Session	Topic	Theoretical Background	Principles/Concepts
1	Understanding Stroke and Caregiver Roles	- Stress and Coping Theory: Understanding the impact of stress on caregivers and the importance of self-care. - Self-Determination Theory: Emphasizing autonomy in caregiving decision-making.	Autonomy: Empowering caregivers to make informed decisions about caregiving. Psychological Well-being: Recognizing the importance of self-care for maintaining caregiver well-being.
2	Communication and Advocacy Skills	- Social Learning Theory: Learning effective communication and advocacy skills through observation, imitation, and practice. - Transactional Model of Stress and Coping: Teaching caregivers' strategies for managing stress and supporting stroke patients.	Competence: Building caregivers' confidence in communication and advocacy skills through practice and feedback. Relatedness: Fostering supportive relationships through effective communication.
3	Practical Caregiving Skills	- Bandura's Theory of Self-Efficacy: Building caregivers' confidence and competence in performing caregiving tasks through skill-building activities. - Adult Learning Theory: Providing hands-on training and experiential learning opportunities to enhance practical skills acquisition.	Competence: Equipping caregivers with practical skills and resources to enhance caregiving effectiveness.
4	Coping Strategies and Stress Management	- Lazarus and Folkman's Transactional Model of Stress and Coping: Teaching caregivers adaptive coping strategies to manage stressors associated with caregiving. - Resilience Theory: Building caregivers' resilience through stress management techniques and self-care practices.	Autonomy: Empowering caregivers to choose and implement coping strategies that work best for them. Psychological Well-being: Promoting caregiver resilience and well-being through stress management techniques.
5	Building a Support Network	- Social Support Theory: Recognizing the importance of social connections and support networks in buffering caregiver stress and promoting well-being. - Attachment Theory: Facilitating the formation of supportive relationships and attachment bonds within the caregiving community.	Relatedness: Creating a supportive environment where caregivers can connect, share experiences, and provide mutual support. Psychological Well-being: Enhancing caregiver well-being through social support networks and meaningful relationships.

The findings indicate that caregiving roles are deeply influenced by stress and the need for emotional resilience, as suggested by the Stress and Coping Theory. Caregivers often

encounter high levels of stress due to the demands of their role, impacting their well-being. In this context, practitioners emphasized the importance of self-care and decision-making, aligning with the Self-Determination Theory. By promoting autonomy and empowering caregivers to take control of their caregiving responsibilities, the program helped to reduce stress and improve psychological well-being. These findings underscore the significance of fostering autonomy to enhance caregivers' capacity to manage their roles effectively.

Furthermore, the sessions on communication and advocacy skills revealed the application of Social Learning Theory and the Transactional Model of Stress and Coping. Caregivers improved their competence by observing practitioner demonstrations, engaging in role-playing activities, and practicing advocacy techniques. These interactive methods allowed caregivers to model effective behaviors and apply them in real-life situations. Additionally, stress management strategies introduced during these sessions reinforced the importance of coping mechanisms in addressing caregiving challenges. This alignment between theoretical frameworks and practical interventions highlights the value of incorporating peer feedback and role-playing to build both competence and confidence among caregivers.

In addition to communication skills, practical caregiving skills emerged as a critical area for caregiver development. The application of Self-Efficacy Theory and Adult Learning Theory in these sessions provided caregivers with hands-on training opportunities that significantly boosted their confidence and competence. As Bandura's Self-Efficacy Theory suggests, mastery experiences are crucial for building self-efficacy. By engaging in experiential learning activities, caregivers were able to apply their knowledge in practical scenarios, reinforcing their caregiving capabilities. This approach highlights the importance of skill-based training in future programs to ensure caregivers feel confident and capable in their roles.

The program also addressed stress management and resilience through activities aligned with Lazarus and Folkman's Transactional Model of Stress and Coping and Resilience Theory. Caregivers were encouraged to adopt adaptive coping strategies tailored to their unique stressors. Resilience-building exercises, emphasizing self-care and psychological well-being, helped caregivers navigate ongoing challenges more effectively. These strategies not only reduced stress but also enhanced caregivers' long-term resilience. Importantly, the ability to tailor stress management techniques to individual needs allowed caregivers to autonomously select and implement strategies that worked best for them, reinforcing the principle of autonomy.

Lastly, the development of support networks highlighted the relevance of Social Support Theory and Attachment Theory. Caregivers reported that forming connections within the caregiving community provided emotional security and reduced feelings of isolation. These supportive relationships served as a buffer against stress, promoting psychological well-being. The findings suggest that fostering a sense of relatedness among caregivers is essential for enhancing their mental health and reducing caregiving burdens. The inclusion of support networks in educational programs can thus play a crucial role in sustaining caregiver well-being.

Limitations and Future Research

While the findings are promising, some limitations should be considered. The study's cross-sectional nature limits causal interpretations: future research should explore longitudinal

designs to confirm these relationships over time. Additionally, investigating how contextual factors (e.g., severity of care burden, family support) interact with psychological capital to influence basic psychological needs and well-being could provide a more comprehensive understanding of these dynamics. Future interventions should continue to build on these findings, emphasizing tailored, skill-based, and supportive strategies to empower caregivers and promote their long-term well-being.

Conclusion

This study highlights the pivotal role of psychological capital in influencing basic psychological needs and psychological well-being. By fostering optimism, hope, resilience, and self-efficacy, individuals are better equipped to feel autonomy, competence, and relatedness, which in turn enhances psychological well-being. Both direct and mediated pathways through which psychological capital impacts psychological well-being underscore its value in interventions aimed at improving mental health and quality of life. Developing programs that nurture both internal psychological resources and fulfill basic needs may be key to enhancing psychological well-being across different populations.

Acknowledgments

This project is funded by National Research Council of Thailand (NRCT).

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Contact emails: sittipongw@g.swu.ac.th
piriyanath.otr@g.swu.ac.th

From College-Professor to School-Teacher: A Small Step for Students, a Giant Leap for Teachers, or Vice Versa?

Eran Gur, Azrieli College of Engineering, Israel

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
The transition from being a high school pupil to becoming a college (or university) student might place high requirements in terms of in the learning abilities and maturity. For most people the role of the college professor might seem quite similar to that of the high school teacher. However, as students differ from pupils, in age, knowledge and emotional tools, the requirements for lecturers at colleges and universities are quite different from the ones needed to be a high school teacher. It is no wonder that most lecturers do not hold a teaching diploma while it is a must for high school teacher. Teaching teenagers contains many aspects of social and emotional learning and teaching abilities, while teaching college students usually requires academic knowledge in a field of interest and a basic ability of transferring it. In this work the researcher uses his own experience as a college and university lecturer for almost 20 years and as a relatively new high school teacher to compare the two teaching experiences. The work compares teaching electrical engineering undergraduate courses at college to teaching high school physics to 14-16 years old pupils. The research combines data of several years of college teaching in groups of 30-40 students per class and the data of 4 high-school classes, containing similar numbers. The purpose of the work is to compare academic teaching to high-school (pre-academic) teaching in terms of personal attention, teaching techniques, grading methods and more, to determine what tools are suitable for which population.

Keywords: Engineering Education, Physics Teaching, Long Life Learning, Social and Emotional Learning

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Introduction

1. Why I Became a College Lecturer?

In 1994 I began my MSc studies in Electrical Engineering and to obtain a scholarship I had to become an assistant lecturer. Almost immediately I fell in love with teaching and the no-barrier connection with my students. As I wished to continue teaching, I went on to do my PhD in Electrical Engineering, during which I had the chance to be the lecturer and not just the assistant in several courses. After finishing my PhD I had to choose between trying to get into the university and getting into an Engineering College. As the main difference was that in the university most of the work is in research and only a very small portion of time is dedicated to teaching and in the college, it was exactly the opposite I chose to become a faculty member in a respectable Engineering College. Since then, I served as head of the Electronics Department in two different colleges but still my biggest passion is teaching. The ability to transfer my knowledge to a new generation of students and at the same time learn from them and adjust the classes to real life matters.

2. Why I Became a Schoolteacher?

During my research at the College, I went to several conferences on engineering education, and I came to understand that many of the advanced modern reaching methods in the academy were invented by schoolteachers, such as the flipped classroom (Bergman & Sams, 2012, Kerr, 2015). The next step was to go back to the university and study for a high-school teaching certificate in Physics hoping to learn some new methods of teaching such as productive failure (Kapur, 2008; Kapur, 2010; Safadi, 2022), Predict-Observe- Explain (POE) (Sajidan et al., 2014) or Toulmin's Argument Pattern (TAP) (Erduan, 2018). During my studies I became aware of the shortage in science teachers in high schools not only in my country but also in other countries due to the technological changes in recent years (Krumsvi et al., 2016). These changes affected the engineering education as well (Tsarapkina et al., 2001). So, with a sense of mission I decided to teach physics at a small but quality high school in my hometown. This is also a part of the LLL (Life-Long Learning) strategy that aims not only to connect the academic life the industrial life that follows but also to the school educational life that precedes (Hargreaves, 2004).

Classifying the Main Objectives for Teaching and Learning

In this section we show the main topics in which we compared high school teaching to college teaching, mainly methods, how to address new material, how to grade students and pupils and how to receive feedback from them.

1. Teaching Methods and Approaches

Both college and high school teaching were based until very recently on the principle that a lecturer (or teacher) stands before the class and unveils his knowledge to the listeners and viewers. this was the standard since the first industrial revolution. This has changed in recent years as knowledge became available in numerous channels and the role of the lecturer had to change. The importance of demonstrations and experimenting with the material taught has risen and thus the hours dedicated to lab work in colleges and high schools is increasing all the time. For example, In the technique of flipped classroom, the students (or pupils) are exposed to the theoretical background whether via textbooks or videos before the meeting in

class and the lecturer uses the time in class to practice the knowledge rather than to teach new material. This methos is now very popular both in college teaching and at high schools. A second method of productive failure (and its' close relatives Predict-Observe-Explain and Toulmin's Argument Pattern) suggest that the lecturer starts by asking questions even before the students have basic knowledge on the subject at hand. Thus, by learning from the mistakes of ourselves and others we understand what we should or shouldn't do when solving a specific problem. A third approach is Problem Based Learning (PBL) (Santana & De Deus Lopes, 2024; Mills & Treagust, 2003), where students are faced with a problem, and they study the laws of physics not as a theoretical subject but rather as a tool to help them solve the problem. This tool is rarely used in class as pupils tend to think that what was right for a specific problem will be true for all problems and fail to see what can be generalized and what cannot. College students, however, are expected to have higher abilities in using specific problem to understand more general cases and for them many times the approach reaches a higher level of Project Based Learning (again PBL) that is not applicable for most high school pupils as their cognitive level is not advanced enough.

2. Teaching New Material

When teaching new material, the teacher must take into account the previous knowledge of the pupils and their expected abilities. Some teachers spend the first couple of lessons reminding the pupils of things they have already studied (and might have forgotten). In college teaching usually lecturers refer the students to specific sources and do not spend a lot of time or repetition. Most lecturers these days use presentations, videos, and simulations to pass the knowledge to the students while, according to my experience, high school teachers still prefer to use the whiteboard and as little technology as possible. The college lecturer today is more of a mentor and less of the teacher, as the students learn new material under his guidance. This is less suitable for many old schoolteachers and for most pupils that are not as independent as college students in performing tasks.

3. Grading

In high school and in college the teacher can give as many home-assignment as he/she wants but in high school there're usually 2 exams during the semester, equally important while in college there's one final exam that has the largest impact on the final grade. In college the grades are set on a scale of 0 to 100 and if someone does not perform any task, he/she will receive a zero. However, school kids are a more delicate population and there's a fear of what a zero might do to the pupil's confidence, so the lowest grade given is a 40, which is a failure but still gives the pupil some hope (e.g., if the second grade is an almost good 70 the average is 55 which is usually a pass). The latter is part of the Social-Emotional-Learning (SEL) approach that tries to understand that children are children and thus must be handled more gently than adults. In college if the average grade is too high in the final exam, in many cases the lecturer has to explain what has happened to his/her superior (was the exam too easy. Did the students succeed in copying, etc.) but in high school if the average grade is too low in any of the exams the teacher has to explain what has happened to his/her superior.

4. Feedback

In college teaching it is much easier to obtain feedback on the quality of teaching since there's a working feedback system and the students are adult enough to answer all the questions properly. It is much harder to apply this in high school since the pupils are all

teenagers and their ability to give reliable answers is limited. They are also afraid many times to speak their mind and even to participate in anonymous polls as they do not believe they are really anonymous. Therefor the teacher has fewer external tools to improve himself than the lecturer and he must rely on his intuition.

Insights on Being a College Lecturer

Since I began teaching college students I taught many subjects in many fields, such as electronics, optics, communication systems, semiconductors, and software engineering. I taught in two universities and three colleges and taught in the classroom and from a far (during the Covid-19 plague). I've tries the classical teacher-stands-and-talks approach as well as flipped classroom and productive failure. From this experience I derive some of teaching in college advantages and disadvantages as shown in Table 1.

Table 1: Advantages and Disadvantages of College Teaching

Topic	Advantage	Disadvantage	Remarks
Syllabus	Can be changes to coordinate with other courses.	Once it is published you can't change it.	There's some control of the Council for Higher Education on the subjects.
Teaching methods	Completely flexible, PBL, flipped classroom etc.	Most of lecturers still write on WB.	Students always expect more than they get.
Grading	Can give any grade and choose between evaluation methods.	If someone fails the final test, home assignments can't help them pass the course.	If grades are too high the teaching committee checks the exam.
Feedback	Lecturers can see where they can improve their teaching and decide how to do so.	Personal opinions might corrupt results if overall number of students is small.	There is a feed-back system that works the same in all universities and colleges.
Attendance	Up to teacher to decide whether required or not.	If there's extremely low attendance lecture must be recorded.	Labs require attendance but most other courses do not.
Flexibility	Teachers can build their own course, within academic limits.	Method of evaluation can't be changed once posted.	Within college definitions.

Insights on Being a Schoolteacher

I am new to school teaching. I mainly teach 10th grades ray optics and basic kinematics, but I also teach 9th grades in a special plan for pupils who excel in mathematics and want to start their kinematics in an early stage (other 9th grades just study basic energy calculations). From talking to other teachers and from my own short experience I may point out several advantages and disadvantages of teaching in high school as shown in Table 2.

Table 2: Advantages and Disadvantages of High School Teaching

Topic	Advantage	Disadvantage	Remarks
Syllabus	The emphasis on subjects is flexible.	Very strict and the teacher has no say.	Ministry of Education defines the syllabus.
Teaching methods	Flexible, conventional, constructive failure, flipped classroom etc.	Method can't be too advanced.	Most pupils are unable to be completely independent.
Grading	Home assignments can make for bad test results.	Can't give less than 40.	If grades are too low the headmaster speaks with the teacher.
Feedback	Teachers can change the approach they use to fit the specific class.	Pupils do not give formal feedback, making it hard to know what the majority of pupils want or need.	The feedback in high school is usually from above and not from below.
Attendance	All pupils must attend.	Difficult to keep up if one misses class.	Studying is mandatory until the age of 16.
Flexibility	Teachers can build their own course, within limits of ministry of education.	No flexibility in hours, headmasters do not support novelty.	School hours and room assignment are very non-flexible.

Another main difference between being a college lecturer and a high school teacher is the non-academic issue of salary versus investments. High school teachers must teach at least 24 hours per week for a full position while college lecturers need only to teach 12 hours per week for a full position. When you add that a full-time teacher makes less money than a full-time lecturer, one may understand why so little good educators do not choose to teach in high school.

Long Life Learning Benefits

The main purpose of Long-Life Learning (LLL) is to teach college students the state-of-the-art tools that will help them succeed in the industrial world when they finish college. However, the continuity between high school education and college education is not less important. In recent years the will to allow more pupils from the periphery to have a full matriculation has caused a decrease in the level of science teaching in schools around the country while the demands of the colleges and universities remained the same, making an almost impossible barrier for average pupils to succeed as students. The purpose of LLL in this connection is to bridge over these difficulties by smarter teaching techniques and methods in high school. If more college lecturers will become schoolteachers, they will be able to build a strong teaching bridge between the two worlds

Conclusion

In this paper the author described his own experience as an undergraduate electrical engineering college lecturer and a high school physics teacher. The author describes the similarities and differences between the two positions and the advantages and disadvantages of both. The author hopes that pupils will benefit from the teaching knowledge college lecturers bring from college and understand the aims of the different subjects taught. The author also hopes that understanding the basic problems of school pupils will help in

improving the teaching of undergraduate students and that more college lecturers will follow him.

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The Preservation of Culture and Indigenous Languages in a Multiculturalism Context

Kamogelo Macdonald Noge, North West University, South Africa

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
Culture as a way of life ought to be preserved accordingly in different indigenous communities that prides itself with their heritage. Language transfers knowledge and practices that instils indigenous life skills education to a particular ethnic group maintaining their culture for their own benefit. The issue behind the distortion of culture and indigenous languages is that people adopt different cultures and languages from other spectrums. This paper aims to underpin various strategies that can be utilized to maintain one's culture and language through embracing their identities even in a multicultural setting. This paper applies a mixed method approach with an indigenous paradigmatic lens to elucidate meaning on the trends and arguments within the challenges and preservation of culture and indigenous languages. The study identified North-West University's (NWU) Bachelor of Indigenous Knowledge Systems (BIKS) students as participants and a sample of 50 students from various ethnic communities were sampled purposively. Data was collected using a questionnaire and it was analysed using thematic analysis and Statistical Package for Social Sciences (SPSS). The paper finds that although some languages and cultures are viewed as inferior towards the contemporary education, there is a need for a policy shift in a multicultural setting. Embracing and mainstreaming culture and language within the education system of South Africa will ensure that the education becomes meaningful and relevant. The paper concludes that institutions of learning should develop and implement language policies which will ensure that various indigenous languages are intertwined within the teaching and learning missions of these institutions. Mainstreaming culture and languages ensure a solid sense of belonging(heritage) that will move from generation to generation through institutions of learning.

Keywords: Culture, Indigenous Language, Education

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Introduction

Language plays an important role towards the transfer of knowledge, wisdom and experiences. It is a line of communication that brings about a one's sense of belonging within a certain ethnic group. So, to say, the role of research in underpinning the preservation of culture and indigenous languages in a multicultural setting is key to foster the revitalization one's identity.[1] Without research and publications, the revitalization and preservation of culture with languages goes into extinction due to not being put at the centre of exposure by researchers and publishers not embracing their own identities.[2]

In the academic diaspora, people meet from all works of life and exchange knowledge through same or different languages. With some being adoptive of certain cultures, they end up shifting from their own ways of life to another leading to their own cultures and languages in danger. Many of researchers or scholars believe that writing and publishing may keep indigenous languages alive in a dynamic and technologically driven society. According to Bernard *et al*. (2020), linguists are very important in the academic dispensation because they can create publishing houses and language preservation nest programs that will perpetuate culture and language diversity within multi-ethnic society.

In South Africa, the concept of Ubuntu has always been at the forefront of creating a harmonious society that will accept one's culture and language without discrimination, inferiority and rejection. With the use of African indigenous life skills educational background ubuntu philosophy is disseminated with the principles, values and customs enshrined in one's character since the brought-up phase. This clarifies that the ubuntu philosophy is one tool that can be adopted by any ethnic group since it resembles humanity (botho) around the world with different cultures and languages that thrives to survive in the catastrophic space of emerging ways of life (Johnson & Quan-Bafour, 2015).

As mentioned above, African indigenous life skills education plays a crucial role in indigenous communities of South Africa, however institutions of higher learning should be the ones carrying out the mandate of language and culture preservation with its policies. This creates a space of language proficiency for students, graduates and workers who want to pursue their interests in multilinguistic associations that will assist in promoting language and culture (Lo Bianco, 2010). Be that as it may, some countries have lost their indigenous languages because they were seen as inferior and there were no strategies put in place to embrace, promote and preserve them.

Through the reflection of research in indigenous knowledge systems unique to a specific group of people, culture and language is at the forefront of everything. Indigenous philosophical underpinnings of indigenous knowledge research emphasize the use of language in research as it carries knowledge from the participants engaging freely without any difficulty (Bhuda, 2021). Moreover, there cannot be people without culture hence culture and language cannot be separated from each other they are interlinked for reasons that are outmost best for a human being.[3] The sole purpose of this research is to mainstream culture

[1] Aiseng, K. (2024). Theoretical Underpinning. In The Sociolinguistics of South African Television: Language Ideologies in Selected Case Studies (pp. 45-85). Cham: Springer Nature Switzerland.
[2] Hermes, M., Bang, M., & Marin, A. (2012). Designing Indigenous language revitalization. Harvard educational review, 82(3), 381-402.
[3] Gehlawat, D. The Interlinking of Language, Culture and Communication in Literature.

and indigenous languages in a multicultural context, remind people that one's culture and language is important.

Challenges and Prospects of Indigenous Languages and Culture in Higher Institutions of Learning

Institutions of higher learning are the main advocators of knowledge preservation, disseminators and should be the ones scrutinizing the indigenous languages and culture preservation discourse (Kuznetsova, 2020). There are challenges that employees and students face in the corridors of institutions not only personally but language barriers affecting their academic and work performance. Although English is the universal language built in within the teaching and learning frameworks of other systems, native languages should also be mainstreamed in the curriculum to embrace decolonial agenda that seeks to uphold one's identity from any spectrum (Macedo, 2019).

It is also crucial to note that curriculum and pedagogy is deeply implicated in the grounding, validating bases to a narrative transformation and transform higher education in institutions (Maditsi & Bhuda, 2023). This can be achieved by mainstreaming various scholars, including indigenous scholars who can stand steadfast and counter the non-transformation that seems to bring the HEIs around the world to stagnation. The colonial era in the case of South Africa, repressed indigenous knowledge as well as indigenous worldviews with its epistemologies hence the unequal language and cultural preference (Breidlid & Botha, 2015).

African indigenous languages with its culture and other knowledge systems around the world are left at the periphery of knowledge economy due to Eurocentric knowledge domain and worldviews that perpetuates marginalization and inferiority complex (Shewadeg, 2023). Most of the students, encounter a designed culture at higher institutions of learning and end up struggling to adjust, for obvious reasons it is different from what they are accustomed to (Kezar & Eckel, 2002). Furthermore, most of the students end up dropping and going home due to the challenging environment and there are others who develop resilience to adapt, acclimatize and cope with the challenges.

For rural students it is a challenge, basically peers coming from an urban area signifies a fast life and they seem to be more privileged than the others. In a nutshell, this is true because they can make a lot of friends in a short space of time and can communicate their challenges to their instructors better (Ajani & Gamede, 2020). This is due to the language issue from different backgrounds to the higher institutions of learning. However, this does not limit nor define student's progress towards academic achievement and life choices. In addition, institutions of higher learning should consider reworking the student's programs in the system to allow full participation of students from different aspects of life and condemn skin, culture and language intolerance (Billet, 2009).

Field & Morgan-Klein (2010), alludes that there should be transitional phases which includes three elements "exclusion marked by rites of separation, the liminal phase characterised by rites of transformation, and incorporation where the new identity is marked and where the individual is incorporated into society as a new kind of social person". According to Maditsi & Bhuda (2024), the positive phase of institutions of higher learning in preservation of culture and language is that it transitions a student social and cultural standing by equipping them with formal credentials, knowledge, new social networks, and to varied degrees, altered lifestyles.

In comparison with the students found to attend the same institution from different settings, the rural student seems to be grounded more on their cultural beliefs unlike the ones from the urban areas.[4] It is because the rural ones were taught in a different way, from an African perspective indigenous life skills education from home plays a key role. Moreover, even though rural students have limited networking stands a chance of leaving the institutions after graduation with their own solid culture and language which they use on daily basis (Nelson, 2019). Without biasness, students from urban areas are likely to leave the institutions of higher learning with diluted language and adopted cultures that does not define who they are and what they stand for.

Not glorifying the challenges that students and employees face at higher education, universities are doing better in trying to create space for all the student equitably without favouritism to cab the challenges that they encounter (Bozat, 2020). Teaching and learning at higher institutions become easier through the involvement of the following skills: listening and speaking, writing and presenting, reading and viewing, as well as language structures and conventions. This is done throughout the module outcome guidelines by the instructors to give students a clearer understanding of what is required from them as the tomorrow's graduate who are going to contribute to the local economy of their countries.

The Role of African Indigenous Languages and Culture in Research

Philosophical Approaches in Research

Language plays an important role in research generally, communication flows by words that create a language. Indigenous knowledge research is enriched by African indigenous languages because that is where knowledge holders freely give knowledge using language (Manyike & Shava, 2018). In simple terms, knowledge is embedded in language and research is dependent on language. It is important for researchers particularly the ones from Indigenous knowledge system background to note that embracing African research, language is of paramount and significant. Knowledge transfer is dependent on language, researcher in general depend on language to communicate to the knowledge holders.[5]

Language difficulties can cause a serious negative effect in the social sphere particularly in research because that is where the knowledge is embedded (Verkhovod *et al.*, 2023). A researcher would collect data, transcribe it and translate it into English but end up loosing the rich meaning of what the participant was trying to say hence the importance of language. It does not matter from which background the researcher is coming from; language plays a crucial role within the space of research. Therefore, it is important for scholars to always revert to their participants for verification of what they had provided during the interviews (Birt *et al.*, 2016). Most of the participants from the local communities use their indigenous languages as it is the language of communication and more of what they know can only be expressed through their language.

According to Addis (2016), there is tacit and explicit knowledge, and these two kinds of knowledge differs according to their reveal, tacit knowledge is difficult to be solely

[4] Jannat, M., Onee, K., & Nahid, M. (2022). Effect of Culture on English Language Practice: A Comparative Study between the Urban and the Rural Background Students. IOSR Journal of Humanities and Social Science, 27, 46-53.
[5] Vintar, Š., & Grčić Simeunović, L. (2017). Definition frames as language-dependent models of knowledge transfer. Fachsprache-Journal of Professional and Scientific Communication, 39(1+ 2), 43-48.

transferred whereas explicit can be. Therefore, one must be critical when dealing with such by considering the use of language and how they will analyse without distorting the actual meaning of what they collected (Alase, 2017). Theoretically in research, the researcher ought to position themselves within the study phenomenon and create a strong narrative of whatever they want to solve with their research. In the African indigenous research, scholars usually utilize the indigenous standpoint theory which positions themselves towards the study phenomenon. This further describes their experiences in terms of political, social and cultural stance of the researched phenomenon (Cox *et al*., 2021). However, this is complicit with the use of languages that are used when conducting a study and how the participant's cultures relate with the study phenomenon.

Through research and publications language and culture can be preserved moreover they will play a role in revitalizing one's identity hence in the definition of indigenous knowledge, knowledge is transferred from generations to generations.[6] In the academic diaspora, knowledge holders are the centre of a successful research because they are the ones providing rich information and views about cultures with their languages therefore is no language and culture role in research without them. According to Chilisa (2019), it is important for researchers to proudly begin to recover, value, and internationalizing Indigenous research methodologies to showcase their interests in language and cultural stance.

The hierarchy between the dominance of indigenous languages and cultures is obviously influenced by one's identity, embracing and perpetuating values with principles that guides them. Wolters (2015) argues that English is the *Lingua franca* in philosophy of science and scholars who plays an academic game outside this trail, they are likely not to get recognition in places of academes. This is one of the reasons why most of languages fade away as they are not utilised more in publications and research because of unequal privilege (Cameron *et al*., 2018). If all languages could be equal in research and publications, the preservation of culture discourse would be doable in institutions of higher learning, strategic organizations and the society.

Incorporating Indigenous Pedagogies to Foster Teaching and Learning at Higher Education Institutions

Ubuntu Philosophy Towards Higher Education System

Throughout the document where the gapes have been identified, there is a need to highlight the most critical issues that are experienced by the society with regards to the higher learning institutions. Higher Education Institutions (HEIs') have been challenged by society that their teaching and learning (T&L) strategies fail to focus and dwell on the problems that are experienced by communities (Maditsi *et al.*, 2024). This involves computer learning skills, language barriers and culture, difficulties of online learning, urban life and adaption, struggles of students making friends in the environment. The whole of the mentioned challenges is at the centre of why educational progress is sometimes stagnant for students that are not familiar with the current contemporary education system (Poyrazli & Grahame, 2007).

[6] Gundakanal, S. S., & Kaddipujar, M. (2024). CULTURAL CUSTODIANS: THE ROLE OF LIBRARIES IN PRESERVING AND PROMOTING LANGUAGE, LITERATURE, AND HERITAGE.

From an African indigenous perspective, it is important to note that when solving mentioned issues to foster teaching styles (pedagogy) ubuntu philosophy is of paramount noteworthiness. According to Assié-Lumumba (2017), ubuntu philosophy has the power to reunite students and university staff members, create a conducive learning environment by fostering harmony, inclusiveness among students from different cultural and ethnic backgrounds. The notion does not end there but deeper understanding is required to grasp its concepts and principles to incorporate it into the educational system (Masondo, 2017).

The authors of this current study felt that it is crucial to converse about the frameworks that are built within the current educational system, whether internationally or nationally because every ethnic group has its own unique preference. Educational frameworks at higher institutions of learning lack the essence of cultural tolerance and language promotion/preservation.[7] Therefore, there is a need to reshuffle the curriculum to incorporate other pedagogical approach such as indigenous knowledge systems, that perpetuates studies involving one's culture and language tolerance (Mpungose, 2020).

The reality about the phenomenon, lack of realization and use of indigenous languages in lecture rooms has also contributed to the negative image of the institutions as they are viewed as being detached from the realities of society (Canagarajah, 2024). Now today, the demand for outsourcing knowledge holders from the society into the educational system is becoming higher than expected (Kaya & Seleti, 2013). Research is conducted from knowledge holders within the communities, the realization of preserving culture and languages should begin by certifying the researched people and mainstreaming their pedagogical approaches into the educational systems.

Conclusions

The study concentrated on challenging and preserving culture, inter/multiculturalism and language. The authors came up with a substantiating tittle of *"The preservation of culture and indigenous languages in a multiculturalism context"* to broaden the scope of research to acquire more insights of the challenges and prospects faced by students in higher institutions of learning. The study was conducted in the Northwest University, Mafikeng Campus with the Bachelor of Indigenous knowledge systems students. This study employed mixed method approach where qualitative and quantitative data was collected and merged. The authors used purposive sampling and snowballing with interpretivism and descriptive paradigm. Fifty (50) students were identified for the study. Ten (10) of each representing first year until masters. The collected was analysed using two methods, quantitative data analysed using statistical package of social sciences (SPSS) and qualitative data analysed using thematic analysis following Braun and Clarke (2017) six phases. The study also showed that building resilience towards preserving languages and culture is important for the society. Set of questions were asked to the students and the following were the main findings of the study.

[7] Brown-Jeffy, S., & Cooper, J. E. (2011). Toward a conceptual framework of culturally relevant pedagogy: An overview of the conceptual and theoretical literature. *Teacher education quarterly*, *38*(1), 65-84.

Language

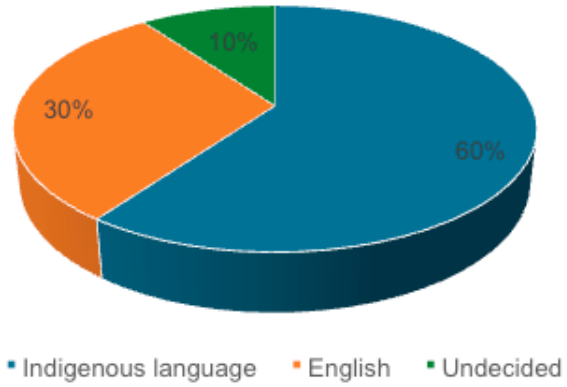

Figure 1: Student's Responses on Language Importance

After the collection of data, the following results were discovered out of 100% rate; sixty (60%) of the students indicated that using indigenous languages in a higher institution of learning is vital for cognitive learning and will help to create harmonious environments for all the student in the same space. Most of their responses related to the preservation of languages and culture (60%) were sure and positive. Thirty (30%) of them indicated that English is the best language of exchange, easy to learn, writing in research and publishing. Ten (10%) of the students were undecided and feel that English and indigenous languages must coexist for a harmonious and conducive learning environment. With the authors analysis, the students who indicated the importance of preserving culture and languages were from rural areas and small portion of them were from urban setting.

Culture

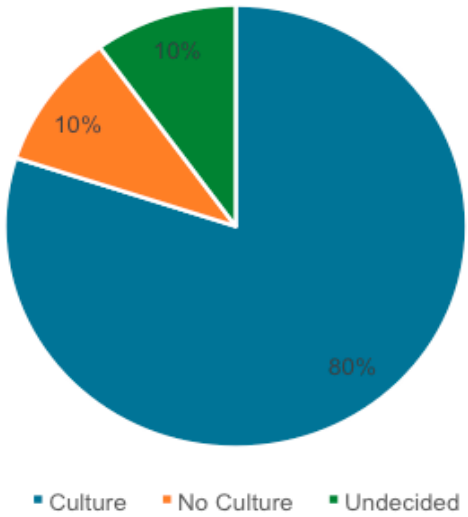

Figure 2: Student's Responses to Culture and Its Importance

Eighty (80%) of the students agreed that culture has a serious role to play in learning institutions and in society at large to preserve its values and principles. Ten (10%) of the students disagreed that culture has a role in shaping the society and important for individuals. This is the view that they have according to their backgrounds and lifestyle choices. Ten (10%) was undecided on whether culture is relevant in a society or not. Furthermore, this is one of the pieces of evidence that the incorporation of pedagogies is required at higher learning institutions.

Language as Conveyer of Valuable Knowledge and Indigenous Knowledge

The responses of the students were unique in terms of how they view participation in research particularly with language and knowledge. Language conveys knowledge with its richness and multiple facets that strengthens social constructs between the knowledge holders of indigenous knowledge and the researcher. Without language, indigenous knowledge and culture will not be preserved and assimilated to the decolonial discourse within the current contemporary education. The relationship between language and indigenous knowledge goes beyond through preserving concepts and epistemologies that shapes one's identity. Moreover, research will still depend on language philosophy because it underpins research enormously.

Multiculturalism Embodies Ubuntu and Collective Learning

From an African perspective, a group of indigenous people are viewed as a collective whether multiracial or not. This is the application of ubuntu concepts that perpetuates values, inclusiveness, tolerance, heritage and unity. Senior students (masters) indicated that ubuntu philosophy is key to the revitalization of culture and indigenous languages by enforcing humanity, compassion, respect, dignity, and reciprocal caring for lively environment. With the concept of multiculturalism and the application ubuntu, collective learning at higher institutions of learning will be achievable without any racial discrimination, racism and verbal harassments.

Culture as a Way of Life and Knowing

Senior students emphasized that culture in forms the ways of knowing, how to learn, write and present in the academic spaces. This took the authors back to the pedagogical discourse, ways of introducing and application of different styles of teaching in higher institutions of learning. Some of the students stated that they believe in what they are being taught from because institutional cultural space comprises of different people grasping and ending up losing themselves along the academic journey. However, they do not have a problem with cultural exchange but one must remain grounded throughout the journey.

In conclusion, there is a need for policy shifting within the higher education system for the recognition of other languages that indigenous scholars would like to use in research and publications. It is mandatory for students to be technologically literate and use English as their primary language of teaching, which presents a problem and obstacle for students from rural areas. Rural students have a hard time fitting into university culture, which limits their ability to ask for assistance when they encounter challenges. Receiving assistance from university officials and taking part in events that promote interaction and a seamless transition to higher education are the best ways to proceed. Within the African institutions of higher learning, there are built in euro-centric frameworks that postulates individualism and continues to detach students, instructors and management from the social realities. In addition, neo liberal ideologies enjoys the superior ranking within African and other state's education, that is a real problem because they promote self-efficacy, self-reliance and centralism hence why African advocates for Ubuntu philosophy that fosters solidarity and collectiveness. Multiculturalism on its own, it's a quest to decolonise, preserve culture and language by challenging institutions such as social, educational, financial and other institutions that absorbs people from all walks of life. Indigenous knowledge plays an important role when dealing with concepts that involves culture and indigenous languages affiliated to any state or country.

Acknowledgements

I Kamogelo Macdonald Noge would like to thank the following people from the bottom of my heart and acknowledge them for assisting me to put together the presentation and this research for the **Korean conference on education (IAFOR)**, my family the Gaotingwe and my brother Katlego Perseverance Noge. From the academic side my big thanks:

The Council for Scientific and Industrial Research (CSIR)
Northwest University, Mafikeng Campus (Indigenous knowledge systems centre)
Mr Mothusiotsile Maditsi, Dr Motheo Koitsiwe, Thato Hazel Seemise, Mandy Rasehlomi, Thembeni Khumalo, Vanessa Risimati, Avie Matsotso, Mandla Wiseman Mohini, and Tshego Mmutle.

All the mentioned individuals were always at my disposal, financially, morally and emotional support as it is a strenuous journey of academia.

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Contact email: 29355435@mynwu.ac.za

The Impact of Gamification on Students' Learning Outcomes: A Literature Review on the Affective, Cognitive and Psychomotor Domains

Charitha Samarawickrama, University of Gloucestershire, United Kingdom
Durani Rathnayake Mudiyanselage, University of Gloucestershire, United Kingdom

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
The implementation of gamification has become a new trend in education by integrating technological advancement with game elements to enhance students' learning. Although a considerable number of literature reviews exist about gamification in educational contexts, few literature reviews have focused on analyzing the impacts of gamification on students' learning and outcomes. However, there is no such review study to analyze the comprehensive impact of gamification on students' learning outcomes by considering all the aspects of learning domains-cognitive, affective and psychomotor. This study is a review of forty (40) articles about the impact of gamification on students' learning published in seven major educational technology research journals from January 2015 to April 2024. The major findings of this review indicate a significant positive impact on students' learning outcomes in cognitive, affective and psychomotor domains. The strongest impact of gamification is made for learning outcomes in cognitive domain followed by psychomotor and affective domains. Moreover, the study identified several gaps in gamification literature. More longitudinal research is needed to analyze the long-term impact that gamification has made on students' learning outcomes. Moreover, researchers and designers of gamification interventions need to pay more attention for integrating game elements other than the most common game elements- points, badges or leaderboards. The contribution of this study will lead to a better understanding of the impacts of gamification on students' learning outcome from a broader view. Further, this study can be a valuable reference for educators and researchers working in the field of gamification.

Keywords: Gamification, Learning Outcomes, Learning Domains

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Introduction

Technological advancements have undeniably permeated every aspect of modern life, offering innovative ways to carry out everyday tasks. These advancements have also revolutionized education by introducing dynamic and creative learning approaches tailored to diverse educational needs. The integration of digital technologies in teaching and learning has become a global trend, as traditional teaching methods lose appeal among younger generations (Szymkowiak et al., 2021). Furthermore, the current generation of learners, raised in a tech-driven environment, demands more advanced and engaging educational experiences (Szymkowiak et al., 2021). As a result, there is a need for implementing cutting-edge, interactive teaching strategies to foster effective learning environments.

Moreover, the shift from traditional teacher-centered learning to a student-centered learning model has become a prominent global trend in education (Diab & Sartawi, 2017). This approach prioritizes what students are expected to achieve or demonstrate at the end of the learning process (Ibid.). Educational digital games are emerging as a valuable tool within this student-focused framework, promoting the enhancement of knowledge and skills (Dicheva et al., 2015). Unlike conventional methods, these educational games actively engage learners, encouraging deeper interaction with the material. Digital games, among the diverse technologies available, stand out for their potential to develop multiple competencies simultaneously (Smith et al., 2022). Recognizing this potential, pedagogical strategies such as gamification have gained popularity, integrating game-based principles into educational practices to create engaging and innovative learning experiences.

Although gamification has become a popular educational strategy, there remains limited research that thoroughly examines its effects on students. As noted by Kalogiannakis et al. (2021), the influence of gamified approaches on learning outcomes is often debated due to insufficient empirical studies investigating their impact. Furthermore, there is a lack of comprehensive review which has been conducted to evaluate the effects of gamification on learning outcomes; cognitive, affective, and psychomotor domains. A review focusing on these domains would offer valuable insights to educators, instructional designers, researchers, and policymakers. Such findings could guide the creation of gamified learning environments that are more effective in achieving targeted learning objectives across the three domains.

Therefore, this review aims to fill that gap by synthesizing current literature on gamification and its effects on students' learning outcomes. The objectives include analyzing existing studies and investigating the significant impact of gamified interventions on learning outcomes. The review begins with an overview of gamification literature and a focus on cognitive, affective, and psychomotor domains. It then describes the criteria for study selection and analysis. Results are followed by concluding with the study's contributions, limitations, and suggestions for future research to develop effective gamified learning environments.

Literature Review

Gamification

Gamification, introduced over the past few decades, has garnered significant attention across various fields, including education (Sailer & Homner, 2020). While games primarily serve as entertainment, their versatility extends to areas like training and knowledge sharing (Richter,

2015). In education, gamification is defined as integrating game design elements, aesthetics, and mechanics into non-game contexts to enhance motivation and engagement (Alsawaier, 2019). Widely, it refers to applying game design components in non-gaming settings to improve user experience and engagement (Deterding et al., 2011). In essence, gamification in education aims to boost student engagement and learning by incorporating game elements into educational environments (Dichev & Dicheva, 2017).

Educational gamification can be categorized into 'Basic' and 'Complex' types. Basic gamification involves adding simple game elements to existing content, while complex gamification requires advanced programming to create sophisticated systems (Lazar, 2015). Despite similarities, gamification differs from terms like serious games or game-based learning, as it focuses on designing learning approaches with game elements rather than fully integrating games into education (Pukelis, 2009). Its primary goal is to influence behavior and attitudes that indirectly lead to improved learning outcomes (Mulcahy et al., 2021). However, the success of gamification depends on both the learning environment's quality and the appropriateness of the gamified intervention (Tahir et al., 2022). Poorly designed gamification or ineffective educational systems may fail to yield desired results, emphasizing the need for balanced integration to foster meaningful learning experiences.

Learning Outcomes

Learning outcomes refer to the specific abilities or skills that students should demonstrate by the end of an educational process (Diab & Sartawi, 2017). These outcomes are typically categorized into three primary domains: cognitive, psychomotor, and affective, which describe the knowledge, physical skills, and emotional/attitudinal changes students are expected to achieve (Savickiene, 2010). Learning outcomes are considered multidimensional, highlighting the idea that they can manifest as changes in knowledge, attitudes, or abilities.

Cognitive Domain (Mental Skills/ What Learners 'Know')

The cognitive domain focuses on a student's thinking abilities and intellectual capacity. On the other hand, it represents the foundational level of Bloom's taxonomy, often referred to as the intellectual or knowledge domain (Bloom, 1956; Forehand, 2010). Within this domain, learning progresses through hierarchical sub-levels: Remember, understand, apply, analyze, evaluate, and create (Kurt, 2021). Students move to higher levels of cognitive complexity once they master the objectives at lower levels. According to Nusche (2008), cognitive learning outcomes range from acquiring specific knowledge in a particular field to developing general reasoning and problem-solving skills. As a result, progress in this domain can be assessed through measures like test scores, grades, and analytical skills.

Affective Domain (Attitude/ How Learners 'Feel')

The affective domain focuses on the ways in which students experience and manage their emotions, feelings, values, sense of appreciation, enthusiasm, and attitudes towards learning (Clark, 2015). Learning outcomes in this domain are defined as the attitudes, values, and dispositions students should develop throughout their education (Savickiene, 2010). It can be understood as the development of emotional and attitudinal growth (Forehand, 2010). The sub-levels of the affective domain range from receiving and responding to information, to valuing, organizing ideas, and internalizing them into consistent behavior patterns (Krathwohl et al., 1964).

Assessing the affective domain is complex because attitudes and values are internal states that are not easily observable (Gagne, 1984). As a result, traditional assessments like tests or written assignments are less effective for this domain. Instead, educators use alternative methods such as portfolios, reflective journals, diaries, projects, and observations of student behavior to assess shifts in attitudes and values (Savickiene, 2010; Diab & Sartawi, 2017). Outcomes in this domain can be inferred from student responses, actions, and discussions during the learning process, offering a more nuanced view of how they engage with the content (Savickiene, 2010).

Psychomotor Domain (Physical Skills/ How Learners 'Do')

The psychomotor domain is concerned with physical or manual tasks and activities (Harrow, 1972). It is often referred to as the skills-based domain, focusing on how students develop and demonstrate physical abilities (Forehand, 2010). This domain consists of different stages, ranging from basic actions to more advanced, refined skills. These stages include imitating, manipulating, achieving precision, articulating, and eventually naturalizing the skill (Harrow, 1972). Essentially, the outcomes in this domain show how well students perform physical tasks because of their learning, reflecting their progress in mastering physical or manual skills.

Methodology

Research Design

This study is a systematic-like review which is also known as 'systematized literature review' that incorporates elements of the systematic review process (Grant & Booth, 2009). Robson (2016, p. 83) highlights that traditional literature reviews are "often unsystematic and unfocused," lacking the clarity and rigor of systematic reviews. Traditional reviews generally do not emphasize transparency or specific guidelines, while systematic reviews offer a structured approach to locating, screening, and synthesizing primary research materials (Ibid.). Nevertheless, the comprehensive process of conducting a systematic review is resource-intensive, requiring a team of researchers and significant time investment (Robson, 2016, p. 85). Considering these constraints, a desk-based traditional literature review, incorporating elements of systematic review methods, is more appropriate for this project given the available resources, timeframe, and need to analyze empirical data.

Inclusion and Exclusion Criteria

A specific set of criteria was established to identify and include studies that are directly relevant to the research topic and questions, while excluding those that did not meet the required conditions. The inclusion and exclusion process is a critical step in research as it helps define the scope and validity of the results obtained from the literature review (Buckley & Doyle, 2016). The following outlines the criteria used for inclusion and exclusion of studies.

Table 1: Inclusion and Exclusion Criteria

Included	Excluded
Articles in English	Non-English articles
Peer-reviewed articles	Book chapters, case reports and article commentary
Empirical studies	Studies with opinions and suggestions or only as abstract
Must have used at least one game element	Non-digital game-based learning

Search Strategy

The search for articles in this study used keywords (“Gamification” OR “gamified”) AND (“learning outcome” OR “learning output”) in the title and abstract sections in 7 Educational technology journals (British Journal of Educational Technology, Computers in Human Behavior, Journal of Educational Technology & Society, Education Technology Research and Development, The Internet and Higher Education, and Journal of Computer Assisted Learning) in the search process. The time span of interest was empirical research published between January 2015 and April 2024.

The initial search yielded an overwhelming number of results, with nearly 2,500 entries from British Journal of Educational Technology alone. This highlighted the need to refine the search scope and strategy to obtain a more targeted and manageable dataset. As a result, the search parameters were adjusted to focus specifically on publications where the term "gamif*" appeared in the title field rather than throughout the abstract or full text. This adjustment ensured that the selected papers centered on gamification as a primary research focus, rather than merely referencing the concept in passing.

Study Selection

The initial search results from two databases produced a total of 781 articles. After initial screening, 695 articles were excluded based on duplicates, title review and abstract review. The remaining 86 were scoped for further information. Further, in accordance with the inclusion and exclusion criteria, 46 articles have been excluded as not being relevant to the scope of this literature review. Eventually, this resulted in 40 articles which have been used in this literature review.

Data Extraction and Analysis

The data from the selected articles was carefully reviewed, and initial ideas were recorded. Learning outcomes presented in the studies were analyzed and appropriately coded according to the research questions. Subsequently, the learning outcomes were classified into three main categories: affective, psychomotor, and cognitive. Additionally, studies that reported negative impacts of gamification or indicated a decline in learning outcomes were also documented. Finally, the influence of gamification on each of these categories was evaluated to provide a comprehensive understanding.

Results

The learning outcomes in gamification studies were categorized into affective, psychomotor, and cognitive domains. Table 2 and Table 3 below provides summaries of the impact of

gamification (positive and negative). The results of a single study may be applicable to two or even all three categories of learning outcomes. The domain most frequently discussed in gamification studies was cognitive, followed by psychomotor and affective, respectively.

Table 2: Positive Learning Outcomes

Learning Domain	Positive Learning Outcomes	Number of Studies
Affective	Positive attitude, Increased confidence level, Improved interest for learning, Feel competence	12 (30%)
Cognitive	Improved digital skills, improved general knowledge, Improved forecasting skills, improved critical thinking skills	26 (65%)
Psychomotor	Enhanced communication skills, improved discipline, Increased interactions, Decrease in unwanted behaviour	14 (35%)

Table 3: Negative Learning Outcomes

Learning Domain	Negative Learning Outcomes	Number of studies
Affective	Anxiety, Gor aroused, Reduced self-efficacy	4 (10%)
Cognitive	Less knowledge retention, Declined inquiry performance	4 (10%)
Psychomotor	-	-

Tables 2 illustrate that gamification generally had a positive impact on learning outcomes across various domains. Specifically, the cognitive domain showed positive impacts in 26 studies, the psychomotor domain in 14 studies, and the affective domain in 12 studies. Among the 40 studies reviewed, 32 exclusively reported positive outcomes, while 8 presented mixed results, highlighting both positive and negative effects (Anunpattana et al., 2021; Baydas & Cicek, 2019; Tsai, 2018).

Negative outcomes were associated with specific aspects, such as decreased knowledge retention (Baydas & Cicek, 2019), reduced performance (Tsai, 2018), and increased anxiety during initial gamification exposure (Anunpattana et al., 2021). Importantly, no negative impacts were reported in the psychomotor domain, whereas the cognitive and affective domains each contained two negative findings. These negative results align with recent studies, such as Bai et al. (2020), which linked gamification to anxiety and jealousy among students. Factors like the type of learner, the design or effectiveness of gamified applications, and the learners' interest in the subject matter were identified as potential causes of these adverse outcomes (Tahir et al., 2022). However, when comparing the positive impacts to the negative ones, the overall influence of gamification remains predominantly positive.

The change in behaviour or change in skills and performance refers to the psychomotor domain (Bloom, 1956). This domain aligns closely with one of the primary objectives of gamification: influencing student behavior through innovative learning strategies (Robson, 2015; Schoech, 2013). Consequently, this analysis highlights the effects of gamification on altering student behavior. For example, Jogo et al. (2022) demonstrated that gamification reduced inappropriate and undesirable classroom behaviors. Additionally, it enhanced teamwork abilities, oral communication skills, social skills, and overall competence among students (Alt & Raichel, 2020; Baydas & Cicek, 2019; Forndran & Zacharias, 2019; Martí-Parreño et al., 2021). These findings underscore gamification's potential to positively

influence students' interpersonal and collaborative skills while fostering a conducive learning environment.

Conclusion

The study highlights a significant positive impact of gamification on students' learning across cognitive, psychomotor, and affective domains. In the cognitive domain, gamification enhances academic knowledge, critical thinking, knowledge retention, and performance metrics like grades and test scores. It also fosters skills in forecasting and data analysis. Psychomotor improvements include teamwork, discipline, communication, and other soft skills, while affective outcomes include increased confidence, positive attitudes, and interest in learning. However, some negative effects, such as reduced calmness, self-efficacy, and occasional difficulties in knowledge retention, were also observed, though they were relatively minimal compared to the positive impacts.

The findings underscore the importance of integrating gamification into education to achieve holistic learning outcomes and encourage educators, policymakers, and designers to leverage these insights. Despite its promise, the study is limited by a small sample size (40 articles), language constraints, and a short-term focus on gamification effects. Future research should explore its long-term impact, applicability in language and non-STEM subjects, and primary education contexts. Additionally, the use of diverse game elements and cutting-edge technologies like AI and mixed reality, along with investigations into individual learner traits and demographic factors, could further enrich the understanding and application of gamified learning strategies.

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Contact email: charithasamarawickrama@connect.glos.ac.uk

The Relationship Between Secondary Students' Experiences With STEM Teachers and Their Choice of Postsecondary STEM Major

Amanda Taggart, Utah State University, United States

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
This study examined the influence of high school teachers' perceived treatment of students on their eventual choice of college major in a science, technology, engineering, or mathematics (STEM) field. Logistic regression was used to identify variables associated with choosing postsecondary STEM majors among students who considered STEM majors while in high school. Data were drawn from a nationally representative sample of students from the High School Longitudinal Study (HSLS: 2009) data set in the United States. Results indicated that high school students who considered majoring in a STEM field once they were in college were less likely to actually do so when they perceived their high school math and science teachers to exhibit disrespectful, differential, or discriminatory behavior toward different students. Findings suggest that such experiences with STEM teachers at the secondary level may contribute to the deterrence of choosing a STEM major at the postsecondary level. Given that STEM-related occupations are projected to grow at over double the rate of non-STEM occupations over the next several years and that a large percentage of STEM occupations require a bachelor's degree, it is imperative that education systems work to produce students who persist in STEM majors. Results of this study may help to offer a better understanding of the pre-college discriminatory experiences that may influence students' decisions to earn bachelor's degrees in STEM fields during college.

Keywords: STEM, Students, Teachers, Discrimination

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Introduction

During the 2021-2022 academic year, nearly one-quarter of bachelor's degrees awarded in the United States (U.S.) were conferred in science, technology, engineering, or mathematics (STEM) (National Center for Education Statistics, 2024). Nevertheless, over half of postsecondary students who initially declare a STEM major change their field of study, which occurs at higher rates than for non-STEM majors (National Center for Education Statistics, 2017). Furthermore, since the COVID-19 pandemic, mathematics and science test scores for K-12 students have declined to their lowest levels in 20 years (National Science Board, 2024a). These events are occurring as the nation faces a projected STEM labor shortage (Boggs et al., 2022).

As such, there have been calls at both the private and governmental levels to improve educational success in STEM fields in order to augment workforce development and to assist the nation in remaining competitive at the international level (National Research Council, 2011; National Science and Technology Council, 2018; West, 2023). Recommendations to achieve these goals include diversifying the population of students and workers in STEM, including women and underrepresented minorities, who currently enter STEM fields at lower rates than White students and workers (National Center for Education Statistics, 2024; National Science Board, 2021; National Science Board, 2024a).

In response to the need for an increase in STEM participation, scholars have examined various factors that may impact STEM involvement among postsecondary students, including demographic variables such as gender, race, and socioeconomic status (SES; e.g., Chen, 2013; Crisp et al., 2009; Griffith, 2010); pre-college variables such as high school academic achievement and teacher influence (e.g., Leuwerke et al., 2004; Nguyen et al., 2017); and college variables such as success in STEM courses (e.g., Chen & Ho, 2012; Honken & Ralston, 2013) and interactions between higher education faculty and students (e.g., Dizon et el., 2023; Lee et al., 2020; Park et al., 2018). However, less is known about how students' experiences with their high school STEM teachers may influence their decisions to enter STEM majors in college. Therefore, the current study utilized logistic regression and a nationally representative data set to investigate how students' perceptions of their treatment by high school STEM teachers influenced their choice of college major.

Review of the Literature

The following review of the literature will synthesize the research to date on factors that influence students' decisions to major in STEM fields, which include demographic variables, socio-cultural variables, high school experiences, and instructor-student discriminatory experiences. Concerning demographic variables, female students have been found to be less likely to major in STEM fields than male students (e.g., Cherney, 2023; Ganley et al., 2018). In addition, research at both the national and state levels has shown that more White and Asian students than Black or Hispanic students have chosen to major in STEM (e.g., Mau, 2016; Zhang et al., 2021). Outcomes on the effect of SES on STEM have shown that students from schools with low levels of SES exhibit decreased levels of STEM participation and achievement (e.g., Murphy, 2020; Ramsay-Jordan, 2020), although a study in one state found that identifying as low-income was a positive predictor of majoring in STEM (Lichtenberg & George-Jackson, 2013). Moreover, receiving financial assistance for college has been shown to be a significant predictor of STEM major choice and credit completion (e.g., Castleman et al., 2018; Wang, 2013).

Regarding socio-cultural variables, parent educational level and having parents who hold a degree in STEM have been shown to increase students' likelihood of majoring in STEM (e.g., Luo et al., 2022; Main et al., 2023). Student aspirations and/or expectations have also been found to be positive predictors of STEM major choice, as have community resources (e.g., Arciniega & Holtzman, 2024; Lichtenberger & George-Jackson, 2013; Tran et al., 2023). For example, choosing a STEM major has been shown to be likelier for students who reside near universities with outreach programs and/or who live in communities with STEM-related summer camps (Arciniega & Holtzman, 2024).

Apart from demographic and socio-cultural variables, academic achievement in high school has been found to impact students' choice to major in STEM or to complete a STEM degree, including earning higher grade point averages (GPAs; e.g., Bazelais et al., 2018; Mau, 2016) and achieving in STEM courses, especially in mathematics (LeBeau et al., 2012; Main et al., 2023; Wang, 2013). High school course-taking also has been found to affect students' interest in and choice to major in STEM, including enrolling in AP STEM and non-STEM courses (e.g., Bohrnstedt et al., 2023; Jewett et al., 2022; Warne et al., 2019) and taking more STEM credits (e.g., Tran et al., 2023).

Prior studies have also examined the importance of secondary teachers on student interest, knowledge, academic achievement, and choice to major in STEM (e.g., Ekatushabe et al., 2021; Han et al., 2021). Results have shown that teacher knowledge, encouragement, help, experience, support, self-efficacy, and motivation have impacted students' choice to major in STEM fields (e.g., Arcieniega & Holtzman, 2024; Lee, 2013; Lichtenberger & George-Jackson, 2013). Finally, research has shown that STEM teachers who act as mentors influence STEM major choice for female students, as have teachers who allowed female students to participate in research (Luo et al., 2022).

Method

Database and Sample

This study used data from the High School Longitudinal Study (HSLS:09). HSLS:09 tracks a nationally representative sample of students as they advance from ninth grade through four years post-high school. The sample used in this study included students who had considered STEM majors while in high school (n = 4,014).

Predictor Variables

Two sets of predictor variables were hypothesized to be related to students' decisions to major in a STEM field in college. Four student perceptions of high school mathematics teachers and four student perceptions of high school science teachers were included in the model. These were comprised of the students' perceptions that their mathematics and science teachers thought all students could be successful, treated every student fairly, treated some students better than others, and treated students with respect.

Outcome Variable

The dichotomous outcome examined in the study was whether a student first majored in a STEM field in college versus whether a student first majored in a non-STEM field in college. A STEM field was considered to be in computer and information sciences; engineering and

engineering technology; biology and physical science, science tech, and mathematics; or health care fields.

Data Analysis

Data were analyzed utilizing PowerStats, which is a publicly available set of data analysis tools provided by the National Center for Education Statistics that does not require the use of a restricted license (National Center for Education Statistics, n.d.; Taggart, 2022). Descriptive statistics were computed to explore the characteristics of students who considered STEM majors while in high school. Logistic regression was used to identify the odds of these students choosing to major in STEM in college.

Results

Descriptive Findings

Of the students who considered a STEM major while in high school, nearly 73% initially majored in STEM in college. A descriptive comparison of students who did choose to major in a STEM field in college (n = 2,918) versus students who did not choose to major in a STEM field (n = 1,096) revealed the following notable differences between the two groups.

Similar percentages of students from all races chose STEM or non-STEM majors while in college except for two groups. Just under half the percentage of Black students majored in STEM compared to Black students who did not major in STEM (8.2% vs. 15.1%). Conversely, Asian students chose STEM majors in larger numbers in college compared to those who did not (11.2% vs. 6.8%). Regarding other socio-demographic variables, while nearly all students not enrolled in STEM majors in college were born in the U.S. (99.8%), under 90% of STEM majors were born in the U.S. (87.2%). In addition, over double the number of students who chose to major in STEM came from families living below the poverty threshold in high school compared to those who did not major in STEM (8.7% vs. 3.7%).

Concerning high school experiences, students who chose STEM majors in college earned A's or mostly A's and B's in high school (73.7%), while only half (50.9%) of students in non-STEM majors did so. However, both groups of students had taken AP courses in high school at almost equal rates (87.6% vs. 86.2%).

In examining how students perceived the behavior of their high school STEM teachers, STEM major and non-STEM major students felt similarly, except that larger numbers of STEM majors agreed that their mathematics teacher treated every student fairly (90.2% vs. 82.5%). Moreover, a larger percentage of STEM majors disagreed that their mathematics teacher treated some students better than others (24.7% vs. 19.8%) while a smaller number of students in STEM majors disagreed that their science teacher did so (19.9% vs. 26%). Descriptive findings are summarized in Table 1.

Table 1: Descriptive Comparison of Students Who Did and Did Not Choose STEM Majors

Variable	% of students[a] who chose to major in STEM (n = 2,918)	% of students who chose not to major in STEM (n = 1,096)
Socio-demographic Variables		
Gender		
Male	65.3	62.8
Female	34.7	37.2
Race		
White	81.0	80.0
Black or African American	8.2	15.1
Hispanic/Latino/Latina	15.3	13.3
Asian	11.2	6.8
Native Hawaiian/Pacific Islander	2.8	3.7
American Indian/Alaska Native	5.2	5.8
Student born in the U.S.	87.2	99.8
English Language Learner	2.2	0.3
Poverty Indicator		
At or above poverty threshold	91.3	96.3
Below poverty threshold	8.7	3.7
Parent Education Level		
Bachelor's degree or higher	62.3	57.8
Less than a bachelor's degree	37.3	42.2
High School Experiences		
GPA		
Mostly A's, A's and B's	73.7	50.9
Mostly B's, B's and C's and below	26.3	49.1
Enrolled in AP courses	87.6	86.2
Student Perceptions of High School STEM Teachers		
Mathematics Teacher		
Thinks all students can be successful	94.1	93.0
Treats every student fairly	90.2	82.5
Treats some kids better than others	19.8	24.7
Treats students with respect	92.8	90.2
Science Teacher		
Thinks all students can be successful	93.6	93.0
Treats every student fairly	84.9	87.8
Treats some kids better than others	26.0	19.9
Treats students with respect	91.3	93.8

[a] All student participants considered majoring in STEM while in high school.

Logistic Regression Analysis

Table 2 displays the parameter estimates, significance values, standard errors, odds ratios, and fit statistics for the regression model. Results indicated that one variable showed a statistically significant effect. Among students who considered majoring in a STEM field while in high school, the likelihood of ultimately choosing to major in STEM in college was influenced by students' agreement that their high school mathematics teacher treated every

student fairly. Specifically, an examination of the direction of the odds ratios indicated that students' odds of majoring in a STEM field in college were nearly two-and-a-half times greater for students who believed all students were treated fairly by their high school mathematics teacher.

Table 2: Logistic Regression Model

Variable	*b*	*SE*	Odds ratio[a]
Student Perceptions of High School STEM Teachers			
Mathematics Teacher			
Thinks all students can be successful	-0.179	0.427	
Treats every student fairly	0.915*	1.039	2.496
Treats some kids better than others	0.184	0.327	
Treats students with respect	-0.507	0.302	
Science Teacher			
Thinks all students can be successful	0.202	0.525	
Treats every student fairly	0.073	0.510	
Treats some kids better than others	0.175	0.742	
Treats students with respect	-0.375	0.292	

[a] Odds ratios only presented for significant variables.
*p < .05.

Conclusions

The results of this study provide insight into our understanding of high school experiences that may influence students' decisions to choose a STEM major. Results of this study shed light on the importance of secondary mathematics teachers' efforts to model just behavior toward students, as it was found that students' perceptions that mathematics teachers' fair treatment of all students more than doubled their odds of choosing to major in a STEM field in college.

This finding extends to the secondary education level previous research that has been conducted at the post-secondary level. It supports college-level research which has shown that discriminatory, or unfair, treatment of students by their teachers negatively affected students' educational outcomes, including in STEM (e.g., Ali et al., 2019; Dizon et al., 2023; Lee et al., 2020; Park et al., 2018). For example, in a study at two universities, Kahveci (2023) found that undergraduate students conveyed high levels of negativity toward "unfair attitudes and behaviors" (p. 299) demonstrated by their instructors that they also felt negatively affected their own progress. Furthermore, Hall et al. (2017) found that discrimination was negatively related to mathematics and science self-efficacy in two cohorts of incoming freshmen at one university.

Given the nation's ongoing need for qualified individuals to work in STEM fields, with STEM jobs projected to grow at faster rates than non-STEM jobs (National Science Board, 2024b; U.S. Bureau of Labor Statistics, 2024), it is crucial to understand the schooling experiences that may influence students' choice to participate in STEM. One major strategy to increase the STEM workforce and thus remain globally competitive is to increase its ranks to include those who are currently underrepresented in STEM fields (National Research Council, 2011). These include women as well as Black, Latinx, and American Indian or

Alaska Native racial/ethnic minority groups (National Science Board, 2021). Doing so would be beneficial for both the country and the individual because it would expand the American workforce that could fill necessary STEM jobs and affect individual standards of living. For instance, STEM workers have higher employment rates and median earnings, as well as greater job security, than workers in non-STEM jobs (National Science Board, 2024a; National Science Board, 2024b).

According to West (2023), "If there are few opportunities for women and minorities, we limit the job possibilities for almost two-thirds of the American population, which robs people of economic opportunities but also limits current and future innovation opportunities" (para. 20). Such opportunities must be extended to these students before they enter postsecondary education and actually choose a college major. Therefore, their high school experiences are extremely important to their STEM development. For example, a literature review conducted by Bottia (2021) showed that inferior preparation in secondary school is associated with racial minority students' underrepresentation in STEM. In addition, Granato (2023) found in a study of over a half million participants that college "students' high school experience explains up to half of the gender gap in STEM graduation rates" (p. 511). Consequently, it is critical that STEM teachers give fair opportunities to all their students, including those who may not have traditionally participated in STEM fields in large numbers.

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Contact email: amanda.taggart@usu.edu

Telling Individual Engagement Stories (TIES): Initial Action Towards Family Engagement Program

Ma. Cecilia G. Callos – Bugayong, La Salle Green Hills, Philippines

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
Parent–school partnership is an essential component to ensure positive students' academic performance. Parents' active involvement in their children's education helps the school for its students to achieve their academic goals. As soon as parents enroll their children and once they enter the physical school, the child's academic success heavily depends on the teachers' role inside the classroom. COVID-19 however, forced schools to bring education at home thus necessitating unparalleled parents' involvement. Parents, unprepared, had to hurdle the challenges, while the school at an instant exhausted all means to reach –out to them. This action research primarily aimed to discover parents' motivation to continue to opt for full online education for their children amidst the rigors. It also attempted to closely evaluate the engagements of both the parents and school during a full online modality. Through TIES, the rich stories, and lives of parents as they traverse the uncharted online schooling with their children, common themes can become a wellspring of information to better the existing school programs. Phenomenology was employed as a research design where dialogue with parents who volunteered to join in–depth interviews and thematic analysis uncovered the strong and weak points of the parents' engagements with the school. Practices which worked well during the online set-up were identified. The study provided a deeper understanding of the complex nature of parent-school partnerships and their impact on students' academic achievement and total well-being. A sustained engagement and a system of parent – school collaboration can be explored which becomes part of the Family Engagement Program.

Keywords: Parent–School Partnership, Initial Action, Student Academic Performance, Phenomenology, Family Engagement Program

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Introduction

Academic development starts at home, having parents and guardians as the child's "first teachers". Several educational research studies (Epstein, 1991; Fan & Chen, 2001) state that parents play a vital role in shaping a child's physical, psychological, and academic growth, which would then predict certain outcomes for their child's future. Parents and their participation in their children's education are essential in creating a secure parent-school-child relationship (Sapungan, 2014). Moreover, specific types of parental involvement in children's studies have been proven to generate a better academic outcome through the creation of a healthy learning environment and providing support and interest. Not only that, with proactive participation of parents and guardians, these children are to grow with better behavior towards themselves, increasing their morale and the formation of a positive self-concept; and they also are to grow with better behavior towards others, being well-adjusted socially and environmentally (Hitchinson, 2020).

As any parent would want, children's academic achievement is heavily reliant on their direct effort to aid their children's learning as effectively and possible (Castro et al., 2015). According to Avvisati et al. (2010), an economist's perspective on effective parenting is that the earlier the involvement, the greater the chance of higher academic achievement. Several present literatures highlight several "parenting theories", and some can only provide concrete evidence on how parents should relate to the child and the institutions housing their children to learn. This in turn reveals thorny issues as some research also presents little to no relation or positive effects at all (Fan & Chen, 2001).

Thus, it can be opined that effective academic parenting is something to be considered multidimensional and has different factors affecting such a parenting style and their relation to their children's respective academic institutions. Shute et al. (2011) defines parental involvement into several variables as to what they have perceived in reviewing several databases on prominent aspects of parental participation in school and its implications to a child's learning.

Conceptual Framework

Parent-school partnerships play a crucial role in promoting student success and well-being. When parents and schools collaborate effectively, they create a supportive environment that enhances children's academic achievements, social development, and overall growth. This conceptual framework aims to outline key elements and principles for building strong parent-school partnerships, emphasizing the importance of collaboration, communication, and shared responsibility.

Parents, guardians, family members' roles are investigated and the pivotal contribution to the students' overall performance. Other than its academic program, the school on the other hand, designs programs to ensure that parents are in the loop and that they are both on the same page in accompanying the children.

Fostering a mutual symbiosis between parents and school can possibly lead to a harmonious positive learning environment for students thus yielding an improved academic performance. The following are the engagements that were investigated.

Parent Involvement

Encouraging and enabling parent involvement in various aspects of school life is vital. Schools should provide opportunities for parents to contribute their skills, knowledge, and perspectives through volunteer programs, parent-teacher associations, advisory committees, and workshops. By actively engaging parents, schools can tap into valuable resources and create a more inclusive educational environment.

Collaborative Decision-Making

Inclusive decision-making processes that involve parents, teachers, and administrators are essential. Schools should create platforms for parents to contribute to policy development, curriculum planning, and school improvement initiatives. Collaboration in decision-making fosters shared ownership, strengthens relationships, and improves the overall quality of education.

Research Questions

To fully understand and appreciate parents' involvement in LSGH, this action research aims to answer the following questions:

Pre – Action

- What are the current school activities to ensure parents' active involvement in online modality?
- How were the parents involved as learning partners in these activities?
- What were the challenges encountered as parents/guardians of going online?
- What other parental activities are necessary which will yield positive students' academic performance?

During Action

- How does intervention help parents as learning companions/partners?
- How were the issues/concerns raised during the intervention addressed?
- What aspect of the intervention do parents find most helpful?

Post Action

- How did the intervention or program help parents in guiding their children?
- How can the intervention be sustained?
- What are other school programs needed to intensify parent-school collaboration?

Proposed Innovation, Intervention and Strategy

Name of the Strategy: TIES (Telling Individual Engagement Stories)

The Office of the Learning Community 5 (LC5) organized Project TIES, a genuine, deliberate, and purposive dialogue with individual parents who opted to go online till the end of the school year. With interview guides, the LC5 Coordinator asked parent-participants of their experience in accompanying their children during the online modality. The parents were assured that the conversation would be an occasion for the school to listen to their unique stories.

An important aspect of the dialogue was for the school to discover the reasons why parents, despite the challenges, opt to go for an online modality for their children. As part of the conversation, they were made to expound on the challenges they have encountered for the

whole duration of online class modality. An important part of the conversation would be to listen to parents' experience of their engagement in the various sessions the school programs organized and find out the most effective and helpful engagement.

Methodology

Research Design, Participants, Instruments, Data Gathering Procedure, Data Analysis, Ethical Issues

Research Design

This action research is highly qualitative in nature and as such utilizes dialogue to gather the data. As Buber explains extensively, genuine dialogue is a living mutual relationship between participants, (Kramer, 2003). The whole process involved a flexible and iterative process that adapts to the research context and emergent findings. To collect data, interviews, focus groups, participant observation, and document analysis were fully utilized.

Participants

The study only involved parents or guardians of students of La Salle Green Hills whose children have been on online modality for the entire three years. A circular to these parents was released to inquire on the reason why they opted for online modality. From those who responded, one parent per grade level was chosen and was invited for an in-depth one on one interview.

Data Gathering Procedure

A set of questions was used as an instrument. Please see appended interview protocols and questions for this purpose. While guided by questions, adhering to the principles of phenomenology, parents were at liberty to freely share their lived experiences.

Data Analysis

For the data analysis, the researcher will adopt the Thematic Analysis of Qualitative Data (Kiger & Varpio, 2020). This involves: Thematic analysis that is widely used as an approach in qualitative research for analyzing data and identifying patterns, themes, and meanings within the collected information. It involves a systematic process of organizing, interpreting, and making sense of qualitative data. The following steps were undertaken in the whole process of analyzing the data using thematic analysis.

Familiarization with the data: The researcher started by becoming immersed in the data to develop a deep understanding of its content. She read and reread the data, such as interview transcripts or field notes, to become familiar with the information and gain a sense of its overall meaning.

Generating initial codes: This was followed by coding the data, which involves identifying and labeling segments of the data that are relevant to the research question. These codes were both descriptive and interpretive, capturing the essence of the information.

Searching for themes: From the codes, the researcher searched for patterns. She looked for recurring ideas, concepts, or topics that emerge across different segments of the data. This process involves comparing codes, clustering similar codes together, and identifying overarching themes that capture the essence of the data.

Reviewing and refining themes: The identified themes were reviewed and assessed if they fit with the entire data set. They examine whether the themes accurately represent the content and context of the data. Themes were revised, combined, split, or discarded during this iterative process to ensure they capture the complexity and diversity of the data.

Defining and naming themes: The final themes were refined and defined by clarifying their meaning and significance. They develop clear definitions and descriptions for each theme, ensuring they are representative of the data and capture the participants' perspectives. Themes are often given concise and meaningful names that reflect their content.

Creating a thematic map: The researcher created a thematic map or framework that visually represents the relationships and connections between different themes. This map provides an overview of the main themes and their subthemes, illustrating how they relate to one another and contribute to the overall understanding of the research topic.

Writing the analysis: Finally, a narrative report is written which presents the findings of the thematic analysis. This involves describing each theme, supporting them with illustrative quotes or examples from the data, and providing an overall interpretation of the findings. The analysis highlights the insights gained from the data and how they relate to the research question or objectives.

Throughout the process, researchers maintain transparency and rigor by documenting their decisions, justifying their interpretations, and seeking input from colleagues or experts to ensure the credibility and validity of the analysis:

- Rope: This symbolizes the actual research interview wherein the answers given by the participants will shed a light on their lived experiences, the actual manifestation of parent-school partnerships and any recommendations and suggestions for the betterment of students' performance.
- Loop: The Crossing Point of Ideas wherein the interviewees and the researcher come to the analysis of how school to parent partnerships work during a time of isolation for the improvement of the students under their guidance.
- Working End: The Recommendations and Implications of the study to the parents, to the institution and of TIES.
- The Knot: The End Product wherein both the learning institution and the parents realize the significance of a symbiotic relationship through the symbolization of an Archer.

Working With Quirkos

Easing the process of analyzing data through thematic analysis, the researcher used Quirkos, a software application for qualitative data analysis which enabled to easily code the data after transcribing the recorded Zoom meeting interviews held with the participant. Moreover, the app visualized the qualitative data and assisted grouping them into color-coded themes called 'quirks' which consequentially, also makes reviewing them and redefining them with ease.

These quirks can further be combined together to create the themes that are essential to the creation of the foundation of the proposed program.

Figure 1: Sample Quirkos Software Interface

Ethical Issues

To ensure parents' participation in the study being conducted, the researcher got the nod and support of the gatekeepers. In qualitative research, gatekeepers are important intermediaries which can be of help in accessing the setting and the participant within the study is conducted, (Ghana, 2019).

STUDY (Results and Discussion)

The Rope: Parent Participants Sharing Their Lived Experiences

Like what was mentioned, the rope is the compiled life stories of parents from grades 5 to 12; varying from mothers and fathers with the desire to simply participate in the study. They have expressed their reasons for participation; the belief that the research and the proposed program will help in evaluating and improving the school's programs for the sake of other parents and other children who may be going through similar circumstances.

The Loop: Thematic Analysis Using Quirkos

Theme 1 – Grappling With Fear

The parents interviewed held their stance, even with the fear of the unknown during the beginning of the pandemic as a way to be able to try and adjust into the new modality however they see fit for their family and their children to be able to fully assume the roles and face whatever obstacle there is inf front of them. With the fear of the virus and the after-effects of the vaccine was not a risk the parents were willing to take when it comes to their children's safety.

Due to Health Concerns

Most of the parents interviewed expressed their concern about being able to send their kids to physical school because of the fear of the Covid-19 virus. With the government's guidelines on availing the vaccine, some parents also express their concerns about the adverse effects of the vaccine thus not feeling overly confident in allowing their children to be exposed by attending classes online. Moreover, some of the parents expressed certain personal health concerns such as family members having comorbidities, which when other people inside the house are exposed outside, they may return home with things that can place their family members more at risk.

Due to Personal Choices

A parent communicated her desire for the child to be able to have the skills and the capacity to be able to make decisions on his own when it comes to academics and in school. She wants her children to be independent. Thus, she is not hands-on with them in terms of academics and school. Thus, it was her son's choice to remain online this year.

Figure 2: Opting Online Theme

Theme 2 – Lights and Shadows of Online Modality

Like any other, choices have their own repercussions and consequences. For the parents interviewed, they and their children also have experienced the advantages and disadvantages of choosing to pursue learning through the online modality.

Positive Outcomes

Based on the gathered interview data, most parents appreciate the many benefits of the online modality offered by the school because of several factors namely: health-wise, practical reasons, family time and flexibility). Most parents believe that the advantages of online schooling outweigh whatever disadvantages might be present. Health-wise, most parents expressed that they see their children gaining more time to sleep and rest and they do not worry about the hustle and bustle of traffic and the morning routine.

A parent experienced that the online modality was easier and budget-friendly, saving up the usage of gas and any other effort. Thus, when the offer for physical classes were raised, she asked her son what his preference was and the child wanted whatever was easiest for the family.

Family Time

For some of the parents interviewed they made mention that with the online modality, opportunities that were deprived of them during physical classes such as family time were granted to them.

Flexibility Case 1:
Parent reasons that the online modality enables the students to learn in the comforts of their own home or when they aren't at home. There are instances where students and their families go on vacation so even at the beach they don't miss-out.

Negative Outcomes

Along with the advantages the online modality presents, the isolation that comes with the modality also has its fair share of disadvantages that may or may not have affected the students and the parents quite much.

Socialization

Parent conveyed that the online modality deprived the children of the chance to be able to hone their skills in communicating and practicing social graces.

Internet Connection

Some parents made mention of the occurrences wherein they experience bouts of disconnection from the internet, but this was an occurrence that was countable by fingers.

Figure 3: Lights and Shadows

Theme 3 – Ray of Hope

Since the announcement of the isolation guidelines the government has set forth during the start of the propagation of the Covid-19 virus, La Salle Green Hills as a learning institution was made to adhere to these rules and formulate solutions and aim certain plans to fulfill its duties to its students and to the parents: to be able to provide quality education amidst isolation.

Ranger 360

With that said, the school came up with programs to cater to the students in learning online such as the learning management system called Ranger 360 where they can access their tasks and view. These apps can also be viewed by their parents to be able to monitor their child's grades and have the ease to be able to schedule any appointments with their child's teachers.

Nexus App

Through this app, parents can view their child's grades as a whole and with every breakdown to be able to see the justifications of the grade their child received. Also, this app shows the awards their children receive, if any, to replace the certificates they receive physically.

Town Hall Meetings

Town Hall meetings are conducted once every _ for the administration to be able to introduce a certain program, concern or announcement to the parent-body. After every town hall meeting, the floor is open for the parents to be able to ask their questions on their various affairs the parents wish to discuss.

ACT (Summary, Conclusion or Implications, Recommendations, Plans for the Next Cycle/Dissemination, Reflection - Professional and Personal)

Assuming the Shooting Position: A Reflection on the Switch to the Online Modality

> *In the sport, the stance of the archer is as significant as merely releasing the string to the arrow. The stance gauges the result of whether or not the archer will aim at the target or at something different entirely.*

At the behest of the COVID-19 Pandemic, most educational institutions who hold their classes and offices in physical settings were urged to switch to online classes which was a safer modality at that time. As expected, this switch was most difficult to handle and deal with in every aspect: physically, mentally, and emotionally. It was draining for several different factors which varied for several different people.

La Salle Green Hills, during the Pandemic, has tried its best to be able to provide a conducive online learning environment through granting its students a free-range access to a wide variety of learning software and applications to aid them in whatever academic tasks they wish to fulfill. Moreso, the presence and open communication between guidance counselors and the students are most appreciated and well-utilized to be able to voice out any concerns with their emotional and mental well-being.

For the students of the said institution, the switch to the online modality was challenging for it prevented them the enjoyment of socializing and learning alongside their peers. This was also accompanied by the several obstacles that arose during online classes which were stated as having intermittent internet connections, difficulty in balancing several school tasks and projects, personal and familial concerns which made their school year more rigorous and challenging. It is safe to say that the interviewed parent-participants are aware of this. They in turn wish the best of experiences for their children even at a time of restrictions and several

physical limitations and threats thus seeking partnership from La Salle Green Hills, their children's school.

Parents are well-involved with their children's tasks and status at school especially through the ease of access to the online learning management system, Ranger360. Here they can actively monitor tasks, seek an audience with their child's educators and adviser, be up to date with any announcements through the circulars released by the school, and attend the online parent Townhall meetings which enabled them to freely voice out any concerns about the current set-up, announcements and methods of learning being given to their child. These town hall meetings and parent-teacher conferences and close parent-school partnerships are the knots that tie and secure a better and much more effective online learning environment for the student learners to ensure that these children are performing their very best.

Nocking the Arrow and Drawing the Bow: A Reflection on Parent-School Partnership for the Students

Nocking the arrow and drawing the bow is all about precision and accuracy in terms of the sport. This will be a backbone of how the arrow will be released. Granted, there are times when one does not simply get the outcome they are expecting.

TIES: A Wellspring of Renewal

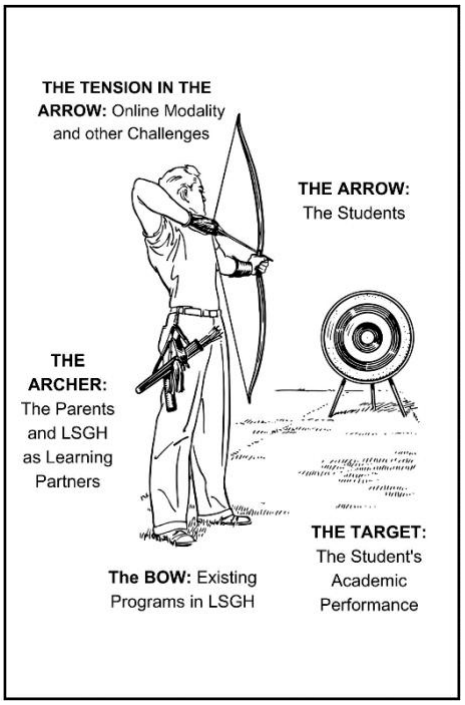

Figure 4: An Archer

Throughout the several tedious steps in the research process and being the listening ear to the participants' lived experiences, the researcher has been able to collate the significant ideas and message behind the reason why this study exists and aims to exist for. Thus, it is only befitting to illustrate this analysis through the institution's *mascot*: an archer. Archery, similar to parent-school partnerships, requires a delicate balance and a keen eye for the target, which is to be able to produce well-mannered and sharp-witted students for their improvement and of their communities as well.

Conclusion

Aiming and Releasing the String: A Short Summary

Everyone Needs a Listening Ear

That is the first point made during the interview. These parents willingly agreed to participate because they wanted their voice and their concerns to be heard. The researcher has been faced with several different views, reactions, and even tears as the parents express their stories of hardship and of their triumphs big or small during the duration of the pandemic and of the online modality.

Fear Is Ever-Present but That Does Not Mean It Cannot Be Alleviated

The pandemic has wreaked fear and anxiety to even the calmest parent. As parents, they shared that it was their responsibility to be able to take care of their family and protect their children from whatever risks and challenges the Virus and the vaccine can bring about and they felt that going online for the duration of the pandemic was their best move. It surely was not an easy task but, with the help of their personal views, strongholds, and the school's various programs, they found adapting to the online modality as…

A Formidable Ally

The parents interviewed expressed that the online modality had its perks weighing greater than its disadvantages so much so that they would like to have the set-up retained as an option simply because of two things: flexibility and practicality. Words that go hand-in-hand. The online modality presented itself as a challenge at first when one has to familiarize themselves with the various programs and requirements for the student to successfully be able to go to class. But, as soon as they become adept, the thoughts of how the online modality saves up resources, grants time to rest and relax without missing out, and the safety it can bring, then the parents are a testament that the online modality works. However, challenges are always around the corner and everyone needs a helping hand which the learning institution is happy to provide. But of course…

There Is Much to Be Improved…

As challenges arose, some of the parents have seen how much the existing programs can do to help them as a parent in crafting the most effective ways possible for their children to be able to move through the year swiftly, even in isolation. It has to be kept in mind however, that a program may very well work but it does not mean it works for everyone. Some cases, it may even be insufficient to cater to the child's needs. Thus, the implications of this research as a backbone to the proposed program is merely a statement that the learning institution is willing to be the voice to the child in question and to children who have gone through similar experiences.

The Working End: Recommendations and Implications

As aforementioned, TIES aims to provide an avenue to one of the school's most important stakeholders, the parents, to be able to assert any concerns and their stories in assisting their child in navigating through the unknown and the inclemency of online learning to be able to

find ways to make that journey any easier and effective for both the child and the parent or guardian.

To the Institution

The participants of this research place the school's initiative of creating programs as a means of communication to both the parents and the students to a high regard. Most of the parents that were interviewed view the online modality accessible and a success in providing students the ease of learning wherever they may be.

This recommendation roots from instances where students are ill and in need of isolation; online learning and classes will ensure that the child does not miss anything of note and thus, ensure the chance to maintain their child's academic performance. Furthermore, the participants also voiced the importance of creating online programs focused on the arts and on sports for both the students and the parents to further expose themselves to a wider array of skills and lessons that may benefit them psychologically and physically.

A Step Further

The researcher believes that the learning institution is making waves of effort, through meticulous research, to be able to accommodate the several varying needs of the parents with regards to their children's academic performance and learning environments as different as they can be. TIES is one of the many evident examples of that effort. This program, as a knot to bind the parents and the school in a partnership is a tangible example of living the Lasallian Core Values where Faith between the good of both parties are transformed, with physical efforts, into Service for the children so that they may live to be perceptive, and community-minded citizens.

Furthermore, the creation of the Perrette Family Engagement Center in the school would be able to consolidate on parent, guardians formation sessions, accompaniment activities; collaboratively coming up with solutions and well-thought-of plans with the intention to effectively lead the children in achieving their goals and their best version of themselves.

To Me As the Researcher

The creation of Project TIES has struck me both as a fellow parent and as part of the learning institution. To have the privilege of listening to the parents' stories of hard work in accompanying their children amidst the pandemic along with their desire to strengthen parent-school partnerships made me realize the significance of the position I held and will now be holding as a teacher in the classroom.

As a teacher, the lived experiences that have been graciously shared by the parent-participants is a reminder that as a teacher, I am the direct hand of the school to be able to interact and collaborate with my students and their parents. Thus, one should always have the patience, the precision, and the heart to be able to see students past the common eye; to see the students as they are and appreciate and cultivate what sets them apart.

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Contact email: cecille.bugayong@lsgh.edu.ph

Vocal-Performance Curriculum Development and Praxis in Romanian Higher Education

Mihaela Buhaiciuc, Transilvania University of Brasov, Romania

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
The current paper is an analysis of vocal performance curriculum development within the core of bachelor's degrees in Romania as they transitioned to the Bologna Process to ensure credit transferability within EU higher education institutions, worldwide accepted quality performance standards and, ultimately, to provide marketable professional singers for the international stages. The study includes teaching practices assessed through research-based evidence and the *currere* method, as well. The article represents a self-assessment of acquired teaching knowledge and experience in the specialized field of vocal performance and, projects outcomes on how an international framework could constructively impact the local perspective.

Keywords: Vocal Performance, Curriculum, Higher Education, Comparative Education

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Introduction - Understanding the Voice Training in a Broad Spectrum

Within the humanities area in higher education, the vocal performance degree is one of the performing music degrees that academia proposes with the aim of providing qualified professional singers for the stage. In its beginnings, the vocal performance training/degrees referred to classical singing only and implied an education that prepared the student as a court singer, church singer and/or opera singer. Until the 20th century, we could discuss the classical vocal performance training within the historical style periods: Baroque, Romantic, Modern, becoming more specific when included in different schools of singing: German, Italian, French, English, or other. The Italians established a 5-year program for training and cultivating a classical voice through building strength and flexibility. Most schools had precise requirements for timbre, vibrato and register development.

Starting with the 20th century, the praxis of applied voice outside of official training exposed the voice to new concepts of timbre, vibrato and registers. Voice training slowly included light opera singers, performers of musicals, and later commercial singers, including the contemporary Christian singers. The schools adapted to student needs by providing singers with diverse training in classical and/or musical and/or commercial applied voice. Nowadays, in the international higher education institutions (HEIs), we find vocal performance degrees in classical, musical and commercial voice. A graduate in vocal performance may be versatile in one or more vocal styles: opera and jazz, musical and commercial, opera and musical, or solely in one vocal genre.

Nowadays, the aspiring singer may decide to pursue education in vocal performance (VP) by choosing from two types of bachelor's degrees: a Bachelor of Music (BM) in vocal performance, which is a professional degree that prepares students for a singing career, and a Bachelor of Arts (BA) in vocal performance with a curriculum that combines a liberal arts education with a more intellectual approach to music. Both bachelors last 4 years and allow the continuance of graduate studies: Master of Music (MM) and Doctor of Musical Arts (DMA) or PhD in music, while the student maintains singing activities within and outside the curriculum. Although other vocal programs, such as musical theater and art song degrees, have similar requirements and course outlines, the classical vocal performance programs will be considered in this study.

The objectives of this article are: (a) to trace historically and analytically the vocal performance bachelor program in Romania, (b) to identify curriculum changes and how these changes impacted the students and faculty of higher education (HE), (c) to emphasize the importance of praxis as a result to curriculum variations, and (d) to undertake a comparative analysis with the vocal performance bachelor programs in the U.S.A.

A Historical Approach to Romania's First Vocal Performance Programs in HEIs: Conservatories and Music Departments

The first Music Conservatory was established on October 6th, 1864 through Decreet No. 1312.

'Regulamentul pentru Conservatorul de Muzicã si Declamatiune' approved by Alexandru Ioan Cuza, an HEI having two locations: in Bucharest and in Iasi (Maier, 2014).

Figure 1: 1864 First VP Programs in Romania: Bucharest and Iasi Conservatories
5-Year Length of Studies

Following the unification of Greater Romania on December 1st, 1918, the Cluj Napoca Music Conservatory, a former extension of Liszt Academy of Music from Budapest, became on September 17th, 1919, the third major music HEI (Maier, 2014) with a vocal performance program of five years.

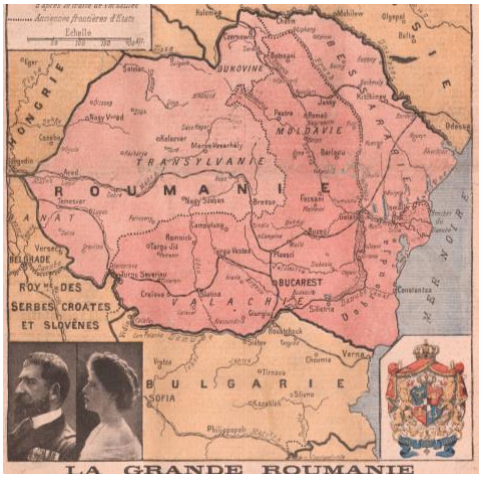


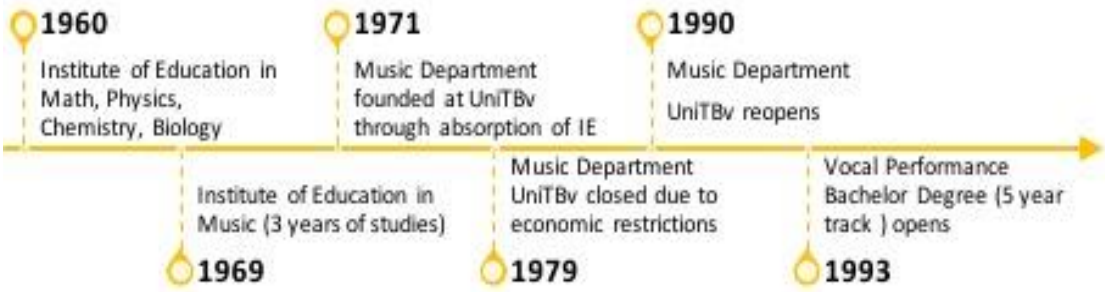
Figure 2: 1919 Three VP Programs in Romania: Bucharest, Iasi and Cluj Conservatories
(Romania's map on the left column)
1960 Three VP Programs in Addition to Several Institutes of Education
(Romania's map on the right column)

In 1948, after the Paris Treaties, the Kingdom of Romania became the Republic of Romania, whose status and size maintained until today. In 1950, only two Conservatories were functioning (Maier, 2014), in Bucharest (under the name of Ciprian Porumbescu) and in Cluj-Napoca (under the name of Gheorghe Dima). Iasi Music Conservatory is closed until 1960 when it composer Achim Stoia's management and George Enescu's name.

In his in-depth research on the evolution of music HEIs in Romania under UEFISCDI funding (Executive Unit for funding HE, Research, Development, Innovation), Valentin Maier's historiographical report shows how, due to a lack of specialized music faculty in secondary education, Institutes of Education/Pedagogy founded starting in 1961 in different

cities and towns throughout Romania (Maier, 2014). These institutes later merged into the first local HEI, with or without a music department. So is the case for the Music Department at UniTBv, who transferred from the Institute of Music Education with a 3-year track in 1971 (Maier, 2014) to join the science education institutes under Transilvania University's name (UniTBv).

(a)



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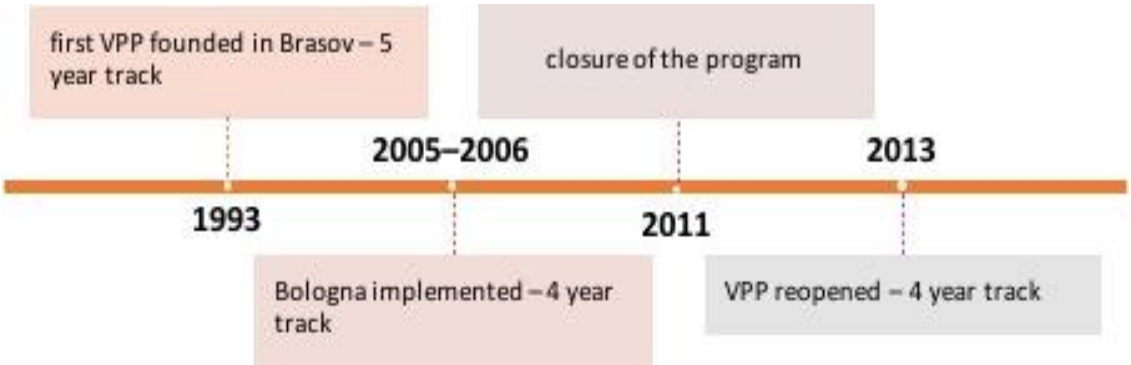

Figure 3: (a) The Making of UniTBv Through Fusion of Institutes of Education
(b) Brasov Vocal Performance Degree Program With a Short History of 21 Years

Today, throughout Romania, local HEIs include a music department with a relatively young vocal performance degree program, while Cluj, Bucharest, and Iasi are socially maintaining the highbrow status they had for the past 160 years.

VP Curriculum Development and the Bologna Process

The 2005 National Report (Damian, 2005) shows major changes in restructuring the HEIs and their curriculum starting with the 2005-6 academic year. Within its 160 years of existence, the Romanian VP program developed according to its times from a five-year track curriculum to a four-year degree program. In practice, today, the 5-year degree program is leveled with a 4-year BM/BA in vocal performance and a 2-year MM degree. While the Romanian bachelor is recognized within the international educational frame of HEIs, the MM is not. The students are required to take additional courses or to start a new MM at an international HEI outside Romania.

The three charts below show a VP course track comparison between different stages of Romanian HEIs: before and after the Romanian Revolution in 1989 (Table 1 and 2) and, before and after the implementation of Bologna Process (Table 2 and 3).

Table 1: 1961-1966 Vocal Performance Curriculum - Bucharest Music Conservatory[1]

Foundational Courses	**Music Courses**	**Vocal Performance Courses**	**Concert Performances/ (*Practica în Productie*)**	**Final State Exam**
Scientific Socialism	Music Theory	Applied Voice	Conservatory's Concert Studio	Voice recital
Dialectical and Historical Materialism	Harmony	Opera Workshop	Conservatory's Opera Workshop production	One Opera Role in an opera production
Marxist-Leninist Aesthetics	Theory of Forms	Rhythm and Dance	Conservatory's Chorus	Scientific Socialism
Psychology	Music History	Stage Combat	Other	
Pedagogy	Romanian Folklore	Stage Make-up		
Foreign Language: (optional: RUS, FR, DE, EN, ITL)	Piano	Vocal Pedagogy		
Physical Educational	Chorus			
History of Arts				

Note: Starting in 1973, all music performance graduates had to enroll in military service (Maier, 2014)

Table 2: 1996-2001 Vocal Performance Curriculum -Transylvania University of Brasov[2]

Foundational Courses	**Music Courses**	**Vocal Performance Courses**	**Concert Performances/ (*Practica Artisticã*)**	**Final State Exam**
Music Theory	Piano	Applied Voice	Department's Concert Studio	Voice recital
Music History	Polyphony	Opera Workshop	Opera Workshop production	and/or
Critical Thinking	General and Vocal Pedagogy	Acting for Singers	Other performances	One Opera Role in an opera production
Music Aesthetics	Harmony	Stage Movement		Paper Presentation on a chosen VP topic
Theory of Forms	Romanian Folklore	Stage Make-up		
Philosophy of Culture				
Psychology				
Foreign Language: ITL and DE				
Physical Educational				

[1] The curriculum is used from a course description of Maier, V. (2014) in *Evoluţia instituţiilor muzicale de învăţământ superior din timpul regimului comunist*, *SERIES HISTORICA*, Romanian Academy Publishing House, p. 133 - table, course classification and translation from Romanian are done by the author.
[2] Author's curriculum completed as a student at UniTBv.

Table 3: 2020-2024 Vocal Performance Curriculum -Transilvania University of Brasov

Foundational Courses	**Music Courses**	**Vocal Performance Courses**	**Concert Performances**	**Final State Exam**
Music Theory	Piano	Applied Voice	Department's Concert Studio	Voice recitals:
Music History	Polyphony	Opera Workshop	Opera Workshop production	20 min chamber music recital
Intro to Music Management	General Pedagogy (optional)	Acting for Singers	Other performances	40 min solo recital
Music Aesthetics	Harmony	Stage Movement		Paper Presentation on a chosen VP topic
Theory of Forms	Romanian Folklore	Stage Make-up		
Psychology optional	**Academic Writing**	Vocal Pedagogy		
Foreign Language: EN		**IPA - German, French Lyric Diction**		
Physical Educational				

Today, to complete a BM in VP in Romania requires fulfillment of 240 (European Credit Transfer System) ECTS credits within four years of study (ARACIS, 2024), while in the UK, only a BMus(Hon) completes 240 credits, Royal College of Music in London, offering an early graduation option for a 120 ECTS credits (Diploma in HE), and for a 60 ECTS credits (Certificate in HE), (London, 2024). In the U.S.A. *calculating curricular structures, the Association uses a four-year degree program of 120 semester hours, or 180 quarter hours, as the basis for determining percentages of various components. For institutions with program requirements beyond 120 semester hours or 180 quarter hours, the combined percentage of the components will exceed 100%. For associate degrees, the basis is 60 semester hours or 90 quarter hours* (NASM, 2023-4).

If before the Bologna Process, all courses were mandatory for any university-admitted student, after implementation of Bologna, courses classified into (a) core or foundational courses, (b) general music courses, (c) vocal performance courses, and (d) elective courses. The last packet of classes, although elective for the students, usually comes in pairs, and it is chosen by the department's head at the beginning of the semester/academic year according to faculty needs. In addition to the bolded courses above, which were new at that particular time, a major change took place within the length of the courses. For example, if in the 1996-2001 curriculum, Italian and German were studied for five years, in the 2020-2024 track design the foreign language requirement was English for two years. The required Italian and German languages for at least one semester in any VP program were omitted here due to convenience. Similar to Music Theory, which was previously mandatory for 5 years, the latest curriculum offers it for two years. It is up to each department to design its curricula according to national and European regulations yet keeping an eye on student needs is also necessary. While the teaching course packet, which included Psychology, General Pedagogy and Vocal Pedagogy were mandatory before Bologna, it later became optional and it's currently integrated and taught by the Department of Education.

Comparative Education - Analyses of VP Praxis in HEI - Romania Versus USA

According to the ARACIS standard requirements (ARACIS, 2024, p. 88), the highest percentage within the core of the VP curriculum is ascribed to the field subjects (up to 55%), which are: Applied Voice, IPA and Lyric Diction, Opera Workshop, History of Opera and Art Song Literature, Vocal Pedagogy, Acting for Singers, Stage Movement and Stage Make-up. In the US curricula, this percentage varies according to the institution's and degree's types (NASM, 2023-4). Nonetheless, several courses are found in all VP programs whether part of a professional degree, BM, or a liberal arts degree, BA.

Applied Voice is the main course taught every semester. The Romanian vocal performance curriculum splits the Applied Voice course into two courses:

- *Canto* is a compulsory 1-1 course whose main objective is to obtain competencies in classical singing. The syllabus, costumed nationally, includes acquired repertoire of the following historical periods: Baroque - for the freshman student (1st year of study); Classical - for the sophomore student (2nd year); Romantic - for the junior student (3rd year); and 20th century, respectively post-modern repertoire for the senior student (4th year). The course is one and a half academic hours, meaning 75 minutes weekly.
- *Lied-Oratorio* is also a 1-1 compulsory course added for the third and fourth year of vocal-performance studies and requires fulfillment of oratorio arias and art-song repertoire. Although the course's name implies the study of the German song only (*Lied*) - the term *Lied* being used in Romania to describe all art-song categories - the syllabus contains German *Lieder*, French *Melodies*, Spanish, Russian, Czech, English, Hungarian and Romanian art song cycles. The student benefits of an additional one-hour vocal instruction a week from the same or different voice faculty assigned.

The Applied Voice course in the US vocal performance programs is a one-hour weekly course with no repertoire constraints throughout the study years. This allows the student and the voice teacher to gear the vocal instruction based on student's continuous abilities and vocal inclinations within the classical frame. Although the student does not benefit from the same amount of vocal instruction as in the Romanian curriculum, what matters on both platforms is quality of instruction shaped on individual vocal needs. At the end of his third year of vocal studies the student must pass a half-hour Junior recital - presented in a hearing to the Jury and publicly in the department's concert season. If the student does not pass the half-hour recital as a Junior, he/she will not advance into the Senior year and will not yet prepare for the 45-minute concert required for the vocal performance degree completion.

The International Phonetic Alphabet (IPA) and Lyric Diction in German, French, Italian, Spanish and English are at the core of all BM in vocal performance degrees in the USA. The undergraduate student studies the IPA, the phonetic and their symbols of the classical languages in singing, including the native one; the use of tongue, lip and air movement for vowel formation, vowel charts; rules and exceptions for open, close, long, short vowels in a specific language; consonants and their articulation; old language versus modern sung language, and phonetic transcription of studied repertoire. The competencies acquired through the completion of these courses are language accuracy, fluency and clear interpretation in any studied repertoire. The IPA is an essential tool for the 21st-century singer. If an international student does not fulfill the US core requirements, he/she must register for it during his/her graduate studies.

In Romania, the concept of precise phonation in classical singing based on scientific data has been overlooked throughout its 164 years of history. Most of the studied repertoire in the program has been for many years in the Italian language, reason for which today over 80% of opera houses' repertoire in the country consists of Italian operas. The Romanian curriculum for a BM in vocal performance includes studies of 1 or 2 years of a foreign language depending on the institution's choice. However, the study of a foreign language although essential, does not equal the study of IPA and lyric diction for singers. After teaching five years at the University of Mobile, Alabama, the Lyric Diction course was imported by the author to Brasov, at UniTBv in 2013 being the first Lyric Diction course in the VP program in Romania. Later on, Cluj and Constanta added the course to their VP requirements. The benefit of this course addition is both national and international: the academic transcript receives recognition and credit equivalation in all countries and universities where this course is taught, and it is a compulsory pre-requisite for advanced degrees in vocal performance: MM and DMA. Furthermore, the insertion of a 2-hour lyric diction class a week within the advance degrees in Romania presents the perspective of a new job title: that of a trained Lyric Diction coach within the national opera houses, who momentarily lack this position.

Vocal Pedagogy is a mandatory course for all bachelor and master programs in vocal performance in the Western curriculum. It is commonly a 2-credit class for a 2-hour weekly course. The syllabus covers the anatomy of the vocal apparatus, its functionality, the sound production and release, the technique of *appoggio* and *aggiustamento*, breath management exercises, vowel formants, the singer's timbre and registers, the *Fach*, the dynamic control in singing, the aspect of communication, aesthetics of timbre in vocal pedagogy, and health in singing. The most used textbook in American and other international universities is Richard Miller's *The Structure of Singing*, but not limited to it. The course is dense and an eye-opener for any novice of singing, and it is taught by a singer faculty specialized in vocal pedagogy.

In the Romanian HEIs, the equivalent of the Vocal Pedagogy course is a module of courses taken within both the Department of Education - which holds the jurisdiction of the class, and the Music Department. The first department offers courses in psychology and general education at Level 1 for bachelor candidates and Level 2 for Master candidates or post-graduate studies. These courses are the core of the pedagogical module. The Music Department handles one course in this module, *Specialized Didactics* (*Didactica Specialitatii*), which comprises of one course and one laboratory. Only the laboratory is taught by a specialized faculty in the field and only at Level 1 (*Nivel 1*). The pedagogical module is not mandatory for students. Therefore, students who do not aspire to a teaching career do not enroll in this module and do not acquire any scientific knowledge of voice and vocal pedagogy. Although some national vocal performance curriculums included a *Vocal Hygiene* course for the students, this does not suffice in shaping a well-prepared and informed singer at international standards. Since 1990, many textbooks have been published on *Specialized Didactics*, borrowing materials from the international vocal pedagogy literature already published.

While the following courses **History of German Lieder, History of French Mélodie, and History of Opera** may be considered mandatory for graduation in the US, the ARACIS standards show these as complementary courses.

One of the sought-after courses in a VP program is the **Opera Workshop**, generally a 2-credit course meeting 2 to 4 hours a week and consisting of setting on stage a full-production in most respectful HEI or opera scenes in resource-limited music departments. In the US, this

course is frequently managed by a vocal performance faculty with stage-directing flair or experience, who understands the vocal needs and demands of the students. In other cases, the Opera Workshop director is a full-time conductor (commonly a former opera singer), with strong knowledge in the field. Whether a full-time voice faculty or opera conductor within the department, one decides on the repertoire to be studied and publicly performed. One works closely with a rehearsal pianist who, too, is accustomed with the opera repertoire and the singers' needs to ensure the musical preparation of the students. After this phase, the stage director comes to set the music on stage. The stage-director is either hired externally for the production only, or he is a voice faculty with knowledge and teaching experience. In high-profile institutions, a set designer, a custom designer, a hair and make-up artist, back-stage technical personnel are involved in the making of the full production. A full opera production includes the department's orchestra, in most schools where there is one. The outcome is an extraordinary musical bond of a team that learns how to work closely work with each other. Partially funded by its community, the production may have a high social impact.

At the three former music conservatories of Romania: Cluj, Bucharest, Iasi, the importance of the Opera Workshop within the program is well enough understood, students and faculty aiming to complete a full production with or without an orchestra. However, in small music departments, there is no director of the course, to supervise the full process of the course and to ensure that student receive their performing experience. The course is shared between two or three faculty members: an accompanist, a stage director and, sometimes, a conductor none of them being involved in teaching voice students and/or teaching within the vocal performance program. Such is the case with UniTBv, and the effect is visible, especially in the ability to shape teams. Even though the number of hours is 6 per week for this course, (or 12 hours a week before Bologna) the outcome may not be compared with a 2-4-hour class in the American curriculum, where strong managerial skills and vision of Voice professionals lead the way.

Concert Music Credit (*Practica Artisticã*) is currently a 3-hour credit course in the vocal performance program demanding student participation - through singing - in at least one public performance per semester and attendance at school's events. In the US, the Concert Music requirements indicate singing involvement in a weekly Voice Audition and a monthly Voice Seminar, in addition to attendance at school events. The student is graded with a *satisfied/not satisfied*, whereas in Romania the student receives an actual grade each semester throughout his/her four years of studies.

Conclusion

After Bologna, *even if the national regulations would had been clear and consistent, they may not have been applied on the ground* (Geven, 2015). While the implementation of the Bologna System allowed freedom within the VP curriculum's design, this freedom hasn't been always used in student's interest. Due to the program's decrease in length, in comparison with its prior designs, long-hour courses required faculty to adapt their courses to a more intense, dynamic and interactive teaching approach. Nonetheless, the Romanian faculty body currently in the HE system still comprises old-school faculty members who taught before 1989, which makes change at practical level difficult. Meanwhile, the younger generation faculty with no international HE exposure, graduating all degrees at the same institution continued on a similar path before 1989, with a teaching input-output alike or even decreased. The renewal of practices will require even more time than anticipated, while Gen Z fully attending universities' courses will demand more strongly a change in teaching strategy.

One of the major advantages that Bologna brought, was that internationalization of student Transcripts/Diploma Supplements, which are now bilingual: in Romanian and one *other foreign language of widespread circulation* (Damian, 2005), English being the case. Although *legal changes do not immediately induce variations in practice or mentality* (Curaj, 2015), Romanian HEIs *have taken serious steps towards increasing mobility and exchanges for students and teachers,* [...] *increasing international and intercultural understanding* (Wells & Florea, 2011).

Table 4: Bologna System Implementation

Advantages	Challenges	Risks
Student mobility based on ECTS	Abolish the private lesson system prior to HEI admission with teachers of admission committees	Mass education may weaken the sector: student competences on papers versus practice
Degree recognition outside of Romania	Renewal of teaching faculty with non-SRI related members	Graduates of VP distance study-program have limited skills at graduation
Graduate studies accessibility in other countries	Managerial vision needed in interest to all stakeholders of HEI	Graduates of other bachelor's degrees admitted in VP graduate programs without sufficient credit and practical proficiency in VP are employed in pre-HEI as voice specialists
Internationalization	Quality assurance transparency tools	
International job opportunities		

While embracing the benefits of change, the author's commitment to national and international academia and to the singing community is expressed in the statement: healthy and efficient teaching and singing unite the mind and the hearth within the human body so that one coherent and honest entity is created. It is an athletic process that becomes art when the power of self-expression - in both singing and teaching - is truly genuine. Staying devoted to this synchronizing principle is author's goal while nurturing students on their path of self-commitment.

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Contact email: buhaiciuc.mihaela@unitbv.ro

Exploring the Relationship Between Realistic Optimism and Big Five Personality Traits Among Indian University Students

Aneesah Nishaat, Higashi Nippon International University, Japan

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
This study explores the relationship between realistic optimism and the Big Five personality traits among Indian university students, offering insights into these constructs in a non-Western context. Realistic optimism, emphasizing a hopeful yet grounded perspective toward the future, was measured using Nishaat's (2018) Realistic Optimism Scale, while personality traits were assessed using the Ten-Item Personality Inventory (TIPI). A total of 209 students from three universities in West Bengal, India participated in the study. Pearson correlation analysis revealed that Emotional Stability showed the strongest positive correlation with realistic optimism, particularly with the Flexibility subcomponent. Other significant correlations were found between realistic optimism and Agreeableness, Openness to experience, and Conscientiousness. Notably, Extraversion showed no significant correlation. These results suggest that emotional regulation, interpersonal harmony, and cognitive openness play critical roles in fostering realistic optimism in an Indian cultural context. Additionally, the absence of a link between Extraversion and realistic optimism may reflect cultural differences in the expression of personality traits. Overall, the findings highlight the importance of considering cultural nuances when examining optimism and personality, suggesting that interventions to enhance realistic optimism should focus on emotional regulation and flexibility. This study contributes to a deeper understanding of how personality and optimism intersect across different cultural settings.

Keywords: Realistic Optimism, Big Five Personality Traits, Indian University Students

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Introduction

In recent years, the field of positive psychology has increasingly focused on optimism as a key construct in understanding and promoting well-being (Seligman & Csikszentmihalyi, 2000; Seligman et al., 2005). Optimism, broadly defined as a tendency to hold positive expectations about future events, has been associated with numerous positive outcomes, including better psychological adjustment, healthier behaviors, and improved physical health (Rasmussen et al., 2009; Scheier et al., 2001). Some researchers, however, argue that optimism and pessimism might not be completely opposite constructs but rather independent dimensions (Zuckerman, 2003). Various forms of optimism have been conceptualized, including dispositional optimism, explanatory style (Carver & Scheier, 2002; Scheier et al., 1994; Seligman, 1991). Studies have shown that individuals with a more optimistic outlook tend to have better psychological adjustment, engage in healthier behaviors, and experience improved physical health (Rasmussen et al., 2009; Scheier et al., 2001).

While various forms of optimism have been conceptualized, this study focuses on realistic optimism. Realistic optimism, as described by Schneider (2001), emphasizes a hopeful yet grounded perspective toward the future. It involves focusing on favorable past experiences while acknowledging and accepting reality, thus driving individuals toward their goals with effort and resilience.

The relationship between optimism and personality has been a subject of growing interest in psychological research. The Big Five personality model, which encompasses five core dimensions - Extraversion, Agreeableness, Conscientiousness, Emotional Stability (or Neuroticism), and Openness to Experience - provides a comprehensive framework for examining individual differences in personality (John & Srivastava, 1999). Traditionally, optimism has been most strongly associated with low levels of Neuroticism and high levels of Extraversion (Marshall et al., 1992; Williams, 1992). However, emerging evidence suggests that other Big Five traits, such as Agreeableness and Conscientiousness, may also play significant roles in shaping optimistic outlooks (Milligan, 2003).

While much of the research on optimism and personality has been conducted in Western contexts, there is growing recognition of the need to explore these constructs in diverse cultural settings. India, with its rich cultural heritage and rapidly changing social landscape, provides a unique context for examining the interplay between personality traits and optimism. The concept of optimism in Indian philosophy, often linked to concepts like karma and dharma, may differ from Western conceptualizations. Therefore, exploring how realistic optimism relates to personality traits in an Indian context can provide valuable insights into the cultural nuances of these psychological constructs.

This study aims to address this gap by investigating the relationship between realistic optimism and Big Five personality traits among Indian university students. Specifically, we seek to answer the following research questions:

1. How does realistic optimism correlate with each of the Big Five personality traits in an Indian university student population?
2. Are there unique relationships between specific subcomponents of realistic optimism (Future Orientation, Flexibility, and Will/Courage) and particular personality traits?

By exploring these questions, we aim to contribute to a more nuanced understanding of optimism and personality in Indian context.

Sample

The study included 209 university students (97 males and 112 females) from three universities in West Bengal, India. Participants' ages ranged from 18 to 25 years, with data collection occurring in June 2023.

Two main instruments were used in this study:

1. Realistic Optimism Scale: Developed by Nishaat (2018), this scale consists of 12 items that measure three factors: future orientation, flexibility, and will/courage.
2. The Ten-Item Personality Inventory (TIPI) by Gosling et al. (2003) was employed to assess the Big Five personality traits. This inventory includes ten items, with each dimension represented by a pair of positive and negative items. Responses were recorded on a seven-point Likert scale.

Data Analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 27.0, where a correlation coefficient analysis was conducted. Pearson correlation coefficient analysis was conducted to examine the relationships between realistic optimism (and its subcomponents) and the Big Five personality traits. Prior to analysis, data were screened for outliers and normality. No significant violations of assumptions were found.

Table 1: Descriptive Statistics

	N	Mean	SD
Future Orientation	209	3.91	.56
Flexibility	209	3.67	.83
Will/Courage	209	2.77	.95
Realistic Optimism (Total)	209	3.74	.50
Extraversion	209	3.92	1.49
Agreeableness	209	5.58	1.18
Conscientiousness	209	4.95	1.54
Emotional Stability	209	4.67	1.50
Openness to Experiences	209	5.25	1.33

Correlations Between Realistic Optimism and Big Five Personality Traits

The analysis revealed positive correlations between Realistic Optimism and several of the Big.

Five personality traits: Emotional Stability showed a moderate positive correlation with Realistic. Optimism (r = .37, p < .01), indicating that individuals with higher emotional stability tend to exhibit more realistic optimism. Similarly, moderate correlations were observed between Realistic Optimism and Agreeableness (r = .28, p < .01) and Openness to experience (r = .21, p < .01). Conscientiousness had a lower, yet significant, positive

correlation with Realistic Optimism (r = .15, p < .05). Notably, Extraversion showed no significant correlation with Realistic Optimism in this sample.

Table 2: The Relationship Between Realistic Optimism Total and Big Five Personality Traits

	Realistic Optimism
Emotional Stability	.37**
Agreeableness	.28**
Openness to experience	.21**
Conscientiousness	.15*
Extraversion	-

** p < .01, * p < .05

Correlations Between Factors of Realistic Optimism and Big Five Traits

Further analysis examined the relationships between specific factors of Realistic Optimism and the Big Five traits. Flexibility was moderately correlated with Emotional Stability (r = .36, p < .01) and Agreeableness (r = .22, p<.01). Future Orientation showed a moderate correlation with Agreeableness (r = .30, p < .01) and Emotional Stability (r = .20, p < .01). A slightly lower correlation was found with Openness to experience (r = .19, p < .01) and Conscientiousness (r = .14, p < .05).

Will/Courage also demonstrated a positive but low correlation with Emotional Stability (r = .18, p<.01). Notably, Extraversion did not correlate significantly with any of the Realistic Optimism factors in this study.

Table 3: The Relationship Between the Factors of Realistic Optimism and Big Five Personality Traits

	Future Orientation	Flexibility	Will/Courage
Emotional Stability	.20**	.36**	.18**
Agreeableness	.30**	.22**	-
Openness to experience	.19**	-	-
Conscientiousness	.14*	-	-
Extraversion	-	-	-

** p < .01, * p < .05

Discussion and Conclusion

This study provides valuable insights into the relationship between realistic optimism and Big Five personality traits among Indian university students, contributing to our understanding of these constructs in a non-Western context. The findings reveal a complex interplay between personality traits and optimism, with some results aligning with previous Western studies and others diverging in interesting ways.

The strong positive correlation between Emotional Stability and realistic optimism emerged as the most salient finding of this study. This result aligns with previous research by Sharpe

et al. (2011), who identified Emotional Stability (or low Neuroticism) as a key predictor of optimism. The robust relationship observed in the Indian sample suggests that the ability to regulate emotions and maintain emotional balance is crucial for fostering a realistically optimistic outlook, regardless of cultural context.

The particularly strong correlation between Emotional Stability and Flexibility further underscores the importance of emotional regulation in adapting to changing circumstances while maintaining a positive outlook. This finding may have particular relevance in the Indian context, where rapid social and economic changes may require significant adaptability from young adults.

Agreeableness, Openness to experience, and Conscientiousness also demonstrated significant associations with realistic optimism, albeit to varying degrees. Agreeableness suggests that interpersonal harmony and a cooperative nature contribute to an optimistic view of the world. This is consistent with the Sharpe et al.'s result (2011), indicating that optimists are more socially adept and friendly, leading to higher satisfaction in relationships. Openness implies that an openness to new experiences and a flexible cognitive style facilitate the development of realistic optimism. Conscientiousness, though less pronounced, highlights the role of goal-directed behavior and persistence in fostering a positive outlook (Sharpe et al., 2011).

The Subcomponent of realistic optimism—Future Orientation, Flexibility, and Will/Courage—further elucidates the nuanced relationships between personality traits and optimism. Emotional Stability had a significant influence on all three subcomponents, especially Flexibility, underscoring its role in adapting to changing circumstances with a positive mindset. Agreeableness was strongly associated with Future Orientation, suggesting that individuals who value interpersonal harmony are more inclined to hold positive expectations about the future. This finding may reflect the collectivistic aspects of Indian culture, where social relationships and harmony are highly valued (Sinha, 2014). Openness to experience and Conscientiousness showed specific associations with Future Orientation and Flexibility, respectively, reinforcing the idea that these traits contribute uniquely to how individuals perceive and approach the future.

Perhaps the most surprising finding of this study was the lack of significant correlation between Extraversion and realistic optimism. This result diverges from many Western studies that have consistently linked optimism with high Extraversion (e.g., Marshall et al., 1992; Williams, 1992). This discrepancy may reflect cultural differences in the manifestation of optimism or in the interpretation of Extraversion-related items.

Interestingly, Extraversion did not show a significant relationship with realistic optimism in this study, which diverges from the findings of Sharpe et al. (2011) that typically link optimism with high Extraversion. In Indian context, where interdependence and social harmony are often prioritized over individual assertiveness (Sinha, 2014), the typical Western conceptualization of Extraversion may not align as closely with optimistic tendencies. This finding underscores the importance of considering cultural context when studying personality traits and their correlates.

Overall, the findings highlight the complexity of realistic optimism and its multifaceted relationship with the Big Five personality traits. While Emotional Stability stands out as a central factor, Agreeableness, Openness to experience, and Conscientiousness each contribute to a more nuanced understanding of how personality shapes an individual's

optimistic outlook. These results suggest that interventions aimed at enhancing realistic optimism could benefit from a focus on emotional regulation, interpersonal skills, and cognitive flexibility, potentially leading to more resilient and adaptable individuals.

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Characteristics of Dropout Indonesia's Online Students at Universitas Terbuka

Afriani, Universitas Terbuka, Indonesia
Rahmat Budiman, Universitas Terbuka, Indonesia
Widyasari, Universitas Terbuka, Indonesia
Yudi Efendi, Universitas Terbuka, Indonesia
Agus Riyanto, Universitas Terbuka, Indonesia

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
This study investigated some characteristics of dropped out online learning students within the first year. It used interview data from 16 participants from three dissimilar locations: Jakarta (metropolitan), Palembang (urban), and Ambon (rural). Purposive sampling was used in this study. It was expected that they would be a reliable source of authentic information. To ensure research ethics, the names of the institution and interviewees were kept confidential and anonymous. Prior to data collection, the research questions were refined into some guiding questions. The interviewers used appropriate probing techniques to encourage participants to provide additional information. The interviews were taped and transcribed for analysis. The results showed that some characteristics indicates the causes of students dropped out in their online learning, including balancing multiple roles, living in remote or rural areas, financial difficulties, lack motivation, having difficulties in self-learning, insufficient learning support, gender in balancing multiple roles, and having geographic barriers. The findings revealed various characteristics of dropout students as well as the reasons why they dropped out in online learning. As a result, Universitas Terbuka must take comprehensive approaches to address the issues, allowing students to complete their studies on time.

Keywords: Characteristics, Dropout Students, Online Learning, Qualitative, Thematic Analysis

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Introduction

This article presents research exploring the characteristics of students who struggle at the beginning of their studies at Universitas Terbuka (UT), or Indonesia Open University. The study focuses on the high number of students who fail early in the semester, aiming to understand why some new distance learners leave the program during their first year.

It's important to note that the term "dropout" may not fully apply here, as UT does not impose a maximum time limit for program completion, allowing students to continue their studies at any time. A more accurate term might be "study suspension," as students can pause and later resume their education (Bristol, n.d.). UT offers flexible pathways to meet the diverse needs of its students (Atchoarena, 2021) and maintains a database of student records from registration to facilitate this process.

Despite these supports, many students still suspend their studies early on. This concern drives UT to identify the characteristics of students who struggle academically, aiming to uncover patterns that indicate potential failure. By understanding these characteristics, UT hopes to reduce and even prevent student failures at the start of their learning journey.

There is a lot of literature that focuses on students dropping out of school in distance learning environments along (Olaya et al., 2020) with studies related to the causes and factors behind students dropping out of school. loIn recent years, especially after the Covid-19 pandemic, online learning, a form of learning used in distance and campus-based universities, has attracted the attention of researchers. Covid-19 has pushed most campus-based universities to switch to distance learning (Ezra et al., 2021). Their current research agrees that online learning has its own teaching methods that are different from traditional teaching methods. Failure to meet the requirements of online teaching methods can lead to student dropout and learning loss (Cerelia et al., 2021). It has been recognized that the dropout rate is an indicator of the success of online programs (Willging & Johnson, 2009).

Previous research has shown that student attrition or dropout rates in distance learning environments are high (Olaya et al., 2020; Markle, 2015; Bağrıacık Yılmaz & Karataş, 2022). According to the results, administrators, field experts, instructors, and support staff are not aware of all the dropout reasons. The results of this research are believed to guide researchers, practitioners, and administrators in enhancing the quality of open and distance education (Bağrıacık Yılmaz & Karataş, 2022).

The study by Del Bonifro et al (2020) aimed to predict the dropout of first-year undergraduate students using machine learning techniques. The researchers conducted experiments on real data from eleven schools of a major university. The study focused on three design principles: early prediction of dropout, using only personal information and academic records from high school, and the number of credits acquired during the first months of the first year.

Another study found that a model that builds on Spady and Tinto's classic models that explains dropout intentions in higher education and specific study programs. The model, which emphasized individual background characteristics and students' satisfaction with institutional support, was tested in Luxembourg. Initial study commitment was not associated with social integration, but satisfaction with institutional support was a significant factor in dropout intention (Hadjar et al., 2023).

The research only focused on models of students' failure without referring to a specific period. Furthermore, the first semester of study is a vulnerable period for students in their learning, so the right step for universities to take is to identify student characteristics to avoid learning failure.

Literature Review

Characteristics can be interpreted as nouns and adjectives (*Characteristic Definition & Meaning | Britannica Dictionary*, n.d.). The term "characteristics" can refer to either nouns or adjectives. When used as an adjective, "characteristic" describes distinctive traits or qualities of a person, thing, or group. As a noun, "characteristic" refers to a special quality or distinctive feature that sets a person, thing, or group apart from others (*Characteristic Definition & Meaning | Britannica Dictionary*, n.d.). In the context of this paper, "characteristics" will be used and interpreted as nouns rather than adjectives.

The characteristics of the dropout students can be defined based on some experts' model. According to Tinto (1975) based his own theory on a previous model by Spady (1970) that he had reviewed. Tinto's (1975) distinct feature is the focus on sociological aspects of dropout, emphasized both (socioeconomic) individual factors and factors relating to the higher education (HE) institutions. Individual aspect are socioeconomic background, parental level of education, and average grade at completion of secondary school. While institutional conditions, such as the study environment, modalities of particular study programs, size, expenditure, institutional selectivity, or teaching quality, shape further drivers of dropout.

While Rovai (2003) divided dropout students into two parts: student characteristics and skills prior to admission and external and internal factors that affect students after admission. The characteristics of dropout students are the first part, namely characteristics before admission. Rovai (2003) examines students' personal characteristics such as age, ethnicity, gender, intellectual development, and academic performance as well as preparation before college. This is different from Hadjar et al (Hadjar et al., 2023), who has similar personal characteristics such as social origin, gender, immigrant background.

The characteristics of dropout students will be analyzed using Rovai's model, which categorizes factors into pre-admission and post-admission. This clear division makes it easier to differentiate between student characteristics and institutional experiences. The pre-admission category includes demographic traits like age, ethnicity, and gender, allowing for a straightforward analysis of individual differences.

In contrast, Tinto and Hadjar offer more complex frameworks. Rovai's simple pre/post admission split, along with its focus on demographics and various external/internal factors, can effectively categorize and analyze dropout data. However, Tinto and Hadjar provide deeper conceptual insights and connections to higher education.

Methodology

The study aims to answer the following question: what are the characteristics of the dropout students in their first year of study? The sampling method used was purposive sampling (Dawadi, 2021). Several procedures were used to determine the sample and its size. First, dropout students were identified from various programs. Next, the sample locations were categorized into three types: metropolitan, suburban, and rural. Then, 10 students were

selected from each category. Finally, participants were invited to join the study via email and mobile phone.

The selected participants were from three geographical areas: Jakarta (metropolitan), Palembang (urban), and Ambon (rural). These participants were expected to provide valuable insights and comparisons regarding the challenges that led to dropout. It's important to note that internet access in Indonesia is unevenly distributed across the country, and the challenges and characteristics of students likely vary among metropolitan, urban, and rural areas.

Data for this study was collected from three UT Regional Offices: Jakarta (2 males and 2 females), Palembang (3 males and 2 females), and Ambon (5 males and 2 females). Focus Group Discussions (FGDs) were used to gather information. According to Creswell in Bridges (2023), focus group interviews are effective for obtaining feedback from specific individuals through group discussions with a small number of participants. A total of 16 participants joined the FGD.

The results were transcribed and analyzed using thematic analysis (Wæraas, 2022). This method interprets data by first classifying it, then grouping codes into themes, and arranging them during a second round of coding. A third round of coding helps identify aggregate dimensions and visualize the codes and themes.

Before the interviews, it was made clear that participation was optional and that participants could withdraw at any time. Among the participants, three were older than 29 years, while 13 were younger. All participants were employed, with three being married.

Results

The current study aimed to explore the characteristics of dropout students in a distance learning program using Rovai's model, which looks at student characteristics before admission and the external and internal factors that affect them afterward. Rovai (2003) focuses on pre-admission characteristics, analyzing factors such as age, ethnicity, gender, intellectual development, academic performance, and college preparation. The findings showed that external factors—like financial issues, family responsibilities, work engagement, transportation, and internet access—significantly contributed to dropout rates. Internal factors included dissatisfaction with the program. Notably, some participants experienced both external and internal challenges simultaneously. The key characteristics of students who dropped out of the distance learning program are summarized below.

Characteristics of External Factor

Challenges Balancing Multiple Roles

Several issues were identified. Students highlighted the challenges that working adults face in balancing professional, family, and academic responsibilities, which can lead to dropping out of courses. Notably, one participant mentioned that he would permanently withdraw. Research indicates that the first year is a critical period for students in distance learning and online environments (Willging & Johnson, 2009).

One female participant emphasized the difficulty of managing work, family duties, and studying after work hours. She expressed that she is often too exhausted from her job to focus on her studies.

> *"Once I arrive home (from work), I just want to take a rest. I also must take care of my children." (Female participant)*

The female student emphasizes the exhaustion after a day's work that makes it difficult to focus on studies in the evening, on top of family duties like childcare. Her comment illustrates the burden of managing competing demands on her time and energy from work, family, and education. Moreover, a male student also said as below.

> *"I work as a teacher and recently I was appointed a secretary at the sub-district office. Automatically, my responsibility doubled. At the weekend, I must work. So I decided not to register in the following semester." (Male participant)*

A male student explained that increased responsibilities at work led him to pause his studies for a semester, as he could not adequately focus on his coursework. His experience illustrates how changes in work demands can force working learners to temporarily or permanently deprioritize their education.

Students indicate that juggling multiple roles and shifting responsibilities heightens dropout risks for working adult learners. Institutions can support these students by offering flexible scheduling, online courses, and understanding their unique needs. Services like childcare could also help ease the burden for working parents.

Work-study conflict is a significant challenge for distance learning students. According to (Rovai, 2003), working students are more likely to drop out of online courses if they cannot resolve this conflict. However, many distance learning institutions provide flexible learning models, allowing students to resume their studies at any time. Those who decide to withdraw still have the opportunity to continue later. Markle (2015) noted that work-study conflict is often more pronounced among female students, while Bağrıacık Yılmaz & Karataş, (2022) found that both male and female students experience this issue.

Residence in Remote/Rural Areas With Limited Access to Transportation and Internet Connectivity

Students in remote areas of Indonesia, especially in the eastern regions, encounter significant barriers to online education due to limited internet infrastructure. A study found that students often cannot participate in online learning activities like webinars and tutorials because of poor connectivity. Shaikh & Asif (2022) noted that inadequate internet access can hinder students' learning progress. One student shared his frustration about lacking any internet access, which severely disrupts his education and ability to complete assignments.

> *If I go to suburbs, I do not have access to the internet so that I cannot follow the online learning. (Male)*

Aside from internet access, some students struggle with transportation requirements to take exams or attend in-person tutorials. Some people are unable to participate because of the long

distances they must travel. One student explained how limited transportation posed an additional barrier, on top of poor internet access.

> *The face-to-face tutorial site is far from my house. Public transportation is very limited. I depend on my friend who has a car. He picks me up, but in Saudi Arabia, this is uncommon to rideshare if they are not spouses. (Female)*

These issues exacerbate the educational disparity between rural Indonesian students and their urban peers. Those in remote areas already face financial constraints and technological divides. Having to overcome internet and transportation barriers just to finish their education adds another layer of difficulty.

Overall, rural eastern Indonesians are on the wrong side of the digital divide. Closing these systemic gaps will necessitate significant infrastructure upgrades and equitable distribution of educational resources. Significant improvements are required to ensure that all Indonesian students have access to online learning opportunities and academic support, regardless of location.

Students Facing Financial Difficulties or Loss of Scholarships

Students from disadvantaged backgrounds often cite financial difficulties as a reason for dropping out. Losing scholarships due to poor academic performance is a key issue. One male student shared that failing his exams led to his scholarship being revoked. Without that funding, he couldn't pay his tuition and had to withdraw from his program. As he stated below.

> *"My scholarship was suspended because I failed my final examination." (Male)*

Moreover, even those who had worked hard to save for tuition had to divert their funds due to financial emergencies. The following is a statement of one female student described how an unexpected emergency expense forced her to reallocate money she had saved for school fees.

> *"I had an emergency. Unfortunately, I had to use the money for the school fees. In fact, I have been collecting the money, but I had no choice but to use the money for the emergency." (Female)*

Scholarship losses and unexpected financial needs depleted the students' limited educational resources. Without a financial safety net, any disruption would result in a loss of ability to pay fees and expenses.

These experiences show how challenging higher education can be for students from disadvantaged backgrounds. Even small financial or performance issues can abruptly end their academic careers. This highlights the need for strong scholarships, hardship assistance, and flexible payment plans for economically vulnerable students. Financial stability and support systems are crucial to help dedicated individuals stay focused on their goals.

Personal and Familial Issues Like Parental Disapproval of Distance Learning, Family Problems, and Lack of Motivation

Some students dropped out of school due to personal or family issues student (Bağrıacık Yılmaz & Karataş, 2022), (Aydin et al., 2019). One significant factor was parental opposition to distance education. One male student stated that his parents preferred that he attend a traditional campus rather than continuing his education via distance learning. His parents refused to let him continue in the online program based on feedback from extended family members.

> *"My parents did not allow me to continue my studies. Someone might tell them about studying at campus-based university. My uncles and aunts agreed with my parents." (Male)*

The male participant's parents preferred him attending a traditional campus instead of distance learning, leading him to pause studies. Family issues that caused emotional distress and frustration hampered students' academic progress. One female learner described how frustrations at home interfered with her ability to focus on exams, ultimately leading to failure.

> *"I had a family problem. I was frustrated and it affected my study. Finally, I failed the exam." (Female)*

The female participant faced family issues that impacted her studies and led to exam failure. These experiences highlight how personal motivations, family influences, and life circumstances affect student persistence. College counselors could better support students by addressing motivational challenges. Engaging with parents can help them understand the benefits of distance learning. With comprehensive support, more students could overcome obstacles and graduate.

Students Receiving Insufficient Learning Support

Insufficient support in distance learning programs contributed to dropout rates. Some students noted that the lack of tutor feedback on assignments was demotivating. One female participant explained that not receiving responses to her assignments and questions left her uncertain about her progress. Since she was focused on learning rather than grades, tutor feedback was essential for her improvement. Without it, she felt disconnected and unsure of how to advance.

> *"I was disappointed. I study for a bachelor's degree not because I need good scores. The online discussion was one way, there were no responses and feedback from the tutor. I sent a direct message, but no reply. Without feedback, I did not know how good my assignments were." (Female)*

Others noted that inflexible schedules for activities like webinars were a barrier. The female participant felt demotivated and uncertain about her progress without tutor feedback, and the lack of responses to her questions disheartened her. Fixed schedules were challenging due to her work and home duties, limiting her participation.

These experiences emphasize the need for effective instructor guidance and flexible learning support in online programs. Proactive outreach from tutors could help students feel more supported and confident in their progress. Accommodating schedules would allow working learners to access essential resources. Improved support systems can boost students' motivation to persevere through challenges.

Insufficient learning facilities, including interaction, lack of support from staff, and learning services, were factors that led to students dropping out (Willging & Johnson, 2009), (Budiman, 2015), (Dawadi, 2021). There would therefore seem to be a definite need for understanding the students in order to provide sufficient and appropriate supporting learning systems.

Facing Geographic Barriers

The experiences of students from metropolitan, urban, and rural areas highlight how geographic barriers interact with other issues such as the lack of local examination centers presented a challenge for those living on remote islands or in rural villages. As one male student on a remote Indonesian island explained, he had no testing site available, necessitating lengthy travel.

> *"I live in Seram Island and there is no examination site here." (Male)*

Students from various geographic regions faced distinct location-based challenges that impacted their education. Those living on remote islands or in far-flung rural villages faced difficulties in accessing essential academic activities. One male learner on a remote Indonesian island described how there were no examination centers nearby. To meet testing requirements, he was forced to travel extensively.

Remote students were unable to access standard academic support systems because no nearby facilities were available. Their participation was hampered by physical distance and lack of access to educational facilities. Moreover, another comment was from female student as below.

> *"The face-to-face tutorial site is far from my house. Public transportation is very limited. I depend on my friend who has a car. He picks me up, but in Saudi Arabia, this is uncommon to rideshare if they are not spouses." (Female)*

The female overseas student struggled with transportation issues due to cultural reasons, which affected her attendance. Students from abroad faced additional cultural limitations that made transportation harder. For example, in Saudi Arabia, the female learner explained that relying on rideshares from non-family males was uncommon, restricting her access to distant tutorial sites. Geographic barriers also hindered rural students, leading to travel challenges, fewer exam centers, and limited academic support.

In short, dropout students often lead complex lives, juggling multiple responsibilities. Working adults find it hard to balance studies with professional and family duties, often feeling exhausted after long days. Rural learners face limited access to resources, such as internet and transportation, putting them at a disadvantage. Financial hardship is also a significant barrier, as those from disadvantaged backgrounds have little cushion when scholarships fail or urgent needs arise.

Characteristics of Internal Factor

The Adjustment of Freshman and First-Term Students to Self-Directed Online Learning

Some students in their first semester or year face a critical risk of dropping out as they adapt to self-directed online learning. The transition to online education is particularly challenging, as many students are still learning to be organized and self-directed. One male student shared that he intended to register for the second semester but missed the deadline because he hadn't yet developed the skills to manage important dates independently.

> *"I planned to register in the second semester. Unfortunately, I missed the deadline because I did not know." (Male)*

This suggests that the student was still learning how to independently keep up with important deadlines in the first semester. Missing registration shows his struggle adapting.

Moreover, another key challenge in the first semester is adapting learning strategies to the online environment. A student who worked at sea explained how in his first semester, he lacked the preparation needed to access online learning without consistent internet. Not having figured out alternatives caused him to fall behind.

> *"As a sailor, when on the sea, I did not have an internet connection. So, I could not access the online learning." (Male)*

This comment indicates that the student was unprepared in the first semester for how to engage in online learning without consistent internet access. He had not yet figured out how to overcome this barrier.

These examples demonstrate how the initial adaptation phase leads to common pitfalls like missing deadlines or lacking engagement strategies. Students have not yet built skills to structure their time, meet deadlines proactively, and find solutions to participation barriers. The first semester is a make-or-break period of adjustment. At last, both comments demonstrate students in their first semester were still acclimating to managing online learning independently, leading to issues like missing deadlines and inability to participate consistently. This highlights the initial challenges of self-directed learning. It is important to bear in mind that distance and online learning students might not have sufficient experience to study independently, lack of technology literacy, and lack of preparation (Willging & Johnson, 2009; Aydin et al., 2019; Izham et al., 2022; Utami et al., 2020).

Male and Female Students' Balancing of Multiple Roles

Both male and female students encounter barriers in their studies, but female students often struggle more with balancing multiple roles, resulting in higher dropout rates. Female students pursuing online education while managing other responsibilities face intense challenges. One working mother explained that after a long day at work, she had little energy left for her studies while also caring for her children. The demands of work, motherhood, and education stretched her capacity thin.

> *"Once I arrive home (from work), I just want to take a rest. I also must take care of my children." (Female)*

Research shows that married women face nearly unsustainable obligations as they juggle roles as employees, mothers, and students. This "triple burden" leads to higher burnout and dropout rates among female learners, as they manage work, family care, and academic advancement simultaneously.

In contrast, male students generally take on fewer family care responsibilities alongside their jobs and studies. The unique demands of motherhood increase the burden for women, creating significant time and energy deficits that can derail their education.

Many dropouts share common behavioral and psychological traits, including lower motivation and resilience. Freshmen, in particular, often struggle with time management and miss deadlines during their adjustment period. Women frequently internalize societal pressures and underestimate their ability to balance competing demands. Overall, students tend to lack effective self-directed learning techniques, which is especially problematic in an online environment with insufficient support.

Conclusion

The analysis shows that students who dropped out faced a complex mix of external challenges and internal traits that tested their perseverance. Externally, these learners juggled busy schedules while balancing work, family duties, and education. Remote students dealt with geographic and technical barriers that left them feeling disconnected, and financial constraints added further pressure for those with limited resources.

Internally, many dropouts shared common traits, such as a lack of resilience and self-motivation to overcome online learning challenges. Freshmen often struggled with time management, missing deadlines during their adjustment period. For women, societal gender pressures intensified the strain of their many responsibilities.

This research highlights several characteristics of dropout students, as below:

1. Balancing Multiple Roles: Juggling work, family, and studies can lead to time management issues and reduced engagement, especially for female students. This highlights the need for flexible learning opportunities and support systems that consider non-academic workloads.
2. Limited Access to Technology: Students without reliable internet or adequate devices are disadvantaged in online learning. Providing alternative materials, offline content options, and loaner equipment programs can help bridge this access gap.
3. Financial Difficulties: The costs of online learning, such as tuition and technology, can be significant barriers. Scholarships, financial aid, and affordable tech solutions can enhance accessibility and reduce dropout rates.
4. Lack of Motivation: Success in online environments often depends on intrinsic motivation and self-directed learning. Engaging students through interactive activities, personalized feedback, and peer interaction can help overcome these motivational challenges.
5. Insufficient Learning Support: A lack of timely feedback, personalized help, and effective communication with instructors can leave students feeling lost. Strong support systems, including online tutoring and regular interactions with instructors, are vital for success.

6. Geographic Barriers: Students in remote areas often face poor internet access and limited technical support, hindering their participation in online learning. Addressing the digital divide and enhancing technical resources is crucial for equity.
7. Difficulties in Self-Learning: Some students struggle with independent learning, missing the guidance of traditional classrooms. Clear instructions, accessible materials, and opportunities for interaction with instructors and peers can help.
8. Gender and Balancing Roles: Female students may face added challenges due to societal expectations regarding domestic responsibilities, making it harder to balance multiple roles. Addressing gender inequalities and promoting family-friendly policies can create a more equitable learning environment.

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Contact email: afriani@ecampus.ut.ac.id

Laboratory and Projects Workshop in Chemical Engineering Degree Program in Mexico

Víctor Hugo Romo-Castorena, Universidad Nacional Autónoma de México, México
Roberto Mendoza-Serna, Universidad Nacional Autónoma de México, México
Marina Caballero-Díaz, Universidad Nacional Autónoma de México, México
Lucila Valdez-Castro, Universidad Politécnica de Puebla, México
Araceli Cisneros-Castro, Universidad Nacional Autónoma de México, México

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
A diagnostic study of the subject Laboratory and Projects Workshop (LPW) of the degree in Chemical Engineering taught at the Faculty of Highest Studies - Zaragoza of the National Autonomous University of Mexico is presented, based on the perception of the professors, the graduated students and the companies that hire them, to realize the applicability of the contents of the subject by comparing them with the professional skills required by the labor market in the chemical industry, to support a proposal to update the subject in the different semesters, until completing the LPW of 9th level within a company. The research was carried out with a mixed approach and with a projective research model. To collect the data and integrate the information of this job, three instruments and an interview guide were developed and submitted to validation by expert judgment, these being mixed for each focus group (professors with 10 years of experience, graduates with a maximum of 5 years of having completed the curriculum, companies that hire chemical engineers and a quality assurance manager). Likert scales with confidence levels from 0.77 to 0.935 were used for the surveys.

Keywords: Chemical Engineering, Competencies, Contents, Labor Market

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Introduction

The present paper is a research whose objective is the development of a diagnosis that contributes to obtain the perception of the graduates, professors and companies that hire Chemical Engineers graduated from the Faculty of Highest Studies - Zaragoza of the National Autonomous University of Mexico (UNAM), about the applicability of the contents of the subject Laboratory and Projects Workshop (LPW) in the labor market and its congruence with the competencies needed by the chemical industry. The four reasons on which this paper focuses are:

1. To confirm the applicability of the contents of the LPW subjects in the labor market.
2. To identify the congruence of the contents of the LPW subjects with respect to the competencies required in the labor market based on the perception of the professors.
3. To identify the competencies that graduates of Chemical Engineering at FES-Zaragoza should have, based on the perception of the companies that hire them.
4. Identify the competencies needed by the chemical industry through the labor market, to compare them with the contents of the LPW subjects.

The approach used in this work is mixed, supported from within the institution with the perception of the professors that has taught or teaches the LPW subject and has at least 10 years of experience, in addition to the external support of the institution that was obtained from the perception of graduates with a maximum of 5 years of having graduated from the degree, as well as from companies that hire Chemical Engineers graduated in FES-Zaragoza.

To collect the data used to integrate the information of this paper, three instruments and an interview guide were prepared and submitted for validation by expert judgment, these being mixed for each focus group (professors with 10 years of experience, graduates with a maximum of 5 years of having completed their studies, companies that hire chemical engineers and a Quality Control Manager who agreed to be interviewed).

The problem is presented and includes a general context, as well as the main indicators that support the importance of the Chemical Engineering degree at national and international level, integrating the problem statement, the formulation of the problem, the research questions, the objectives, and the justification. The main theoretical-conceptual references are identified, where a general description of the research carried out on the subject in general and for the Chemical Engineering degree at FES-Zaragoza is recovered. A clear example of improvement is also included, as well as the conceptual framework linked to the construct of professional competencies, the requirements requested by employers and general aspects of the curricular design in relation to Chemical Engineering. Then the methodological framework is described, which is composed of the research approach, the type of research, the research design, the description of the population and sample. The data collection techniques, a description of the instruments developed for this work, the validation process by expert judgment and a general description of the project phases are presented. Later are presented the results obtained in the research on the perception of graduates and professors of Chemical Engineering at FES-Zaragoza, as well as the additional opinions expressed by both focus groups.

The perceptions of employers who hire Chemical Engineers trained at FES-Zaragoza and the interview with the Quality Control Manager of WYN de México are also presented. Finally, we close with the perception of Chemical Engineering specialists in the world.

Chemical Engineering is a specialty of engineering that deals with the operation and design of chemical plants and methods to improve production. Chemical Engineering develops processes to convert raw materials into useful products, using principles of chemistry, physics, mathematics, biology and economics to efficiently design, use, produce, transport and transform energy and materials (NASEM, 2022).

Chemical Engineering involves from the study of nanotechnology and nanomaterials in the laboratory, to industrial processes that transform raw materials, chemicals, microorganisms, and energy into useful products for society, from the stage of design, modeling, control, and reaction, to the operation of the plant.

Within the Mexican Republic, UNAM is positioned as the best institution at national level that teaches this profession, occupying the 3rd position in Latin America. The QS World University Rankings research published that the Chemical Engineering degree at UNAM is ranked 60th worldwide (Gaceta UNAM, 2023, March 27th).

Chemical engineers develop and design chemical manufacturing processes and apply the principles of chemistry, physics, and mathematics to solve problems involving the production or use of chemicals, fuel, drugs, food, and many other products (AIChE, 2022). Chemical engineers work in different types of industries such as design and construction of process equipment, petrochemicals, food, specialty chemicals, polymers, pulp and paper, pharmaceuticals, biotechnology, microelectronics, among others, such as environmental safety.

Within these industries, chemical engineers rely on their knowledge of mathematics and science, particularly chemistry, to overcome technical problems safely and economically. And they apply their engineering knowledge to solve any technical challenges they encounter, including supporting areas of law, education, publishing, finance, and medicine and in fields requiring technical training.

Chemical engineering is not static and is constantly changing, as shown in Figure 1, which shows the trends and products that are currently driving the chemical industry. Where Industry 4.0 refers to the digital transformation of production processes of related companies and value creation processes.

Based on the assessment of the Deloitte firm (2019), the chemical industry is moving from the Industry 4.0 concept to the fourth industrial revolution where technology leads the changes in companies, as shown in Figure 2.

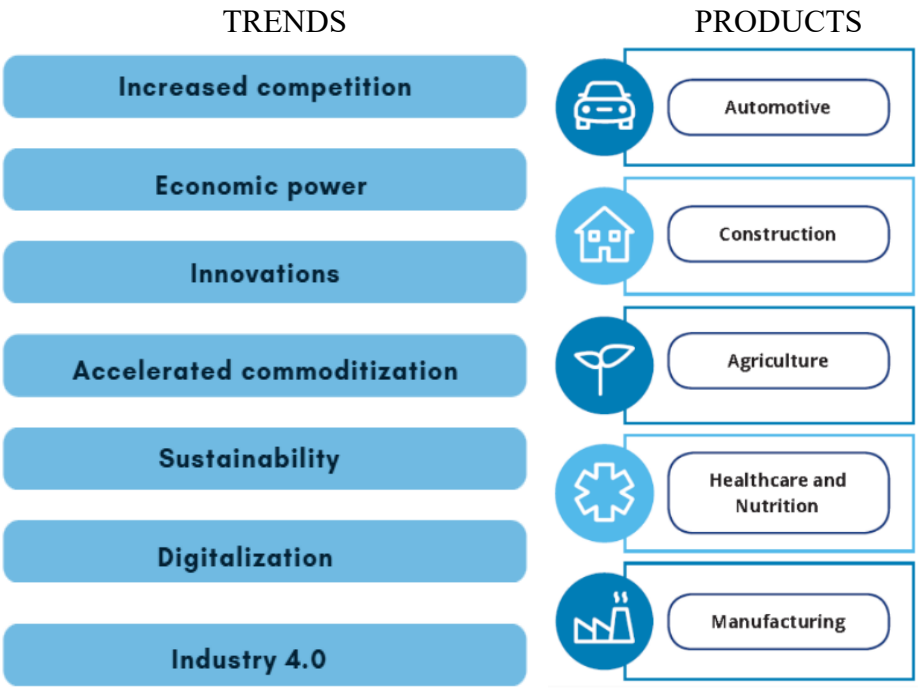

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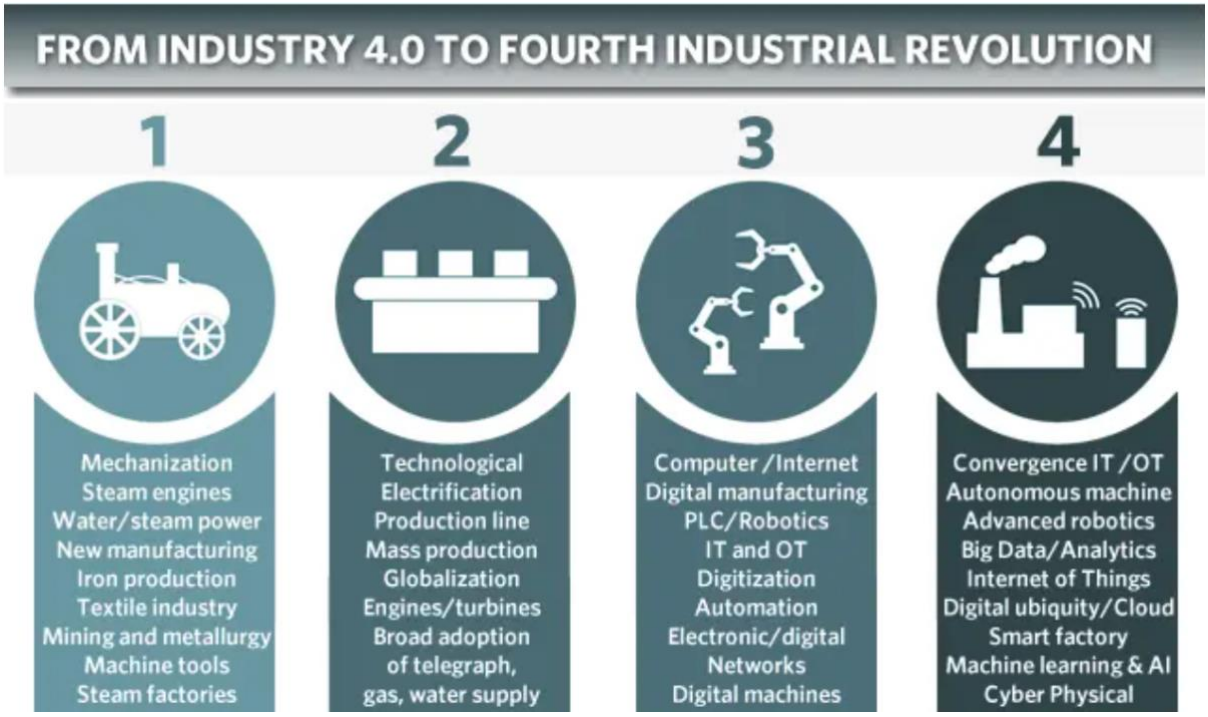
Figure 1: Chemical Industry Trends and Products



https://www.i-scoop.eu/industry-4-0/

Figure 2: The Chemical Industry From Industry 4.0 to the 4th Industrial Revolution

In several research studies it is recognized that, after a century of development, Chemical Engineering is a complete discipline that has made contributions to the economy, particularly by the growth of petrochemicals, but also states that it is necessary to reexamine and improve education in Chemical Engineering because the economic environment is changing rapidly and the industry is booming towards microelectronics, bioengineering and nanotechnology,

which forced to review the curricula in Europe, the United States, Asia and the Pacific (Feijoo et al., 2018; Martín et al., 2019; Obiuto et al., 2024), Chemical Engineering will be focused on solving environmental problems in the near future, supporting its decisions in the knowledge of the properties of mass, heat and momentum transfer and their combination with unit operations for the achievement of processes.

Based on the research of *The National Academies of Science, Engineering and Medicine* (*NASEM*, 2022), in its book *New directions for chemical engineering* it can be assured that Chemical Engineering is changing according to the rapid advances in science and technology, such as computer simulation, machine learning and artificial intelligence. It is also known that academic research is migrating from process research to scientific, basic, and applied research. In the same book, the National Academy of Sciences, Engineering and Medicine (NASEM, 2022) mentions that academic institutions have adapted to change and, to achieve this, have focused on three important social responsibilities: education, research and service, the fulfillment of which has brought great benefits to society.

In the field of education, the study and analysis of the core undergraduate curriculum in Chemical Engineering must evolve with the incorporation of new topics that reflect emerging areas of impact and relevant practice, as well as an ongoing dialogue about the very nature of the profession, so the undergraduate curriculum must show resilience of the discipline in the face of change (NASEM, 2022). The curriculum should reflect its basic nature and how it brings together the underlying sciences (chemistry, physics, mathematics, biochemistry, and biology) in an interdisciplinary problem-solving context. It is striking that neither biochemistry nor biology is included in the undergraduate chemical engineering curriculum at FES - Zaragoza.

The Chemical Engineering curriculum should aim at transmitting the fundamental knowledge to translate it into solutions of mass and energy balances, mass and energy transport, chemical kinetics and process design and control, putting it into practice in a laboratory. Without forgetting that the examples used to transmit the knowledge and apply it in practice have changed, and will continue to do so, every time Chemical Engineering finds new applications.

Literature Review

The Chemical Engineering curriculum at the undergraduate level in the United States has a problem-solving approach to mastering the dynamics and thermodynamics of physical and chemical processes, moving through the biochemical and electrochemical realm, and currently has a focus on the photochemical realm. The core curriculum as taught in the United States of America represents a research method and problem-solving toolbox (NASEM, 2022), and, in the perception of a selected group of graduate students and postdocs, is that process science has proven to be comprehensive and adaptable enough to persist for the next 25 years and beyond. However, the profession and its undergraduate curriculum do not always succeed in setting the stage required to attract and retain people with backgrounds and interests that future challenges will demand, so as the Chemical Engineering curriculum evolves, it will need to convey with greater purpose and success, how no profession unleashes the spirit of innovation like engineering and how few disciplines have such a direct and positive effect on people's daily lives.

It is clear that the undergraduate curriculum in Chemical Engineering has been adapting to the needs of industry and society, so the emphasis on new fields of research has created the appearance of a fragmented profession, but we must remember that the curriculum has endured, not because it is frozen, but because it has dynamically adapted to new ideas, emphasizing challenges and opportunities (Martín et al., 2019), so some topics within the curriculum will need to evolve more rapidly and, in some cases, components removed from the curriculum will need to be restored.

Today, as throughout its history, the field of Chemical Engineering needs to consider what minimum requirements and what set of principles should define the content of its core undergraduate curriculum and that can be framed by the following question: what product should an evolving undergraduate curriculum deliver? The requirements have not changed, but Chemical Engineers function and practice in a very different environment today (NASEM, 2022, p. 231). Engineering students today are asked to address more diverse challenges, with a body of knowledge and a toolbox, which extend beyond, what a core undergraduate curriculum can competently deliver in its entirety, so it must provide a mathematical framework for designing and describing chemical and physical processes, from the laws of conservation of matter and energy and mass and energy balances, in systems that are described by the continuity equation and by the thermodynamic relationships that define the equilibrium point, as well as the chemical and physical dynamics that materials follow to approach the equilibrium point, understanding that all this takes place in atoms and molecules in the states of matter, whether gas, liquid, solid or supercritical (NASEM, 2022).

The universities that grant the degree of Chemical Engineer in the world, such as the *Massachusetts Institute of Technology* (*MIT*) in the USA, the Liaoning University of Technology in China, the University of Santiago de Compostela, Spain and the Faculty of Chemistry of the UNAM, among other universities, offer several alternatives of specialization to the student, in response to the demands of the companies that hire Chemical Engineers, while studying the curriculum of the degree (Moliner, 2019). Therefore, by identifying the perception of the professors, the graduates and the companies that hire Chemical Engineers graduated at FES - Zaragoza, about the contents of the subject LPW in the 4th, 5th, 8th and 9th semesters and its congruence with the professional competencies needed by the chemical industry, recommendations can be suggested for this course in each of the semesters indicated, which are congruent with the labor market.

Methodology

In the graduate profile of the Chemical Engineering degree taught at FES - Zaragoza (Curriculum, 2013), it is established that the student will have the ability to conduct scientific research, to create production processes and to lead industrial projects, therefore, it is necessary to carry out a diagnosis to know the perception of the graduates, the professors and the companies that hire Chemical Engineers graduated at FES - Zaragoza, about the applicability of the contents of the subject LPW in the labor market and its congruence with the professional competencies needed by the chemical industry (Brown, 2019).

The degree program in Chemical Engineering at FES - Zaragoza consists of 9 semesters, with a total of 430 credits. It has a modular system and is divided into a basic cycle and a professional cycle. In the basic cycle, from the first to the third semester, students course subjects such as chemistry, mathematics, physicochemistry and basic science laboratories, so that they acquire adequate skills for the professional cycle. The professional cycle, from the

fourth to the ninth semesters, enables students to develop skills, abilities, and attitudes in the different areas of Chemical Engineering.

In each semester of the professional cycle, a LPW is integrated. In this subject, the knowledge acquired in the same semester is integrated, becoming a perfect scenario to apply the theoretical knowledge acquired throughout the degree. In fact, as stated in the revision of the curriculum (2013), it is intended that, from very early stages of the students' training, they have a more direct contact with what will be their field of work, generating an engineering project derived from real situations, exposing it in the LPW Congress at the end of the semester, which allows them to acquire security, experience and develop those skills that will be very useful in the professional field.

It is in this part of the curriculum where it is expected that there could be an improvement in the subject program, since the specialists emphasize the importance of experimental activities from the beginning of the course and during the whole training cycle in Chemical Engineering, and in FES-Zaragoza this experimental continuity is broken during 4 semesters and has remain unchanged for 48 years. The research projects developed in the subject LPW have played a determining role in maintaining its validity, however, it is valid to consider that, through the knowledge of the perception of the graduates, the professors and the companies that hire Chemical Engineers trained in FES - Zaragoza, about the applicability of the contents of the subject LPW in the labor market and its congruence with the competencies needed by the chemical industry, it is possible to identify if it is necessary to propose changes, as several universities around the world have been doing.

The objective of this job is to develop a diagnosis that contributes to obtain the perception of the graduates, the professors and the companies that hire Chemical Engineers of FES - Zaragoza, about the applicability of the contents of the subject LPW in the labor market and its congruence with the professional competencies needed by the chemical industry.

To meet the objective, a study was developed based on a research process that proposes to solve certain situations related to the design of the study programs of the subject LPW, so we worked according to the projective research model which is part of the holistic spiral of research, based on previous researches. Projective research is one of the most complex types of research since it starts from a proposed reality, integrates the elements that are obtained for the interpretation of reality, involves all the actors of the process under study, visualizes and projects actions towards the objectives to reach a desired context to improve reality and proposes sustained actions to improve the analyzed context (González-Garay, 2019). The projective research is the most used research for the design of study programs, among other examples such as engineering projects, social intervention programs or computer programs, if they are supported by a research process. The project focused on conducting a diagnosis to know the perception of graduates, professors and companies that hire Chemical Engineers trained in FES - Zaragoza, so, data collection was done without numerical measurement. The research was done through surveys for graduates, for professors and for companies that hire graduates of Chemical Engineering trained at FES - Zaragoza, so that the views of the participants were framed by asking specific questions, leaving a space for respondents to expose their points of view, so that a mixed interview format was used, with closed and open questions.

Interviews were conducted with executives, asking open-ended questions to gather the direct perception of the company's personnel, using the interview guide to take advantage of the time allotted and achieve the objectives set.

Sampling unit: Graduates of the Chemical Engineering degree program at FES-Zaragoza with a maximum of 5 years of graduation, professors of the Chemical Engineering degree program at FES-Zaragoza who were teaching the LPW subject during the period of the survey or professors who, in their curricular experience, had taught this subject. In both cases, professors with at least 10 years of teaching experience were considered. Finally, we considered executives of companies that hire or have hired Chemical Engineers graduated from FES-Zaragoza.

In the instruments used, 26 questions were formulated for the professors and 31 questions for graduates. 56% of the questions involved the labor market and 44% of the questions involved professional competencies. The instruments initially proposed were changed and adapted with the observations made by the experts' judgment.

The instruments were validated using the technique suggested in qualitative research processes, such as observing the internal consistency of the instrument with which it is intended to measure a construct, based on the relationship shown by the items that make up the instrument or scale (Aranzabal et al., 2019).

Any measurement in the field of social and behavioral sciences must have two desirable characteristics which are validity and reliability and which in turn are key qualities of the so-called psychometric soundness of the instrument. The validity and reliability can be understood as indicated by Rodriguez & Reguant (2020). A common characteristic is to consider that while validity refers to the fact that it measures what it is intended to measure, reliability refers to the accuracy with which a measuring instrument measures what it measures (Aranzabal et el., 2019). For this research was used the Cronbach's alpha coefficient (α) described by Lee J. Cronbach (1951) (García et al., 2024), measuring the reliability linked to the homogeneity or internal consistency of an instrument.

The formula to calculate the Cronbach's Alpha Coefficient (α) is shown below:

$$\alpha = \frac{K}{K-1}\left[1 - \frac{\sum Vi}{Vt}\right]$$

Where:
K is the number of items
∑Vi is the Variance sum of items
Vt is the total variance.

The calculations were made using Microsoft Excel version 2016.

Once the reliability of an instrument is calculated and a numerical value is obtained, the next step is to give meaning to that value. Reliability is expressed by a positive decimal number ranging from 0.00 to 1.00, from a lack of reliability to perfect reliability (Rodríguez & Reguant, 2020). The classic text by Nunnally (1978, cited by Rodriguez & Reguant, 2020) states that 0.70 is the minimum acceptable score. In this sense Barrios and Cosculluela (2013), cited by (Rodríguez & Reguant, 2020) conclude that adequate reliability ranges between 0.70

and 0.95 and point out that values very close to 1 may imply redundant items that do not provide relevant information about the attributes they are trying to measure.

Results

The research was conducted with a mixed approach, describing situations and events, specifying important properties and characteristics of the curriculum, measuring and evaluating components that contributed to support the content of a curricular design proposal for the Bachelor's Degree in Chemical Engineering taught at the Faculty of Highest Education - Zaragoza, through the labor market and the professional functions in which the graduates are immersed, to identify possible professional competencies needed in the LPW subject, so according to the mixed methods it was identified the convenience of focusing on a descriptive research, of the mixed type and with a projective research design. Mixed research approaches represent a set of systematic, empirical and critical research processes and involve the collection and analysis of quantitative and qualitative data, as well as their integration and joint discussion, to make inferences from all the information collected (meta-inferences) and thus achieve a better understanding of the phenomenon under study, without forgetting that those problems that need to establish trends, are better suited to a quantitative design; and those that need to be explored to obtain a deep understanding, are more suited to a qualitative design. When the problem or phenomenon is complex, the use of a mixed approach is recommended as is the case of this research work, being necessary the integration of the specialists' point of view to complement the resulting quantitative and qualitative information.

In Table 1 are presented the result of Cronbach's Alpha Coefficient (α) for the instrument applied to 18 professors of the Chemical Engineering degree program at FES – Zaragoza and from which 17 responses were received. The open-ended questions of the instrument for professors can be reviewed in Appendix A.

Table 1: Cronbach's Alpha Coefficient (α) Applied to the Survey Instrument for 17 Professors

Professor	Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q 9	Q 10	Q 11	Q 12	Q 13	Q 14	Q 15	Q 16	Q 17	Q 18	Q 19	Q 20	Q 21	Q 22	Q 23	Q 24	Q 25	Q 26	Σ
1	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	5	4	5	5	5	5	5	5	5	128
2	4	4	5	5	3	4	4	4	5	5	5	5	4	5	5	1	4	4	5	5	4	5	5	4	4	5	113
3	5	4	5	5	5	5	5	5	5	5	5	5	4	4	5	5	5	5	5	4	3	4	4	3	3	3	116
4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	1	2	5	5	5	5	123
5	5	3	2	1	2	1	2	1	1	2	1	2	3	3	5	4	3	4	5	4	5	5	5	5	2	1	77
6	5	4	5	5	5	5	5	5	5	5	5	5	4	4	5	5	5	4	4	4	2	4	5	5	4	4	118
7	5	5	4	4	4	5	5	5	4	5	4	4	3	4	5	5	5	5	5	5	4	4	4	5	5	5	118
8	4	3	4	4	2	4	4	4	3	4	4	4	4	4	4	3	4	4	4	3	4	4	3	3	4	4	96
9	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	130
10	5	4	4	4	4	3	3	3	4	3	3	3	5	4	3	4	3	2	4	4	3	1	1	2	1	3	83
11	3	5	5	4	2	3	3	3	4	3	4	4	5	5	4	4	3	4	5	3	4	4	4	5	1	5	99
12	4	5	4	3	2	4	2	5	4	2	4	4	5	4	5	5	5	5	5	4	5	4	4	4	3	4	105
13	5	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	1	4	5	4	5	121
14	4	5	4	5	5	4	5	5	5	5	5	5	5	4	5	5	5	5	4	5	5	5	4	3	3	3	118
15	5	4	1	2	1	2	2	1	4	1	1	1	5	5	4	5	5	5	2	1	1	1	4	5	2	4	74
16	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	5	125
17	3	4	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	4	5	5	3	4	4	4	3	3	116
	0.5	0.5	1.3	1.3	1.9	1.4	1.4	1.8	1.1	1.8	1.7	1.4	0.5	0.4	0.3	1.1	0.6	0.6	0.6	1.1	1.6	2.0	0.9	0.9	1.7	1.2	291.89

Own elaboration with data from the survey applied to professors in September 2023.

K= # items	26.00
∑Vi= Variance sum of items	29.39
Vt= Total variance	291.89
Cronbach´s Alpha Coefficient (α)	0.935

The value of 0.935 gives a high reliability for the interpretation of the results.

Table 2 shows the result of Cronbach's Alpha Coefficient (α) for the survey instrument applied to 15 employers who hire Chemical Engineers from FES - Zaragoza. In the Appendix B are shown the open-ended questions to employers.

Table 2: Cronbach's Alpha Coefficient (α) Applied to the Survey Instrument for 15 Employers

Employer	Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q 9	Q 10	Q 11	Q 12	Q 13	Q 14	Q 15	Q 16	Q 17	Q 18	Q 19	Q 20	Q 21	∑
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	21
2	1	1	1	1	1	1	1	1	1	1	2	2	2	2	1	2	1	1	1	2	1	27
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	21
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	21
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	21
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	21
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	21
8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	21
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	21
10	1	1	1	1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	30
11	1	1	1	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	31
12	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	1	2	2	2	2	1	27
13	2	1	1	1	1	1	1	1	1	1	2	1	1	2	1	1	1	1	1	1	1	24
14	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	22
15	1	2	1	2	1	2	2	2	2	2	2	2	2	1	1	1	1	1	1	2	1	32
	0.06	0.06	-	0.12	0.06	0.16	0.20	0.16	0.16	0.16	0.24	0.22	0.20	0.16	-	0.06	0.06	0.06	0.06	0.16	-	16.20

Own elaboration with data from the survey of employers from October 20 to 24, 2023.

K= # items	21.00
∑Vi= Variance sum of items	2.36
Vt= Total variance	16.20
Cronbach´s Alpha Coefficient (α)	0.90

In Table 3 are shown the result of Cronbach's Alpha Coefficient (α) for the survey instrument applied to 538 graduates of Chemical Engineering degree program at FES – Zaragoza, of which 85 responses were received, that is, 15.79% of the population invited to participate.

In the Appendix C are presented the open-ended questions for graduates.

Table 3: Cronbach's Alpha Coefficient (α) Applied to the Survey Instrument for 85 Graduates

Graduates	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	…	Q27	Q28	Q29	Q30	Q31	
1	5	5	5	5	4	5	4	5	5	5	5	5	5	5	5	1	5	4	2	2	127
2	4	5	4	4	4	4	4	4	4	4	4	4	5	5	4	4	4	4	3	3	123
3	5	5	5	5	5	4	5	5	5	4	5	5	5	5	5	2	5	2	2	5	144
4	4	5	3	5	5	5	5	5	5	3	5	5	5	5	5	2	5	2	5	5	136
5	5	5	5	1	1	1	5	5	5	1	1	5	5	5	5	1	1	5	5	3	97
6	4	5	4	4	4	4	5	4	5	4	4	4	4	4	4	4	5	4	2	4	122
7	5	4	4	2	4	4	5	4	5	5	5	5	5	5	5	1	4	5	5	4	122
8	5	5	5	3	1	1	5	5	5	5	5	5	5	5	5	1	5	4	5	4	114
9	4	5	5	5	5	5	5	4	4	5	5	2	5	3	5	3	4	3	4	4	119
10	5	5	5	5	2	2	4	2	5	5	2	2	5	5	5	1	1	4	2	1	96
11	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	4	3	5	2	136
12	5	5	5	5	5	5	5	5	5	5	5	4	5	4	5	5	4	5	5	5	140
13	5	5	5	4	3	4	4	4	5	4	5	4	5	5	5	1	4	1	1	4	105
14	4	5	4	4	2	5	4	5	3	4	4	4	5	5	5	4	5	4	3	5	125
15	5	4	5	5	5	5	4	4	4	4	4	4	4	5	5	1	3	3	3	3	107
16	5	4	2	3	4	3	4	3	5	5	5	5	3	4	4	1	3	3	3	3	115
17	4	4	4	5	5	5	4	4	4	5	5	5	4	5	5	5	5	5	5	5	132
18	4	5	5	2	4	4	5	4	4	4	5	4	4	5	5	5	4	5	5	4	135
19	4	5	4	5	5	4	5	5	5	5	5	3	4	4	5	1	3	5	2	3	124
20	5	5	5	5	5	5	1	2	5	2	2	2	5	5	5	1	5	5	3	5	110
…	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	1	3	1	1	3	116
32	4	5	4	3	3	4	4	4	3	4	5	5	5	5	5	1	4	5	5	4	113
33	4	4	3	5	4	4	5	5	4	4	4	3	3	3	5	1	2	1	1	2	103
34	5	5	4	4	4	4	5	4	4	4	4	4	4	5	5	2	2	2	2	3	114
35	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	1	2	4	1	3	122
36	5	5	1	2	2	2	4	4	4	4	5	5	4	5	5	1	1	4	3	1	105
37	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	3	3	139
38	5	4	1	5	5	3	5	5	5	5	5	5	4	2	5	4	2	1	1	1	115
39	5	5	5	4	5	4	4	4	3	3	4	5	5	5	5	3	4	4	5	4	118
40	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	5	147
41	2	4	2	4	4	4	4	5	2	2	5	5	5	5	5	1	4	3	2	4	108
42	1	4	4	5	5	5	5	4	5	5	5	5	1	1	5	1	4	5	5	4	114
43	4	5	4	4	4	4	4	5	5	5	5	5	5	5	5	1	2	1	1	2	108
44	5	4	5	5	5	4	5	5	5	5	5	4	4	5	5	1	4	4	4	4	125
…	5	5	3	5	4	5	5	5	5	5	5	5	5	1	5	5	1	5	5	4	139
60	5	5	3	1	3	3	1	5	5	4	5	5	4	5	5	1	5	5	5	1	114
61	4	5	5	5	5	5	4	5	4	4	5	5	5	5	5	2	4	4	3	4	132
62	5	4	4	5	5	4	5	5	5	5	4	5	5	5	4	2	2	2	3	2	116
63	5	5	4	4	5	5	5	5	5	5	5	4	5	5	5	1	1	1	3	1	110
64	2	4	2	4	4	5	5	5	5	5	4	4	4	5	5	2	4	4	2	3	126
65	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	2	5	5	5	5	133
66	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	4	4	4	4	140
67	2	2	1	5	5	1	1	1	4	5	5	4	4	5	5	4	5	5	5	4	120
…	5	4	4	4	4	5	5	4	4	4	4	4	4	5	5	3	5	4	2	2	133
79	5	5	5	4	4	5	5	5	4	3	5	4	5	5	5	3	5	4	3	1	118
80	5	5	2	2	2	2	5	5	5	5	5	5	4	5	5	3	5	5	5	5	134
81	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	1	1	1	5	1	115
82	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	4	2	2	4	142
83	5	5	4	4	5	5	4	4	5	5	4	4	5	5	5	1	1	1	1	1	101
84	5	5	5	4	4	4	5	5	5	5	5	5	4	3	5	2	4	5	5	3	129
85	4	5	5	5	5	5	5	4	5	5	5	5	5	5	5	1	4	2	3	1	120
	1.14	0.67	1.30	1.08	0.93	0.95	0.70	0.58	0.48	0.70	0.81	0.73	0.87	1.07	0.11	1.99	1.84	1.99	2.18	1.89	146.95

Own elaboration with data from the survey applied to graduates in September 2023.

K= # items	31.00
∑Vi= Variance sum of items	37.12
Vt= Total variance	146.95
Cronbach´s Alpha Coefficient (α)	0.77

The value of 0.77 gives an acceptable reliability for the interpretation of the results.

Discussion

Organizations such as the FiiDEM Alliance that recommend combining academic study with supervised work experience, they also recommend completing a school period in the industry, in addition to inducing future engineers to carry out real industrial projects, in addition to recommending continuous experimentation, from the beginning of the career in the laboratories of the university itself and without interruptions, until the completion of the real industrial project in the last undergraduate period (NASEM, 2022). In the curriculum of the undergraduate degree in Chemical Engineering taught at FES-Zaragoza there are the LPW subjects of the semesters 4th, 5th, 8th and 9th in which experimentation is not currently performed, being these subjects the resource that can be used to implement the recommendations of the specialists, to increase the competences of the students combining the engineering research project of the 9th semester, with the opportunity to assign them a company to complete their professional training (Lenihan et al., 2020).

The LPW subjects are dynamic and flexible as it allows working on topics of interest and current affairs that are adapted to the industrial and social needs of the time, for example, Chemical Engineering students are very interested in topics related to the environment and the production of biomaterials, and the LPW courses are the appropriate scenario to study and analyze these types of projects with the approach that corresponds to each module and that, over time, have played a decisive role in maintaining the validity of the curriculum.

Recommendations

Cork Institute of Technology (*CIT*) of Ireland is an institution of teaching, learning and research excellence and quality for the benefit of the student and for the benefit of society. *Cork Institute of Technology* has been teaching Chemical Engineering since 1979 and is well established to meet the demand for Chemical Engineering graduates in different areas such as Chemical, Food and Beverage, Oil and Gas and Pharmaceuticals. From 2010 to 2020 *Cork Institute of Technology* incorporated Bioengineering based teaching modules such as Principles of Bioprocess Engineering, Biopharmaceutical Engineering and Bioreactor Design to meet the demand in the Biopharmaceutical sector (Lenihan et al., 2020). Even though the constant updating of the curriculum at *Cork Institute of Technology* is visible, they detected a problem; it took 1 to 2 years for graduates to be hired and decided to conduct a study to identify possible solutions to reduce the hiring time of graduates. They conducted a census of all chemical industry companies within Ireland and confirmed that the pharmaceutical and biotechnology sectors were key elements for their country, as well as contributing 58% of exports nationally. Also, as part of the strategy, they identified companies in the chemical industry that were within a 100-kilometer radius of the *Cork Institute of Technology*. The *Cork Institute of Technology* took the recommendations of specialists in the training of Chemical Engineers and decided to approach companies to reach collaboration agreements so

that Chemical Engineering students could carry out their last undergraduate project within the company. To this end, at the *Cork Institute of Technology*, the competencies in Chemical Engineering were developed by combining the engineering research project and the opportunity to assign them to a company to complete the project in the last year of undergraduate studies, concluding that a favorable synergy is achieved, compared to the results when not combined (Lenihan, 2020). Based on the criteria of the *Cork Institute of Technology* it is also important that the academic staff is familiar with the industrial environment and has worked as a professional in Chemical Engineering to facilitate the integration tasks of the educational project (Lenihan, 2020).

Conclusions

- The Chemical Engineering degree program at FES - Zaragoza must create incentives and practices in the industry, to share Chemical Engineering content, ensuring that the exchange promotes access to high quality content intended for both students and professionals in Chemical Engineering, in addition to have a period of experience in the industry.
- The Chemical Engineering degree program at FES - Zaragoza should approach companies to achieve collaboration agreements for Chemical Engineering students to carry out the last undergraduate project within a company.
- Experiential and frequent learning should be included from the beginning of the career, and without interruptions, through laboratory practices and virtual simulations, as well as experiential learning in industry should be reinforced, eliminating barriers, to offer internships to Chemical Engineering students in a systemic way in companies or in university laboratories.
- Chemical Engineers at FES - Zaragoza should be induced to carry out real industrial projects, addressing a real problem of current importance and must be coupled to the needs of industry and society.
- Commonly universities have state-of-the-art laboratories that are managed by the university itself or by some private company, with specialized applications, aligned to industry needs.
- Create effective connections between individual core courses with empirical learning through virtual or physical laboratory experiences.
- Place greater emphasis on statistics in the modern database context, with highest capacity computing systems, with the use of robust, high-fidelity models and methods.
- The market study, the technical study and the production capacity that is carried out in the 4th semester LPW, must be related to the national chemical industry, and compared with the installed capacity of a company to increase the professional competences of the students and must be compared with similar processes of the national chemical industry to bring the students closer to the labor market, adapting the project to the needs of the industry.
- To increase the professional competencies of the students, in LPW of 5th semester, the results should be compared with the equipment and systems used in the national chemical industry and perform laboratory practices when designing process equipment from the mechanical point of view, when designing systems for the handling of materials in the chemical process industry, and when designing mechanical separation and mixing systems for the chemical industry. The specifications and standards used in the design of process equipment in a company of the national chemical industry or using simulators should be compared.

- The selection and design of homogeneous and heterogeneous reactors and the results of the simulation and optimization of the 8th semester LPW project should be compared with the results of a reactor used in the chemical industry to bring students closer to the job market, including experimental activities aligned with the needs of the industry, in laboratories of the University itself, with emphasis on statistics in the modern context of databases.
- The 9th semester project must be carried out at the facility of a chemical company that processes a product that is the same or like the product assigned in the project, promoting high quality supervised content, and thus completing a semester of industry experience.
- The results of the financial and economic study and the rates used by the investors of the 9th semester LPW project should be compared with a company in the chemical industry to increase the competencies of the students, without forgetting that Business Development is important, but it is recommended that it be part of individual courses, after the formal curriculum of Chemical Engineering, so it should not be part of the formal curriculum of the bachelor's degree.
- In the LPW projects of semesters 4, 5 and 8, experimental activities should be carried out in the laboratories of FES-Zaragoza and simulators should be used to verify results.
- To increase students' competencies, projects in semesters 4, 5, 8 and 9 should be carried out on products produced in the Mexican Republic.
- The use of simulators for projects in semesters 4, 5, 8 and 9 should be a mandatory tool to create effective connections between courses and the effective and seamless incorporation of statistics and computational mathematical thinking.
- Biotechnology should be integrated as a required or elective course for Chemical Engineers.

Acknowledgements

Sincere thanks to each one of the participants in this research, professors, graduates, and employers, all interested in updating and improving the academic level of the Chemical Engineering students of the Faculty of Highest Studies - Zaragoza of the National Autonomous University of Mexico, to make them more useful to society and more competitive in the labor market.

Appendices

Appendix A

Questionnaire for professors of Chemical Engineering degree program at the Faculty of Highest Education – Zaragoza, with at least of 10 years of teaching experience.

Please answer considering the following options.

1) Definitely not 2) Probably not 3) Undecided 4) Probably yes 5) Definitely yes

#	Questions	R
Q1	The subject Laboratory and Projects Workshop (LPW) has 4 theoretical laboratories and 2 empirical laboratories. Do you consider it pertinent to include experimental activities in LPW in semesters 4, 5, 8 and 9?	
Q2	Should LPW in semesters 4, 5, 8 and 9 be linked to a company that produces same or similar product than the product assigned in the project?	
Q3	If the LPW of semesters 4, 5, 8 and 9 were carried out on products that are produced in Mexico, would they increase the skills of the students?	
Q4	If the LPW 4's market and technical study were conducted based on the processes that are used in the national chemical industry, would the students' competences increase?	
Q5	If the production's capacity of the chemical process analyzed in LPW 4 is compared with the capacity of a company that exploits the same process in the national chemical industry, would the students' competences increase?	
Q6	If the industrial process analyzed in LPW 4 were carried out according to the processes that are used in the national chemical industry, would it bring the students closer to the job market?	
Q7	In LPW 5, process equipment is designed from the mechanical point of view, material handling systems are designed for the chemical process industry, and mechanical separation and mixing systems are designed for the chemical industry. Would the students' competencies increase if the results were compared with an engineering firm and/or a process equipment manufacturer?	
Q8	In LPW 5, the specifications and standards for the design of process equipment are analyzed from a mechanical point of view. Would the students' competencies be enhanced by comparing their application in an engineering firm and/or process equipment manufacturer?	
Q9	In LPW 8, homogeneous and heterogeneous reactors are selected and designed. Would comparing the results with a reactor used in the national chemical industry bring the students closer to the job market?	
Q10	In LPW 8, processes are simulated and optimized using mathematical models. Would the students' competencies increase if the results were compared with a process in the national chemical industry?	
Q11	In LPW 9, a financial and economic study of a project is prepared. Would the students' competencies increase if the results were compared with a company in the national chemical industry?	
Q12	In LPW 9, financial statements are prepared to determine the ratios used by an investor in making decisions about a project. Would the students' competencies be enhanced by comparing the results with a chemical company with investment projects?	

Q13	Should LPW 9 project be conducted at the facility of any chemical company that processes same or similar product than the product assigned in the project?	
Q14	If LPW 9 were to be carried out at a company's facility, do you think it would facilitate the hiring of graduates?	
Q15	Do you think it is necessary to reinforce experiential learning in industry by offering internships to Chemical Engineering students in a systemic way?	
Q16	Would it be useful if through LPW of semesters 4°, 5°, 8° and 9° to promote internships in the chemical industry, to share Chemical Engineering content to students?	
Q17	Can LPWs in semesters 4, 5, 8 and 9 be used as a learning and innovation infrastructure, from university education to the workplace?	
Q18	Should the LPWs of semesters 4, 5, 8 and 9 be used as a link to bring Chemical Engineering students closer to industry?	
Q19	Should the 4th, 5th, 8th, and 9th semester LPW professors be familiar with the industrial environment and have worked as a Chemical Engineer in industry?	
Q20	Would the students be increased if the LPW project for semesters 4, 5, 8 and 9 were the same, with the corresponding module focus (Process Analysis, Materials Handling, Process Design and Project Development)?	
Q21	As an LPW professor for semesters 4, 5, 8 or 9, do you use electronic simulators for industrial chemical processes every semester?	
Q22	Have you conducted LPW projects in semesters 4, 5, 8 or 9 involving Biotechnology processes?	
Q23	Do you consider that the study of Biotechnological processes should be an elective subject for Chemical Engineers?	
Q24	Should Process and Product Control be an elective subject for Chemical Engineers?	
Q25	Should Data Science be an elective subject for Chemical Engineers?	
Q26	Should Business Development be an elective subject for Chemical Engineers?	
Q27	Based on your experience, how can we increase the competencies of Chemical Engineering students at FES-Zaragoza?	
Q28	Would you like to add any comments about the LPW subjects?	

Appendix B

Questionnaire for employers that hire Chemical Engineering graduated from FES-Zaragoza.

Please answer considering the following options.

1) Yes, it is useful 2) No usefulness

#	Questions	R
Q1	A product is designed knowing the characteristics of the current product, the consumer profile is identified, consumer expectations are identified and the proposal for a new product is presented.	
	Comments:	
Q2	Through market research, a supply vs. demand interpolation is carried out and the distribution and marketing channels for the proposed product are identified.	
	Comments:	
Q3	The most convenient production process is selected considering the availability of raw material and the suggested location for the plant, performing the mass balance and energy balance for the selected process.	
	Comments:	
Q4	Properties' prediction of the new compound is made, supported by research.	
	Comments:	
Q5	The stages of a project are studied, specifications and standards for equipment design are reviewed, the physical and chemical properties of the materials used in the construction of equipment are studied, and the selection and specification of materials are made.	
	Comments:	
Q6	Material handling systems in the chemical process industry are selected and designed, determining the variables involved in material handling, correlating the variables with experimental observations, making rheological determinations of non-Newtonian fluids and sizing the systems for solids transport and fluid transport.	
	Comments:	
Q7	Mechanical separation systems in the chemical process industry are selected and designed, making the experimental determination of the variables involved in the selection and design of a mechanical separation system for materials.	
	Comments:	
Q8	Mixing systems in the chemical process industry are selected and designed, making the experimental determination of the main variables involved in the selection and design of a material mixing system.	
	Comments:	
Q9	Crushing and milling systems in the chemical process industry are selected and designed, making the experimental determination of the variables involved in the selection and design of a crushing and milling system for materials.	
	Comments:	
Q10	Sizing of mechanical separation, fluid transport and mixing equipment is performed.	
	Comments:	
Q11	Homogeneous and heterogeneous reactors are selected and designed through process simulation and optimization using mathematical models.	
	Comments:	

Q12	Reaction systems are studied, analyzing the main phenomenological models, determining experimentally the main variables, selecting the mathematical models based on experimental observation values, analyzing the selection and design criteria to select and design the reaction system.	
	Comments:	
Q13	Process simulation and optimization is performed by using mathematical models for a process step and for the complete process, analyzing the behavior through simulation, analyzing the process optimization criteria and applying the process synthesis criteria in the process design.	
	Comments:	
Q14	For process control systems, the variables involved in the dynamics of a process step are determined, analyzing the process with mathematical model simulation, analyzing the dynamics under a control system, comparing the dynamic behavior under different systems to select and design a process control system.	
	Comments:	
Q15	For total investment, fixed assets, deferred assets and working capital are identified.	
	Comments:	
Q16	The financial structure identifies the capital stock and sources of financing.	
	Comments:	
Q17	The revenue budget includes sales, discounts and rebates and net sales invoiced.	
	Comments:	
Q18	The expense budget analyzes and integrates fixed and variable costs.	
	Comments:	
Q19	The pro forma financial statements include the balance sheet, income statement and cash flow statement.	
	Comments:	
Q20	The net present value, the internal rate of return and the capital recovery time are calculated.	
	Comments:	
Q21	A sensitivity analysis is performed considering the inherent risks of a project and the risk prevention strategy.	
	Comments:	
Q22	What are the instrumental, interpersonal, and systemic competencies your company is looking for when hiring Chemical Engineers?	
Q23	What are the academic and professional competencies that your company needs when hiring Chemical Engineers?	
Q24	Do you have any additional recommendations or comments?	

Appendix C

Questionnaire for graduates of Chemical Engineering degree program at FES-Zaragoza, with a maximum of 5 years after graduating.

Please answer considering the following options.

1) Definitely not 2) Probably not 3) Undecided 4) Probably yes 5) Definitely yes

#	Questions	R
Q1	The subject Laboratory and Projects Workshop (LPW) has 4 theoretical laboratories and 2 experimental laboratories, should experimental activities be included in each LPW?	
Q2	Must LPW of 4, 5, 8 and 9 semesters be linked to a company that produces a product that is same or like the product assigned in the project?	
Q3	Should LPW of 4, 5, 8 and 9 semesters be carried out on products produced in Mexico, to increase students' skills in the national chemical industry?	
Q4	Does the market and technical study conducted in LPW 4 must be related to the national chemical industry?	
Q5	Should the production capacity of the process being analyzed in LPW 4 be compared with the installed capacity of any company operating the same process in the national chemical industry?	
Q6	Should the process studied in LPW 4 be compared with similar processes in the domestic chemical industry?	
Q7	In LPW 5, process equipment is designed from the mechanical point of view, systems for material handling in the chemical process industry are designed and mechanical separation and mixing systems for the chemical industry are designed. Should the results be compared with equipment and systems used in the national chemical industry?	
Q8	In LPW 5, the specifications and standards for the design of process equipment are analyzed from the mechanical point of view, should their application in any company of the national chemical industry be compared?	
Q9	In LPW 8, homogeneous and heterogeneous reactors are selected and designed, should the results be compared with any reactor used in the national chemical industry?	
Q10	In LPW 8, processes are simulated and optimized using mathematical models, should the results be compared with any process in the national chemical industry?	
Q11	In LPW 9, the financial and economic study of a project is elaborated, should the results be compared with a company of the national chemical industry?	
Q12	In LPW 9, financial statements are prepared to determine the ratios used by an investor in making decisions on a project. Should the results be compared with any chemical company with investment projects?	
Q13	Should the LPW 9 be conducted at the facility of a chemical company that processes the same or similar product assigned in the project?	
Q14	If LPW 9 were to be carried out at a company's facility, do you think it would facilitate the hiring of graduates as professionals in Chemical Engineering?	
Q15	Is there a need to reinforce experiential learning in industry by offering internships to Chemical Engineering students in a systemic way?	
Q16	If through LPW of 4, 5, 8 and 9 semesters promote internships in the chemical industry, would it be useful to share Chemical Engineering content to students?	

Q17	Can LPW of 4, 5, 8 and 9 semesters be used as a learning and innovation infrastructure, from university education to the workplace?	
Q18	Should LPW of 4, 5, 8 and 9 semesters be used as a link to bring Chemical Engineering students closer to industry?	
Q19	Should the LPW professors of 4, 5, 8 and 9 semesters be familiar with the industrial environment and have worked as a Chemical Engineer?	
Q20	Would students' competencies be increased if the LPW were the same in 4th, 5th, 8th, and 9th semesters, with the corresponding module focus (Process Analysis, Materials Handling, Process Design and Project Development)?	

Please evaluate considering the following options:

1) Nothing 2) Very Little 3) Some 4) Quite a lot 5) A lot

Q21	Energy and Mass Balance?	
Q22	Transport Phenomena?	
Q23	Thermodynamics?	
Q24	Mass transfer?	
Q25	Reactor Engineering?	
Q26	Equipment design?	
Q27	Biotechnology?	
Q28	Process and Product Control?	
Q29	Data Science?	
Q30	Business Development?	
Q31	Electronic simulators for chemical processes.	

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Contact email: victorhromoc@gmail.com

Investigating the Effects of Differentiated Learning on Primary School Students' Literacy Competence: A Multi-Site Comparative Study

Sri Dewi Nirmala, Universitas Terbuka, Indonesia

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
Advances in technology and information, which are growing very rapidly, affect all areas of human life, so literacy skills are needed as one of the skills of the 21st century. However, the literacy of primary school students in Indonesia is still in the low category. The results of the 2022 national assessment show that 50% of students have reached the minimum competence limit for reading skills. In 2023, 61.53% have reading skills above the minimum. In general, however, these results still rank students' literacy skills at a low level. This study aims to investigate the influence of differentiated learning activities on the literacy of primary school pupils. The research method uses the quasi-experiment method. The study was conducted in six primary schools representing three cities, namely Bogor, Jakarta, and Yogyakarta. The research tool uses tests, questionnaires, and observation sheets for learning implementation. Quantitative data analyses were carried out to determine the results of literacy tests and the results of surveys on the impact of differentiated learning activities. The results showed: (1) there were differences in the results of the students' reading and writing test for the pretest and posttest; (2) differentiated learning strategies have a positive effect on students' literacy skills, and (3) students' literacy skills increase in the proficient and interpretative categories. Based on these results, it was concluded that differentiated learning strategies in three cities have an impact on improving the literacy of primary school students.

Keywords: Comparative Studies, Differentiated Learning Strategies, Literacy Competence, Primary School Students

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Introduction

Literacy has become one of the key skills that are indispensable in facing challenges in the 21st century. In an era where information is available in large quantities and access to technology is increasingly widespread, the ability to understand, evaluate, and use information effectively is the main foundation for the success of individuals and society as a whole (Olaniran, 2020). In the midst of rapidly changing global dynamics, literacy skills are no longer limited to basic reading and writing skills. However, literacy also includes the ability to understand and analyze information in a variety of formats, including social media, images, and numerical data as technology and socio-cultural developments (Damaianti et al., 2020). Individuals who have good literacy skills tend to be better able to overcome complex challenges, think critically, and make informed decisions intelligently (Elder & Paul, 2020).

The importance of literacy skills in the context of the 21st century is also reflected in how these skills contribute to economic development, environmental sustainability, and social welfare (World Bank, 2018). By being able to read with deep comprehension, individuals can access better educational and employment opportunities, as well as actively participate in public life (Heller et al., (Eds.), 2021). Literacy not only allows individuals to understand and interpret information but also to make intelligent decisions in a variety of life contexts (Long & Magerko, 2020).

Literacy is the ability of students to understand, use, evaluate, and reflect on various types of texts to solve problems and develop individual capacity as Indonesian and world citizens to contribute productively to society (Anwas et al., 2022). Literacy is developed through a critical and creative understanding of knowledge related to the development of the environment and the science that accompanies it so that it is used as a skill which is intact and integrated in attitudes, behaviors and broad insights (Nirmala, 2022).

Reading literacy is one of the critical aspects of education, playing an important role in the development of students' cognitive skills and academic success (Abusamra et al., 2020). The importance of literacy is based on the low literacy skills in Indonesia. Teresia (2021) said that based on national and international studies, the literacy level of students in Indonesia is still relatively low. The results of the National Assessment (AN) through the 2021 Minimum Competency Assessment (AKM) released in 2023 by the Ministry of Education and Culture, Research and Technology (Kemendikbudristek) stated that less than 50% of students have reached the minimum competency limit for reading literacy. Meanwhile, the results of the 2022 AKM released in 2023 stated that 61.53% of students had literacy competencies above the minimum, an increase of 8.11% from the results of the AKM of literacy skills in 2021. Although there is an increase in literacy ability, in general, this ability is still not significant. However, this increase reflects systemic efforts to improve the quality of education, especially in strengthening students' reading literacy skills as a foundation for more complex and sustainable learning (Anggraena et al., 2022).

Based on the low level of student literacy in Indonesia, teachers have an important role in organizing a quality learning process. This is to prepare students for the future, especially in developing literacy skills needed in the 21st century. Teachers are required to create varied and interesting learning so that students can have good literacy skills. Chalkiadaki (2018) states that people who can succeed in the 21st century are those who have good character, competence, and literacy. Therefore, teachers can apply various strategies to create literate

students. One of the learning strategies that can be used to improve students' literacy skills is the differentiated learning strategy.

Differentiated learning strategies are learning strategies that seek to accommodate the diverse characteristics and learning needs of students in the classroom by adjusting content, processes, products, and learning environments. The purpose of this differentiated learning is to ensure that each student can access the learning materials and succeed in their learning endeavors by providing multiple pathways to achieve the same educational goals (Onyishi & Sefotho, 2020). Through the application of appropriately differentiated learning, the quality of learning in the classroom can be improved, including in reading literacy activities (Saleh, 2021). Amid the complexity of diverse learning needs in the classroom, differentiated learning approaches have emerged as a promising strategy to effectively meet the individual needs of students (Charles, 2017).

Differentiated learning, as one of the learning strategies that pay attention to individual differences in learning, has great potential to improve literacy skills, especially reading literacy. The results of the study Puzio et al. (2020), stated that differentiated learning effectively improved reading ability, with a more significant impact on elementary school students than other levels of education. In addition, research Bondie et al. (2019), shows that differentiated learning can increase student motivation and engagement in learning activities. Research Bondie et al. (2019), shows that differentiated learning provides very positive results on students' creativity in writing short stories, especially in obtaining story ideas from personal experiences or others, the ability to structure interesting storylines according to their structure, and the ability to write stories with creative language. In addition, through his research Hasanah (2024) and Adiwijayanti (2020), it is stated that differentiated learning can optimize students' learning interests and talents so that students feel safe and comfortable in following the learning process.

This paper presents the results of research on the use of differentiated learning strategies in improving the literacy skills of elementary school students. The purpose of the research is to explore and analyze the literacy skills of elementary school students through the application of differentiated learning strategies.

Method

The research method used is a quasi-experiment with *a Nonequivalent Control Group Design*, that is, the researcher cannot randomize the research subjects in both the experimental group and the control group (Pozo-Rico et al., 2023). The research was conducted in three cities, namely Bogor, Jakarta, and Yogyakarta which will be carried out in 2023. Each city selected 2 school samples as the experimental class and the control class. Sample determination technique by *purposive sampling*. A total of 173 4th-grade elementary school students were sampled in the study with a distribution of 86 people in the experimental class, and 87 people in the control class.

The research instrument used is a literacy ability test covering the following criteria: (1) Special Intervention Needed; (2) Basics; (3) Speaking; and (Advanced). The literacy ability test is given to students referring to the instrument The literacy ability test is based on the following literacy ability indicators.

Table 1: Literacy Indicators

Competency Level/ Level/	Level of Understanding	Literacy Indicators
Need for Special Intervention (PIK) /Low	Literal Factual	Identifying the settings (place, time, situation) of the text Identify factual information in the text (who, when, where, why, and how)
Basics/ Intermediate	Interpretive/ Inferential	Finding key ideas in the text Interpret the explicit information present in the text.
Competent/ Tall	Interpretive/ Inferential	Interpret the implicit information present in the text Making interpretations of implicit information in everyday application Mention the implicit information present in the text.
Skillful/ Carry on	Applicant	Responding to appropriate situations in daily life based on the description of the text content Make predictions based on the content of the text. Reflecting on new knowledge gained from the text read.

Data analysis based on *the Nonequivalent Control Group Design* design was carried out by comparing the results of the literacy ability test of students in the experimental and control classes through the results of the pretest and posttest with the literacy ability value scale in the range of 1 – 4. Data analysis includes (1) descriptive data analysis to determine the mean, mode, median, and standard deviation; (2) prerequisite tests, namely normality and homogeneity tests; and (3) hypothesis tests through t-tests to prove the comparison of students' literacy skills based on the results of the pretest and posttest in the experimental class and the control class.

Results and Discussion

In this section, the results of research on the application of differentiated learning strategies and their impact on literacy skills, especially reading literacy of elementary school students, are presented.

The presentation of the *results of the first research*, namely the results of the implementation of learning strategies in elementary schools carried out in Yogyakarta with a sample of 2 schools consisting of an experimental class and a control class. The results of the study between the pretest and the posttest between the control class and the experimental class showed a difference in the average increase in scores from the pretest (64.90) to the posttest (84.66). The score range in the posttest (54) was smaller than that of the pretest (86), indicating a more even distribution of scores in the posttest. The standard deviation of the posttest (12,114) was smaller than that of the pretest (20,136), indicating a smaller variation in the posttest score. The results of the Kolmogorov-Smirnov Normality Test showed that the data were not normally distributed (sig. < 0.05 for both).

Based on the data normality test, it is known that N is more than 30, and the details are 60. The results of normality test used Kolmogorov-Smirnov with pretest statistics of .086 and posttest 0.125, sig pretest 0.039 < 0.05, and posttest 0.000 < 0.05. Because the sig value is less than 0.05, the data is distributed abnormally. Therefore, the literacy test data test was continued with a non-parametric test, the Wilcoxon type. The results of the Hypothesis Test (Wilcoxon) showed that 45 out of 60 students experienced an increase in grades (positive ranks).

Based on these results, differentiated learning activities have a significant positive impact on improving the literacy of elementary school students. The majority of students (81.58%) experienced an increase in grades after participating in differentiated learning. The average increase in scores of 19.76 points (from 64.90 to 84.66) shows the effectiveness of this learning method. This study provides strong evidence that differentiated learning is effective in improving the literacy of elementary school students. The average increase in scores of 19.76 points (30.45%) shows a substantial impact. The decrease in the value range and standard deviation indicates that differentiated learning not only increases the average score but also narrows the gap in literacy skills between students. Through the results of 81.58% of students experiencing an increase in scores, it can be concluded that differentiated learning provides benefits to the majority of students. The increase in student literacy is statistically significant, not a coincidence. These results support the theory that learning tailored to student's interests and needs can improve learning outcomes, especially in terms of literacy. This study provides an empirical basis to recommend the application of differentiated learning in the elementary school curriculum, especially to improve literacy skills.

The results of the study show that differentiated learning is effective in significantly improving student literacy after being implemented. This is in line with findings Valiandes (2015), which state that differentiated learning significantly improves students' reading achievement. According to the review Smale-Jacobse et al. (2019), differentiated learning generally has a positive impact on student achievement, supporting the results of the study which showed an average increase in scores of 19.76 points. The finding that 81.58% of students experienced an increase in grades was in line with the study Suprayogi et al. (2017), which concluded that well-implemented differentiated learning can benefit most students in the classroom accordingly with their abilities, especially in improving the reading comprehension ability of elementary school students, as also found by Xu et al. (2020).

The results of *the second* research were conducted in Jakarta involving 2 schools as an experimental class and a control class. The results of the study show that the application of differentiated learning is effective in improving students' literacy skills. This can be seen from the increase in the average score between the pretest and posttest in this aspect. The average pretest result reached 68.85 while the posttest: had an average of 83.54, so there was an increase of 14.69 points. There was an increase of 14.69 points in students' literacy skills. This shows that differentiated learning has succeeded in improving the skills of reading, writing, and comprehending texts in students.

Furthermore, based on these results, a t-test for independent samples, also known as the Independent Sample t-test, is a parametric statistical method applied to two unrelated data sets. The main purpose of this test is to detect whether there is a significant change in the value of a sample before and after certain treatments. In other words, this test helps researchers evaluate the effectiveness of an intervention or treatment of the variables studied.

The results of the t-test have obtained the average score of literacy ability in both the experimental and control classes.

The analysis of the data shows a striking difference between the experimental class and the control class. The experimental class, which implements differentiated learning methods, achieved an average score of 83.54. This figure is substantially higher than that of the control class that uses conventional learning approaches, where the average score is only 75.33. This difference indicates that there is a significant impact of the application of differentiated learning on the literacy level of students. A comparison of the results before and after this learning intervention showed a significant improvement.

These findings confirm that differentiated learning methods have a positive and meaningful influence on improving students' literacy skills (Ismajli & Imami-Morina, 2018; Şentürk & Sari, 2018). In other words, this learning approach has proven to be effective in encouraging the development of literacy skills of students who are the subject of research. Differentiated learning showed a significant positive influence on student literacy (Puzio et al., 2020; Magableh & Abdullah, 2020). These results support the use of more adaptive and personalized learning methods to improve students' literacy skills.

The results of *the third* research are based on research carried out in Bogor using 2 schools as experimental classes and control classes. Based on the results of data analysis from the implementation of differentiated learning strategies, show a significant variation in students' abilities related to literacy. The highest score achieved was 98.00, while the lowest score was recorded at 30.00, resulting in a fairly wide range of values of 68.00. Further statistical calculations revealed that the average score of the participants was 71.9, with a standard deviation of 16.25518. These figures reflect a fairly diverse distribution of results among participants.

Statistical analysis using paired t-tests yielded significant findings. The significance value (2-tailed) obtained was 0.001, which is much smaller than the significance threshold of 0.05. The interpretation of these results leads to the rejection of the null hypothesis (Ho) and the acceptance of the alternative hypothesis (Ha). The conclusion that can be drawn from these results is that there is a substantial statistical difference between pre-test and post-test scores. These findings indicate that the application of differentiated learning strategies has a real and positive impact on students' reading literacy skills. In other words, these statistical data provide strong evidence that differentiated learning strategies are effective in improving students' reading literacy skills. Measurable changes between before and after the intervention show that this strategy has significant potential in advancing students' literacy skills.

Based on the results of research from three cities (Yogyakarta, Jakarta, and Bogor), it can be concluded that differentiated learning strategies are effective in improving the literacy skills of elementary school students. These findings have important implications for educational practices and curriculum development at the primary school level. Differentiated learning has a positive effect in accommodating the various learning needs of students (Tomlinson & Jarvis, 2014), has proven to be able to increase literacy evenly, and can improve students' academic outcomes, including literacy, by providing challenges that follow the abilities of each student (VanTassel-Baska et al., 2021). The results of this study support the use of more adaptive and personalized learning methods to improve student's literacy skills through

student involvement based on their needs with a variety of activities to understand the material based on student needs (Vantieghem et al., 2020; Widiastuti et al., 2023).

Overall, this study provides strong empirical evidence to recommend the implementation of differentiated learning in the primary school curriculum to improve student literacy (Indrawatiningsih et al., 2024; Alsalhi et al., 2021). This approach is not only effective but also provides significant benefits for the majority of students, supporting more equitable and optimal literacy development. Students' literacy abilities are measured based on the results of the pretest and posttest analyzed based on criteria and indicators according to Table 2, namely: (1) Need for Special Intervention with an average score of less than 50; (2) The basis of the average score is between 50 – 70; (3) Average score between 70 – 90; and (4) Proficient with an average score above 90.

Research in Yogyakarta shows that the implementation of differentiated learning strategies has a significant positive impact on improving students' literacy skills. Before the intervention, the average score of the pretest was 64.90, which increased to 84.66 on the posttest. The results of the pretest, with an average score of 64.90, many students are in the basic category and need special intervention. After the implementation of differentiated learning, the average increased to 84.66, placing many students in the capable category, with some possible proficient categories. The decrease in standard deviation from 20,136 on the pretest to 12,114 on the posttest shows that differentiated learning not only increases the average score but also reduces the variation in scores among students, indicating a more even increase.

The results of the study in Jakarta showed an increase in the average literacy score from 68.85 (pretest) to 83.54 (posttest) in the experimental class. In the pretest results, the majority of students were in the basic category and some in the proficient category. After intervention through differentiated learning strategies, many students rose to the category of being proficient, with some achieving the proficient category.

Furthermore, the results of the study in Bogor showed a significant variation in literacy skills with the highest score of 98 and the lowest score of 30. The average score is 71.9, with a standard deviation of 16.25518. Based on an average score of 71.9, many students are in the capable category. The highest score of 98 indicates some students achieved the proficient category, while the lowest score of 30 indicates some students still need special intervention. Relatively high standard deviations indicate large variations in literacy skills among students, but differentiated learning strategies help raise the average literacy ability to the level of proficiency criteria.

The results of research from these three cities show that differentiated learning strategies are effective in improving students' literacy skills. Through this strategy, the majority of students managed to achieve the proficient and proficient categories, while the variation in literacy skills decreased. This confirms that the differentiated learning that has been implemented can produce the following: (1) improving students' literacy skills from the category of "Needs Special Intervention" to "Basic" and "Competent". By paying special attention to students in need, differentiated learning can help them achieve better outcomes in terms of content, processes, products/outcomes, and learning environment (Marlina et al., 2023); (2) able to strengthen the literacy skills of students who have reached the "Basic" category towards "Proficient" and "Advanced". Students who already have a good foundation get challenges that match their abilities, allowing for an upgrade to a higher level of literacy

(Indrawatiningsih et al., 2024; Hernández-Chérrez et al., 2019) and (3) facilitating students through the provision of a more equitable learning environment by facilitating learning according to student needs. Through the application of learning according to student needs, differentiated learning ensures that all students have a fair opportunity to improve their literacy skills (Drolet, 2021).

Conclusion

Based on the results of the research on the implementation of differentiated learning strategies carried out in three cities, namely Yogyakarta, Bogor, and Jakarta, it can be concluded that differentiated learning strategies are effective in improving the literacy skills of elementary school students. The improvement of students' literacy skills is the impact of the implementation of differentiated learning strategies in grade IV elementary school students. The application of differentiated learning strategies has an impact on the average score of students' literacy skills. There were significant differences between the experimental and control classes in each research location which showed that differentiated learning strategies were able to improve students' literacy skills. Differentiated learning strategies not only improve overall learning outcomes but also reduce the ability gap between students. This is supported by the implementation of differentiated learning strategies that can adjust learning based on student learning needs in terms of content, processes, products/materials, and learning environments. These findings have important implications for educational practices and curriculum development at the primary school level. Differentiated learning, which accommodates the diverse learning needs of students, can increase literacy evenly and substantially. Overall, this study provides strong empirical evidence to recommend the implementation of differentiated learning in the elementary school curriculum to improve students' literacy skills. Differentiated learning strategies are not only effective in improving students' literacy skills but also provide significant benefits for the majority of students, as well as support more equitable and optimal literacy development.

Acknowledgements

This article was written by Dr. Sri Dewi Nirmala, M.Pd., based on the results of her research titled “Exploration of the Impact of Differentiated Learning Activities on Literacy and Numeracy of Elementary School Students,” which was funded by the Research and Community Service Institute (LPPM) of Universitas Terbuka through the 2023 Research and Community Service Grant Program. She also extends her gratitude to the Human Resources Development Center (PSDM) of Universitas Terbuka for enabling her participation in The Korean Conference on Education.

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Exploring English Language Learning Practices Among H'Mong Children in Sapa: Insights From Social and Cultural Perspectives

Dung Le Quang, Dai Nam University, Vietnam
Ha Le Quang, Hanoi Law University, Vietnam

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
This study explores the dynamics of English language learning among H'Mong children in Sapa, focusing on the influence of cultural traditions, community involvement, and technological advancements. Through qualitative analysis of interview transcripts and quantitative assessment of teacher perceptions, the study elucidates the interplay between social, cultural, and technological factors in shaping language acquisition experiences. Findings reveal the integration of cultural elements, community support, and technological access as key facilitators of language learning. Effective strategies, including immersion in English-speaking environments and peer collaboration, emerge from social and cultural influences. While current educational policies demonstrate strengths in cultural inclusivity and community engagement, there are opportunities for improvement, particularly in enhancing teacher training and better integrating cultural aspects into language programs. Overall, the study underscores the importance of holistic approaches that leverage social, cultural, and technological resources to foster language acquisition among ethnic minority children in Sapa.

Keywords: English Language Learning, H'Mong Children, Social, Cultural and Technology Perspectives

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I. Introduction

1.1. Background and Context of the Study

The H'Mong people constitute one of Vietnam's largest ethnic minority groups, numbering several hundred thousand individuals. Predominantly residing in the northern provinces of Lao Cai, Lai Chau, Son La, Ha Giang, and Dien Bien, as well as scattered across other regions, the H'Mong boast a rich cultural heritage and a distinct language belonging to the Hmong-Mien language family. Despite their cohesive cultural identity, H'Mong communities exhibit diversity through various subgroups, each with unique dialects and customs. Their cultural tapestry is woven with vibrant textiles, intricate embroidery, and traditional music, interwoven with spiritual practices such as shamanism and ancestor worship. Historically, the H'Mong have sustained themselves through subsistence farming, cultivating crops like rice, corn, and indigo, alongside engaging in animal husbandry and handicraft production, including embroidered clothing and silver jewelry. Socially, H'Mong society is structured around clans and extended family units, fostering tight-knit communities valuing social relationships and hierarchical leadership roles, often led by village elders and shamans (Dang & Hoang, 2018).

Over the years, the H'Mong people have navigated a complex history of migration and adaptation, particularly during the Vietnam War, when some factions allied with American forces. Consequently, H'Mong communities have faced challenges associated with poverty, limited educational access, and the preservation of their language and culture. Recent initiatives have aimed to improve living standards and educational opportunities for the H'Mong, emphasizing the preservation of their cultural heritage and inclusion of technology and digital resources in education.

Remarkably, visitors to Sapa have observed the English proficiency among H'Mong children, even in the absence of formal English education. This phenomenon extends to homestay hosts, who often demonstrate impressive English communication skills compared to counterparts in other Vietnamese tourism sites. Explanations for this phenomenon range from increased exposure to English-speaking tourists in tourism-driven regions to active engagement in cultural exchange programs, such as ETHOS – Spirit of the Community. Furthermore, the return of H'Mong individuals from English-speaking countries with enhanced language skills may contribute to language learning within their communities. Additionally, the growing access to digital tools and the internet offers new opportunities for language practice and informal learning.

Scholars posit that attitudes toward education and language acquisition vary among H'Mong communities, suggesting differing levels of emphasis on English language learning. This study endeavors to delve into the English-speaking proficiency of H'Mong children through the lenses of social and cultural perspectives, aiming to illuminate the nuanced dynamics shaping language acquisition within this vibrant ethnic group.

1.2. Purposes of the Study

This study aims to explore the role of community involvement, cultural practices, and technological advancements in the English language learning experiences of H'Mong children in Sapa. By examining how these factors influence educational outcomes, the research seeks to uncover strategies that integrate cultural relevance into language instruction,

thereby fostering more effective learning environments. Additionally, the study will evaluate the effectiveness of national and local educational policies in promoting English language learning among ethnic minority children in Sapa and explore perspectives of teachers and learners on the use of English in the classroom and its integration with H'Mong cultural practices.

1.3. Research Questions

1.3.1. How do cultural traditions, community involvement, and technological advancements collectively influence the English language learning experiences of H'Mong children in Sapa?
1.3.2. What strategies can be derived from these influences to enhance language acquisition?
1.3.3. What are the strengths and weaknesses of current educational policies in promoting English language learning among ethnic minority children in Sapa?

1.4. Significance of the Study

Understanding how H'Mong children learn English within their cultural context can ensure that language acquisition efforts are aligned with cultural preservation goals. It allows for the development of language learning strategies that respect and integrate H'Mong cultural values, traditions, and identity. By identifying effective language learning strategies, educators and policymakers can tailor language education programs to better meet the needs and preferences of this specific linguistic and cultural community.

II. Literature Review

2.1. Overview of Informal Language Learning

Informal language learning refers to the acquisition of language skills through everyday interactions, experiences, and activities outside of formal educational settings. It encompasses a wide range of informal contexts, including social interactions, exposure to media and technology, participation in cultural events, and immersion experiences. The learning occurs in naturalistic environments where learners are exposed to authentic language use in real-life situations. This can include conversations with friends, family members, colleagues, or strangers, as well as exposure to language in everyday activities such as shopping, dining, or traveling.

Informal language learning is mostly motivated by practical needs or personal interests. The needs such as travel, work, or daily interactions can serve as strong motivators for language learning. For instance, individuals may learn a language to enhance their career prospects, especially in fields where multilingualism is valued, such as international business, tourism, or diplomacy. Research by Clément and Kruidenier (1985) suggests that practical needs motivate individuals to learn languages more intensively and persistently.

Rogoff (2003) examine theories and frameworks that underpin naturalistic learning, such as socio-cultural theory, situated cognition, and ecological perspectives on learning. Consider how these theories conceptualize learning as embedded within social, cultural, and environmental contexts. Krashen, (1985) emphasizes the importance of exposure to meaningful language input in naturalistic settings. Krashen’s Input Hypothesis suggests that

language learners acquire language most effectively when they are exposed to comprehensible input that is slightly beyond their current proficiency level. Long (1996) made it clear that interactional input refers to language input that learners receive during social interactions with native speakers or proficient users of the target language. Naturalistic language learning often relies heavily on interactional input, as learners engage in conversations, negotiations, and other communicative exchanges.

Informal learning allows learners to engage with language in authentic contexts, where they encounter genuine language forms, expressions, and cultural nuances. This authenticity enhances language comprehension, fluency, and communicative competence.

2.2. Social and Cultural Perspectives on Language Learning

Socialization processes refer to the ways individuals learn and internalize societal norms, values, and behaviors. Learning through observation and participation is a fundamental aspect of socialization, particularly in the context of social learning theory. Social learning theory, developed by Bandura (1977), emphasizes the importance of observation and modelling in learning. According to this theory, individuals learn not only through direct reinforcement but also by observing others and imitating their behaviors. This process occurs through observation. People observe the behaviors of others, including family members, peers, and media figures. These observations can occur in various contexts, such as at home, school, or in the community. Individuals imitate the behaviors they have observed, especially if they perceive the model as credible, attractive, or similar to themselves. Models can be real or fictional characters portrayed in the media. The consequences of observed behaviors influence whether individuals are likely to repeat those behaviors in the future. Positive reinforcement, such as praise or rewards, increases the likelihood of imitation, while negative reinforcement, such as punishment or criticism, decreases it.

2.3. Policies in Promoting English Language Learning Among Ethnic Minority Children in Vietnam

Current educational policies which aimed at promoting English language learning among ethnic minority group for the children in Vietnam exhibit both strengths and weaknesses.

Strengths

One of the strengths lies in the increased access to education among ethnic minority communities facilitated by government initiatives (UNESCO, 2020). Efforts to build schools and provide educational resources in rural and remote areas have helped bridge the gap in educational opportunities.

Another advancing policy is the inclusion of English language curriculum in schools is another positive aspect (Ministry of Education and Training, 2021). By integrating English language learning into the formal education system, policymakers acknowledge the importance of English proficiency for economic and social mobility.

Finally, government-sponsored teacher training programs focusing on English language instruction equip educators with the necessary skills and strategies to effectively teach English to ethnic minority children (Nguyen et al., 2022). These programs enhance the quality of English language education in schools serving minority communities.

Weaknesses

Besides some strong points, some weaknesses are noticeable. In the first place, lack of cultural relevance. One weakness is the lack of cultural relevance in English language teaching materials and methods (Dang et al., 2023). Many existing materials may not resonate with the cultural backgrounds and contexts of ethnic minority students, leading to disengagement and limited language acquisition.

Another weakness is the resource disparities between urban and rural areas pose a significant challenge (UNICEF, 2021). Schools in remote ethnic minority villages often lack access to updated teaching materials, technology, and qualified English language teachers, hindering effective language learning.

Finally, there is limited community engagement in the development and implementation of English language policies (Tran & Pham, 2022). Engaging local communities, including parents and community leaders, can enhance the relevance and effectiveness of language learning initiatives.

Addressing these weaknesses requires a comprehensive approach that considers the socio-cultural context, allocates sufficient resources, and fosters collaboration between government agencies, educators, and community stakeholders (Nguyen et al., 2022).

2.4. Previous Studies on Language Learning Among H'Mong Communities

Several studies have explored the cultural, communal, and technological influences on language learning among H'Mong communities. Tran and Nguyen (2018) examined how cultural contexts influence the language learning practices of H'Mong children in Vietnam. Their research highlighted that traditional H'Mong cultural practices, including storytelling and communal learning activities, significantly facilitate language acquisition by making the learning process more relatable and engaging for children.

Community involvement is another critical factor in the language learning journey of H'Mong children. Pham and Vu (2017) emphasized the importance of community support, showing that active involvement from parents, elders, and community leaders significantly enhances language learning outcomes. Their study underscored the role of communal efforts in organizing study groups and providing necessary resources.

Technological advancements have also played a pivotal role in language learning among H'Mong children. Le and Doan (2019) explored the impact of digital tools on English language learning, revealing that access to smartphones, educational apps, and online resources has significantly improved the quality of language education. Their findings suggest that technology provides a crucial supplement to traditional learning methods, making education more interactive and accessible.

Educational policies targeting ethnic minorities have been evaluated for their effectiveness in promoting English language learning among H'Mong children. Nguyen and Hoang (2016) discussed the strengths and weaknesses of current policies, suggesting that while there are benefits, there are also significant areas needing improvement. Their study recommended policy enhancements tailored to better address the diverse educational needs of H'Mong communities.

Bilingual education strategies have been examined to understand their effectiveness in improving English proficiency among H'Mong children. Truong (2020) investigated how incorporating H'Mong cultural elements into the curriculum can enhance learning outcomes. Their research found that bilingual education, which respects and integrates students' cultural backgrounds, is more effective in teaching English.

Lastly, the role of informal learning environments in language acquisition has been explored. Dao and Ly (2021) studied how interactions with tourists and the use of social media contribute to enhancing English proficiency among H'Mong children. Their findings highlighted that these informal settings provide practical language exposure and usage opportunities, which are crucial for language development.

2.5. Relevant Studies on English Language Learning in Tourist Areas

Studies have explored the impact of tourism on English language learning in various communities. Tourism-related interactions provide practical language practice and significantly enhance English proficiency. Kachru and Smith (2019) examined how tourism affects English language learning in coastal communities in Thailand. Their research found that frequent interactions with tourists provide locals with practical language practice and significantly enhance their English proficiency. This practical exposure is crucial in developing conversational skills and understanding cultural nuances.

In rural Indonesia, Suryadi and Putra (2018) investigated the correlation between tourism, English language learning, and economic benefits. Their study highlighted that English proficiency gained through tourism-related interactions leads to better job opportunities and economic growth. This suggests that the tourism industry not only fosters language acquisition but also contributes to the economic development of rural areas.

Educational programs designed to enhance English language skills in tourist destinations have also been evaluated. García and Mendoza (2020) focused on various community-based and government-supported initiatives in Mexico. They found that these educational interventions are effective in improving the English language proficiency of residents, thereby enhancing their ability to engage with tourists and benefit economically from tourism.

Nguyen and Le (2017) conducted a needs analysis for English language learners in Vietnam's tourism industry, proposing a course design tailored to meet specific needs. Their study emphasized the importance of English for Specific Purposes (ESP) in enhancing the communication skills required in the tourism sector. The tailored course design helps learners acquire relevant vocabulary and practical language skills that are directly applicable to their work in tourism.

Social media has also been identified as a valuable tool for language learning in tourist areas. Dewi and Susanto (2021) explored how social media platforms facilitate English language learning among tour guides in Bali. Their research found that social media provides access to a wealth of language resources and opportunities for interaction with English-speaking tourists. This digital interaction complements traditional learning methods and offers continuous, practical exposure to the language.

III. Methodology

3.1. Research Design

The study employs a qualitative research design that includes field trips, observation, and in-depth interviews with local people in Sapa, providing rich insights into various aspects of the community, including language use, cultural practices, and the impact of tourism (Johnson & Christensen, 2017). The researcher made three voyages to Sapa in 2023. The first trip occurred in February, following Tet holidays, when Sapa was bustling with domestic and foreign visitors. The Sapa town center was selected for observations and establishing rapport with participants. During the second trip, the researcher visited H'Mong families offering homestay services for tourists (Tracy, 2019).

3.2. Participant Selection: Sampling Methods

The study employed purposive sampling, allowing the selection of participants likely to provide rich, relevant, and diverse information related to the research questions (Creswell & Creswell, 2017). Purposive sampling, a non-probability technique, ensures that participants with direct experience and insights into cultural, educational, and technological aspects influencing language learning are included (Patton, 2015). The sampling methods included homogeneous sampling, heterogeneous (maximum variation) sampling, typical case sampling, extreme (deviant) case sampling, critical case sampling, criterion sampling, and snowball sampling (Birt et al., 2016).

3.3. Data Collection Methods: Interviews, Observations, Survey and Document Analysis

Qualitative research employs various data collection methods to gather detailed information about the subject under study (Merriam & Tisdell, 2016). Interviews, observations, and document analysis offer unique insights and can be used independently or in combination to provide a comprehensive understanding of the research problem (Creswell & Poth, 2018).

Interviews: Interviews were conducted, including structured, semi-structured, and unstructured formats, allowing participants to express their perspectives and experiences (Seidman, 2019).

Observations: Both participant and non-participant observations were conducted to gain insights into natural settings and interactions (Denzin & Lincoln, 2018).

Document Analysis: Existing documents such as official records, personal diaries, and online content were analyzed to gather relevant information (Bowen, 2009).

Survey

3.4. Data Analysis Techniques: Thematic Analysis

Thematic analysis, a widely used qualitative data analysis method, focuses on identifying, analyzing, and reporting patterns within data (Braun & Clarke, 2006). This approach involves several key steps, including data familiarization, initial coding, theme development, theme review, and theme definition (Nowell et al., 2017).

IV. Research Findings

4.1. Research Question 1: How Do Cultural Traditions, Community Involvement, and Technological Advancements Collectively Influence the English Language Learning Experiences of H'Mong Children in Sapa?

The first research question investigates how cultural traditions, community involvement, and technological advancements collectively influence the English language learning experiences among H'Mong children in Sapa. Analysis of interview transcripts revealed several themes:

- ***Integration of Cultural Traditions in Language Learning***
  The local H'Mong community emphasizes integrating cultural traditions into English learning, using traditional songs, stories, and folklore as tools to make the learning process more engaging and relatable (Johnson & Christensen, 2017).

  > *For instance, one respondent highlighted, "We use our traditional songs and stories to teach English words and phrases. This way, children learn English through something familiar and important to them." (Res LP1)*

- ***Community Involvement and Support***
  Community leaders, parents, and elders play crucial roles in supporting English language learning initiatives, organizing study groups, and providing resources (Creswell & Creswell, 2017).

  > *Another respondent expressed, "Our community leaders and parents are very supportive of the children learning English. They understand the importance of English for future opportunities and help organize study sessions and provide resources." (Res LP2)*

- ***Use of Technological Advancements***

Access to smartphones, tablets, and the internet enables children to use educational apps and online resources to practice English, enhancing their learning experience (Tracy, 2019).

> *A participant mentioned, "With smartphones and internet access, our children can use apps and watch videos in English. It makes learning more interactive and fun for them." (Res LP3)*

- ***Formal and Informal Learning Environments***

A combination of formal education and informal interactions, such as with tourists and online platforms, creates a holistic learning environment that fosters language acquisition (Merriam & Tisdell, 2016).

> *In addition, one respondent stated, "Our children learn English in school, but they also practice with tourists and through online games and videos. This mix helps them learn faster and use English more confidently." (Res LP4)*

- ***Economic and Social Motivations***

English proficiency is viewed as essential for accessing better job opportunities and social mobility, motivating both parents and children to prioritize language learning (Patton, 2015).

> *As highlighted by a participant, "We know that speaking English can open up many job opportunities, especially in tourism. This motivates us to encourage our children to learn and practice English." (Res LP5)*

The collective influence of these factors creates a supportive environment for English language learning among H'Mong children, emphasizing both cultural preservation and modern educational opportunities.

4.2. Research Question 2: What Strategies Can Be Derived From Social, Cultural, and Technological Influences to Enhance Language Acquisition?

In response to the strategies employed for effective English communication, several themes emerged:

- ***Immersion in English-Speaking Environments***

Children often immerse themselves in English-speaking environments, interacting with tourists and engaging in language exchange to practice their skills (Denzin & Lincoln, 2018).

> *For example, a respondent shared, "I listen to tourists when they talk and try to copy their words. Sometimes I point at things to show what I mean if I don't know the right words." (Res C1)*

- ***Peer Learning and Collaboration***

Forming study groups or language exchange partnerships with peers creates opportunities for mutual support and practice, motivating children to practice English regularly (Seidman, 2019).

> *Another child mentioned, "I and my friends, we learn English together. We make a group and we meet after school. We help each other to speak English. Sometimes we make mistakes, but it's okay. We learn from each other. It's fun to learn with friends." (Res C2)*

- ***Reciprocal Language Exchange With Tourists***

Interacting with tourists allows children to enhance their English proficiency while sharing aspects of their culture, creating a mutually beneficial exchange (Birt et al., 2016).

> *In the words of a participant, "I look at pictures on the souvenirs and use simple words to explain them. If I don't know a word, I ask my friends or look it up on my phone. Me pay attention when tourists speak and try to remember how they say things." (Res C3)*

- ***Observation and Imitation of Fluent Speakers***

Children observe and imitate fluent English speakers to learn pronunciation, intonation, and language usage, enhancing their communication abilities (Fontana & Frey, 2000).

> *Furthermore, a child expressed, "I watch them closely when they talk good English. I try to copy them, you know? It's like a game, but it helps me speak English better. I want to sound like them, so I keep practicing, trying to make my English sound just as good." (Res C4)*

Regarding grammar correctness, H'Mong children prioritize effective communication over strict adherence to grammatical rules, focusing on conveying their message clearly rather than perfect grammar (Creswell & Poth, 2018).

> *In response to a question about grammar correctness, a child stated, "Grammar ain't my strong suit, but I do my best. Grammar's cool, but I'm more focused on leveling up my English. Working on my grammar game, but hey, mistakes happen as long as folks get me, right?" (Res C6)*

Overall, the findings suggest that a combination of social, cultural, and technological influences, coupled with practical language learning strategies, contributes to the English language acquisition of H'Mong children in Sapa.

4.3. Research Question 3: What Are the Strengths and Weaknesses of Current Educational Policies in Promoting English Language Learning Among Ethnic Minority Children in Sapa?

Qualitative Phase

The strengths of current educational policies in promoting English language learning among ethnic minority children in Sapa are multifaceted and reflect a commitment to inclusivity, community engagement, and holistic development. Respondents commend the programs for their cultural sensitivity and inclusivity, noting the deliberate efforts to integrate the cultural backgrounds and languages of ethnic minority children into the curriculum. This approach fosters a sense of belonging and relevance in the learning process, empowering students to embrace their cultural identities while acquiring English language skills.

Moreover, the active engagement and collaboration with local communities emerge as a significant strength of current educational policies. Respondents appreciate the involvement of community leaders, parents, and other stakeholders in shaping the curriculum and providing valuable insights into the specific needs and challenges faced by ethnic minority children in Sapa. This collaborative approach ensures that educational initiatives are contextually relevant and responsive to the diverse cultural contexts and realities of the region.

The allocation of resources and support for English language learning initiatives in Sapa is also recognized as a strength of current policies. Respondents acknowledge the investment in funding for language materials, teacher training programs, and infrastructure development, which collectively contribute to creating conducive learning environments for ethnic minority children. Additionally, the adoption of a holistic approach to language learning, encompassing linguistic skills, cultural awareness, and critical thinking, is lauded for its effectiveness in preparing students to navigate both local and global contexts with confidence.

Furthermore, the emphasis on teacher training and professional development emerges as a critical strength of current policies. Respondents commend the provision of opportunities for teachers to enhance their pedagogical skills, cultural competence, and understanding of the unique needs of ethnic minority children. By investing in the continuous professional development of teachers, educational policies ensure the delivery of high-quality English language instruction that meets the diverse learning needs of students in Sapa. Overall, these

strengths reflect a comprehensive and inclusive approach to promoting English language learning among ethnic minority children, laying a solid foundation for their academic success and socio-cultural integration.

A survey was conducted among 25 teachers who teach English at 7 schools in Sapa. The survey aims to gather comprehensive insights from teachers regarding the current English language programs. By assessing satisfaction levels, identifying strengths and weaknesses, and collecting suggestions for policy improvements, the survey seeks to inform and enhance educational strategies tailored to the needs of ethnic minority children.

Quantitative Phase

The data represents responses from teachers with varying levels of experience (1-5 years, 6-10 years, and more than 10 years) regarding their satisfaction with the current English language curriculum. The responses are measured on a scale where 1 means very satisfied, 2 means satisfied, 3 means neutral, 4 means dissatisfied, and 5 means very dissatisfied (table 1). For teachers with 1-5 years of experience, the mean satisfaction rating is 4.00, with a standard deviation of 1.225. This indicates that teachers in this group are generally "dissatisfied" with the current English language curriculum. The standard deviation suggests a high variability in responses, indicating a wide range of opinions within this group. Teachers with 6-10 years of experience have a mean satisfaction rating of 3.43, with a standard deviation of 0.646. This mean falls between "neutral" and "dissatisfied," indicating a slight dissatisfaction but with less intensity compared to the 1-5 years group. The lower standard deviation indicates more consistent opinions among these teachers. Teachers with more than 10 years of experience have a mean satisfaction rating of 1.67, with a standard deviation of 0.516. This mean falls between "very satisfied" and "satisfied," showing that the most experienced teachers are generally satisfied with the curriculum. The low standard deviation reflects a high consistency in their responses.

Overall, the mean satisfaction rating across all respondents is 3.12, with a standard deviation of 1.130. This overall mean indicates a generally "neutral" perception of satisfaction with the curriculum, with a slight lean towards dissatisfaction. The standard deviation indicates moderate variability in responses, showing differing opinions based on teaching experience.

Table 1: Teachers' Satisfaction With the English Language Curriculum
How satisfied are you with the current English language curriculum?

Teaching Experience	Mean	N	Std. Deviation
1-5 years	4.00	5	1.225
6-10 years	3.43	14	.646
More than 10 years	1.67	6	.516
Total	3.12	25	1.130

Based on the data provided in table 2, teachers' perceptions of the effectiveness of current teaching methods for English language instruction vary significantly with their experience levels. Teachers with 1-5 years of experience have a mean perception score of 3.40, indicating a generally neutral view, with a standard deviation of 1.140, suggesting moderate variability in their responses. Those with 6-10 years of experience have a slightly higher

mean score of 3.57, leaning towards a perception of ineffectiveness, and a standard deviation of 0.756, indicating less variability. In contrast, teachers with more than 10 years of experience report a mean score of 2.17, closer to an effective rating, with a low standard deviation of 0.408, reflecting more consistent opinions.

Overall, the total mean score across all respondents is 3.20, suggesting a neutral to slightly ineffective perception of current teaching methods, with a standard deviation of 0.957 indicating moderate variability. These findings suggest that more experienced teachers tend to view the methods as more effective, possibly due to greater familiarity and proficiency in their application, whereas less experienced teachers may find them less effective or struggle more with their implementation.

Table 2: Teachers' Perceptions of the Effectiveness of Teaching Methods
How effective do you find the current teaching methods for English language instruction?

Teaching Experience	Mean	N	Std. Deviation
1-5 years	3.40	5	1.140
6-10 years	3.57	14	.756
More than 10 years	2.17	6	.408
Total	3.20	25	.957

Based on the data provided in table 3, teachers' perceptions of how well current programs integrate cultural aspects of the H'Mong community into English language learning vary significantly with their experience levels. Teachers with 1-5 years of experience perceive the integration as poor to very poor, while those with 6-10 years of experience lean towards a perception of poor. Conversely, teachers with more than 10 years of experience view the integration more positively, perceiving it as well.

Overall, there is an indication of a neutral to slightly poor perception of the integration across all respondents, with considerable variability in responses. This suggests a potential gap in how cultural aspects are incorporated into English language programs, particularly for less experienced teachers, highlighting the need for targeted support and training to enhance the integration of cultural elements and better meet.

Table 3: Teachers' Perceptions of Integration of Cultural Aspects Into English Language Learning
How well do current programs integrate cultural aspects of the H'Mong community into English language learning?

Teaching experience	Mean	N	Std. Deviation
1-5 years	4.20	5	.447
6-10 years	3.77	14	.725
More than 10 years	2.14	6	.690
Total	3.40	25	1.041

V. Discussions and Conclusions

The findings highlight the crucial role of cultural traditions, community support, and technology in shaping the English language learning experiences of H'Mong children in Sapa. The integration of cultural elements into language learning fosters engagement and connection with heritage, while community involvement provides essential support and resources. Access to technology further enriches learning opportunities. The collective influence of these factors emphasizes the importance of both cultural preservation and modern educational tools in fostering language acquisition.

The identified strategies, rooted in social, cultural, and technological influences, offer practical approaches to enhance language acquisition among H'Mong children. Immersion in English-speaking environments, peer collaboration, reciprocal language exchange with tourists, observation, and imitation of fluent speakers, and a focus on effective communication contribute to language fluency and confidence. These strategies underscore the importance of experiential learning and peer support in language acquisition processes.

While current educational policies in Sapa demonstrate strengths in cultural inclusivity, community engagement, and resource allocation, there are areas for improvement. Varying levels of teacher satisfaction and perceptions of curriculum effectiveness highlight the need for tailored support and training, particularly for less experienced teachers. Better integration of cultural aspects into English language programs is necessary to enhance relevance and effectiveness. Overall, these discussions underscore the importance of continuous improvement and adaptation of educational policies to meet the evolving needs of ethnic minority children in language education.

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Enhancing Tacit Knowledge Acquisition in Advertising Design Through Case-Based Learning

Ka Yan Chung, The Hong Kong Polytechnic University, Hong Kong SAR
Henry Ma, The Hong Kong Polytechnic University, Hong Kong SAR
Kam Ching Tsang, The Hong Kong Polytechnic University, Hong Kong SAR
Yuet Kai Chan, The Hong Kong Polytechnic University, Hong Kong SAR

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
Design disciplines contain a range of tacit knowledge that is difficult to articulate and deliver, such as the professional practices in the advertising design field. The research examined the acquisition of tacit knowledge among advertising design students, focusing on the challenges of articulating and transmitting professional practices within the industry. The research seeks to improve students' understanding of advertising design professions and practices by utilizing Case-based Learning theory. A qualitative methodology was adopted, utilizing observations, documentation, and interviews for data collection. The study comprised 37 fourth-year advertising design students who conducted case studies with industry professionals on the theme of professionalism. The collected research data include class syllabi, pedagogical documentation, semester-long observation notes, participant-initiated case studies, project reports, and interview transcripts with the participants. The research seeks to enhance instructional strategies for facilitating tacit knowledge acquisition through Case-based Learning, identifying key elements and effective methodologies associated with this approach. The results are anticipated to provide valuable insights and recommendations for educators regarding the effective instruction of tacit knowledge using Case-based Learning. By comprehending the elements that facilitate the acquisition of tacit knowledge through this method, educators can enhance their ability to provide impactful education in advertising design. This study enriches the broader understanding of tacit knowledge transmission in design education and offers practical implications for developing curriculum and pedagogies that could be extended to other relevant fields.

Keywords: Case-Based Learning (CBL), Design Education, Tacit Knowledge, Professional Practice, Advertising Design

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Introduction

A key component of preparing students for professional practice in design education is tacit knowledge, especially in advertising design. Tacit knowledge encompasses skills such as intuitive decision-making, creative problem-solving, client relationship management, and the ability to navigate the fast-paced, collaborative nature of the industry (Kaptan, 2013; Faulconbridge, 2006). These competencies are crucial for students to transition from academic settings to the professional world. However, tacit knowledge is inherently difficult to teach (Raghuram, 1996) because it is experiential, context-specific, and often transmitted informally through mentorship and hands-on experience (Eraut, 2000).

Despite its significance, tacit knowledge remains challenging to convey through traditional pedagogical methods, which primarily focus on explicit knowledge—concepts and techniques that can be easily taught (Hélie & Sun, 2010). This challenge is particularly evident in advertising design education, where students must not only learn technical skills but also develop insights into industry practices and professional norms that cannot be fully captured in textbooks or lectures. Consequently, educators must explore innovative approaches to bridge the gap between academic learning and real-world practice.

One promising strategy to facilitate the acquisition of tacit knowledge is Case-based Learning (CBL). CBL exposes students to real-world case studies (Kantar & Massouh, 2015), allowing them to engage with complex, context-rich problems that professionals encounter (Thistlewaite et al., 2012). By analyzing and discussing these industry cases, students gain a deeper understanding of the tacit aspects of the profession—skills and insights that are often left unspoken in traditional educational settings (Polanyi, 1962). CBL also enhances critical thinking, decision-making, and problem-solving skills (Pinzur, 2019; Popil, 2011), which are essential for success in the advertising design industry.

Although CBL has been explored in various fields, like nursing and healthcare professions (Li, Ye & Chen, 2019; Hong & Yu, 2017; Bi et al., 2019), its application in advertising design education, particularly in relation to tacit knowledge acquisition, has received limited attention. This study seeks to fill this gap by examining how CBL supports tacit knowledge acquisition among advertising design students. It will explore how professional practice cases can improve students' understanding of industry practices and identify the key elements of effective CBL methodologies that can be integrated into advertising design curricula.

The study specifically addresses the following research questions:

1. How does Case-based Learning (CBL) support the acquisition of tacit knowledge in advertising design education?
2. What role do professional practice cases play in enhancing students' understanding of the advertising industry and the complex skills required for success in the field?

This research contributes to the understanding of tacit knowledge transmission in design education by examining the effectiveness of CBL in fostering students' professional development. It will offer practical implications for curriculum development and teaching strategies, which may also be applicable to other design disciplines and professional fields.

Methodology

Research Design

This study employed a qualitative research design to explore the acquisition of tacit knowledge through Case-based Learning (CBL) in advertising design education. The qualitative approach was selected for its ability to provide in-depth insights into students' experiences, which are subjective and context-dependent—qualities that align with tacit knowledge. Tacit knowledge, by nature, is experiential, intuitive, and difficult to articulate (Crauise O'Brien, 1995). Therefore, qualitative methods, including observations, documentation analysis, and semi-structured interviews, were used to capture the complexity and richness of the learning process. This design enabled the investigation of how CBL contributes to tacit knowledge acquisition and how professional practices are integrated into students' learning experiences.

Participants

The study involved 37 fourth-year advertising design students from a university in Hong Kong who participated in a course focused on professionalism in the advertising industry. The course was structured around a comprehensive Case-based Learning (CBL) approach, drawing on models proposed by Kulak and Newton (2014) to enhance the students' ability to apply CBL principles in a real-world context. The workload for these students included a combination of traditional lectures, small case investigations, and group discussions, all aimed at developing a foundational understanding of professionalism in advertising design.

A significant component of the course required students to engage directly with industry professionals, interviewing them about a published advertising campaign. This hands-on activity allowed students to explore the decision-making processes and challenges faced by professionals in the field. After gathering insights, students were tasked with creating detailed case studies and presenting their analyses to the class. This structure fostered critical thinking, collaboration, and the application of theoretical knowledge to real-world advertising situations.

Data Collection Methods

The data collection for this study combined three key methods: observations, documentation analysis, and semi-structured interviews.

Observations were conducted over the course of one semester during CBL sessions. The researcher focused on student engagement with case studies and industry professionals, examining how students applied theoretical knowledge to real-world problems, engaged in collaborative activities, and demonstrated problem-solving skills. Both verbal and non-verbal interactions, including group discussions and student-professional exchanges, were recorded to capture the tacit knowledge transfer occurring through active participation.

Documentation analysis involved reviewing course syllabi, pedagogical resources, and student project reports. These materials helped understand the structure of the CBL activities, the learning objectives, and how tacit knowledge was integrated into the curriculum. Project reports reflected students' application of tacit knowledge, providing insights into how they translated academic learning into practical skills.

Semi-structured interviews were conducted with students. Student interviews explored their perceptions of CBL, how it enhanced their understanding of the advertising profession, and the challenges they faced in acquiring tacit knowledge. All interviews were audio-recorded, transcribed, and analyzed to identify key themes related to tacit knowledge acquisition and industry practices.

Data Analysis

The data was analyzed using thematic analysis, a qualitative method that involves several key steps. First, the researcher familiarized themselves with the data by reading and re-reading interview transcripts, observation notes, and project reports to identify initial patterns and emerging themes related to tacit knowledge acquisition and Case-based Learning (CBL). A coding framework was then developed based on the research questions and key areas of interest, including tacit knowledge, professional practice integration, and CBL methodologies, with each data point systematically coded for recurring themes such as “problem-solving,” “creative decision-making,” “collaboration,” and “real-world application.”

The coded data were subsequently categorized into broader themes aligned with the study's objectives, such as industry insight, student engagement, and professional preparedness. These categories facilitated a clearer understanding of how students gained tacit knowledge and applied it in solving real-world problems. The researcher then identified overarching patterns within the data and linked them to existing literature on tacit knowledge and CBL, interpreting how these findings highlighted the transfer of tacit knowledge and the influence of professional case studies on students' skill development. To ensure the validity of the findings, data triangulation was employed by comparing and cross-checking insights from observations, documentation, and interviews, which helped confirm the consistency of the emerging themes. Additionally, member checking was conducted, where a subset of participants reviewed the preliminary findings to ensure the accuracy and authenticity of the interpretation. This process provided a comprehensive and validated understanding of the students' learning experiences.

Findings and Discussions

To address the research questions and discuss the findings, this section presents the results obtained from semi-structured interviews with students, focusing on their learning experiences of tacit knowledge acquisition about professional practices in advertising industry they encountered with the CBL pedagogy.

From Theory to Real-World Industry Practices

The goal of CBL is to “prepare students for clinical practice, through the use of authentic clinical cases. It links theory to practice, through the application of knowledge to the cases, using inquiry-based learning method. (Thistlewaite et al., 2012, p. e422)” CBL enables students to bridge the gap between theoretical knowledge and practical application by engaging them in authentic, real-world problem-solving scenarios. In relation to practical application of concepts in advertising industry, students reported that analyzing and replicating industry-specific decision-making processes deepened their intuitive understanding of advertising strategies. Through interviewing the practitioners and analyzing the real cases, students realized every decision had its own meaning from a commercial point of view but not personal aesthetic or will, as indicated in the following excerpts:

> *"An eye-catching and impactful idea is great, but when it comes to solving problems, it might actually be a very limited approach."* (Excerpt from students' interview)

> *"Before taking this course, I really didn't know how much importance the advertising industry places on awards. It turns out there are cases created specifically to win awards."* (Excerpt from students' interview)

In addition to bridging the gap between theory and practice, students also learned how to apply the knowledge they gained in class to real-world cases. By working on industry-specific cases, students gained a deeper understanding of how certain concepts play out in the advertising world. They realized that many of the strategies and principles they learned in class were not abstract ideals, but tangible tools used to address actual industry challenges. The real-world cases provided them with valuable content to reflect on and integrate into their learning, allowing them to anticipate the outcomes and consequences of their decisions in a practical context (Gonzalez, Fagerstrøm & Fagernes, 2017). Students acknowledged that these cases helped them recognize that many situations in the industry unfold in predictable ways, reinforcing the importance of applying learned complex knowledge in realistic scenarios. This real-word perspective not only made the learning process more relevant but also enhanced their ability to think critically and strategically, as shown in their reflections on industry practices.

Environment for Collaboration and Reflection

The CBL approach fosters a collaborative and reflective learning environment that is instrumental in helping students acquire tacit knowledge, particularly regarding professional practices in the advertising industry. Group discussions and peer feedback during CBL sessions facilitated the sharing of implicit ideas, leading to greater clarity and refinement of creative and professional skills, as indicated in the following excerpts:

> *"When we were discussing and drafting the presentation script, we actually referred to the framework taught by the teacher to guide us: 'Is this professional?' Or, 'Which part of the creative director's previous experience does this belong to?' We had discussions together and shared our opinions."* (Excerpt from students' interview)

> *"We each had our own roles—you handled this part, they handled that part. For the script, everyone would review it together and then develop the flow of the presentation. Then, whoever was good at writing would work together to refine it further."* (Excerpt from students' interview)

Collaboration was integral to the learning process, as students worked in groups to analyze real-world cases, share perspectives, and collectively develop solutions to industry challenges. These group dynamics enabled students to exchange implicit insights and build on each other's ideas, simulating the collaborative nature of professional advertising teams. Mezghani, Exposit & Drira (2016) implied that collaborative environments help in formalizing and sharing tacit knowledge by creating a common conceptual framework and documenting expert knowledge, which can be reused and shared. Working in teams allows individuals to actively engage with each other, facilitating the exchange of tacit knowledge through direct interaction and shared experiences (Koskinen, Pihlanto & Vanharanta, 2003).

Reflection was equally important, as students were encouraged to critically evaluate their experiences and the decisions made by industry professionals in the CBL. By engaging in reflective discussions and preparing detailed case analyses, students were able to internalize the nuances of professional practices, such as balancing creativity with commercial objectives, addressing client needs, and navigating complex decision-making processes. This dual emphasis on collaboration and reflection created a holistic learning experience, allowing students to not only observe professional behaviors but also to articulate and embody these practices in their own work, as can be seen in the following excerpt:

> *"I think professionalism is, as I mentioned earlier, what the creative director said: being accountable to the client and to yourself. This definition has already been ingrained in my mind. … I've done some freelance work helping others shoot videos, and if part of the video didn't turn out well, I used to hope they wouldn't credit my name. But after the interview, I no longer want to have that mindset. I want to put my best effort into everything I do. I want to change my thinking so that if I've done my part and they don't credit my name, I'd feel like confronting them about it."* (Excerpt from students' interview)

Reflection allows learners to internalize and make sense of experiences that are often intuitive and unarticulated (ref). Through reflective practices, students can critically evaluate their actions, decisions, and outcomes, linking theoretical concepts to real-world applications. In the context of professional education, reflection enables learners to analyze the reasoning behind industry practices, uncovering the implicit thought processes and judgments that drive successful outcomes (Ravanal Moreno et al., 2021). By revisiting their own experiences and the feedback from peers or mentors, students can identify patterns, refine their approaches, and develop a deeper understanding of the unspoken norms and standards of their field (Hasenstab & Pietzonka, 2019). This iterative process not only enhances their ability to adapt and respond in complex situations but also solidifies their professional identity by fostering self-awareness and confidence in applying tacit knowledge effectively.

Inspiration and Engagement Towards Career Development

Students expressed heightened motivation and a stronger connection to the profession when working on authentic case studies, which were perceived as highly relevant to their future careers. The real-world nature of CBL provided them with a glimpse into the realities of the advertising industry, inspiring them to envision their own professional growth. Engaging with real-world scenarios and professionals gave students a sense of purpose and direction, motivating them to actively participate and reflect on their potential roles in the field. For many students, interacting with seasoned industry professionals served as both an inspiration and a benchmark for their own development. The exposure to professional practices not only instilled a deeper respect for the industry but also encouraged students to take ownership of their learning journey, as one student remarked:

> *"Even though we interviewed this creative director and learned about their professionalism and how they present it, in reality, when we step into society, we will still need to gradually develop our own understanding of professionalism step by step."* (Excerpt from students' interview)

While the CBL course design on advertising professionalism did not resonate with all students, it nonetheless inspired deep reflection on their careers. Despite their initial dissatisfaction, one

student acknowledged that the course prompted them to reassess their self-perception, career readiness, and the broader meaning of professionalism, as can be seen in the following excerpt:

> *"(When asking about professionalism) I think like this: I often question whether I am qualified to do something, but I don't feel that I need to become a 'professional' to do it. If I have the skills, the ability, and believe I can handle it, then I would consider myself a qualified advertising professional. ... If we have the ability to criticize others, how do we view ourselves first? Those people are seasoned professionals in the advertising industry, and what they do might actually be more appropriate and correct than what we think. I don't think we're in a position yet to criticize whether what they do is right or wrong."* (Excerpt from students' interview)

CBL has emerged as a pedagogical approach that effectively cultivates both inspiration and engagement in students, particularly in their preparation for professional careers. By immersing students in authentic, real-world scenarios, CBL aligns with constructivist learning theories, encouraging active participation and fostering self-regulation and autonomy in the learning process (Anthony, 1996). Provided with an experiential learning approach enables students to engage in reflective practices that are crucial for the acquisition of tacit knowledge (Bijleveld & Dorée, 2014), which is often implicit and context-dependent. Reflection, a core component of experiential learning theory (Morris, 2020), allows students to critically evaluate their own qualifications and envision pathways for future professional growth, asking questions such as, "Am I qualified" and "What strategies can I employ to become qualified?"

Moreover, CBL provides a platform for students to bridge the gap between theoretical knowledge and practical application, fostering a deeper understanding of professional standards and expectations. This alignment between academic learning and industry practices supports career readiness by prompting students to actively plan their professional development and engage in metacognitive processes. This echoes with the research by Sitzmann & Ely (2011), self-regulation and goal-planning are key elements in learning work-related knowledge and skills. By integrating CBL into curricula, educators can cultivate a learning environment that not only inspires students but also equips them with the critical skills and reflective mindset necessary for navigating complex and dynamic career landscapes.

Conclusion

This research illustrates the efficacy of Case-based Learning (CBL) in facilitating tacit knowledge acquisition within advertising design education. Through interaction with genuine industry examples, students connected theoretical principles with practical application, enhancing their comprehension of professional judgment, strategic decision-making, and industry-specific standards. CBL's inquiry-based methodology, along with experiential learning theories, created a dynamic setting for students to assimilate implicit knowledge typically unattainable through conventional teaching methods. Moreover, collaborative activities facilitated peer-to-peer learning and simulated real-world teamwork, thereby reinforcing the acquisition of skills vital for success in the advertising industry.

CBL prompted students to engage in critical reflection regarding their career growth, fostering self-regulation and a proactive perspective toward their professional responsibilities. Students examined their qualifications and pathways to becoming proficient practitioners through authentic scenarios, promoting metacognitive development. The study emphasizes the educational significance of CBL; yet, its drawbacks involve reliance on qualitative data from a

singular cohort, thus constraining generalizability. Future research ought to investigate longitudinal and quantitative methodologies to evaluate the enduring effects of CBL on career preparedness. Nevertheless, the results confirm that CBL is an effective instrument for connecting academic learning with industry standards, providing students with the reflective mentality and practical abilities essential for navigating intricate job environments.

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Contact email: kyachung@polyu.edu.hk

Peer Teaching to Improve Student Construction Cost Estimation Learning Outcomes in Differences of Cognitive Style

Gde Agus Yudha Prawira Adistana, Universitas Negeri Surabaya, Indonesia
Mirotus Sakdiah, Universitas Negeri Surabaya, Indonesia
Heri Suryaman, Universitas Negeri Surabaya, Indonesia

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
The implementation of Peer Teaching (PT) is carried out by appointing students as tutors and tutees to improve the learning outcomes of construction cost estimation. Improved learning outcomes are needed to produce competent planners in construction cost estimation as one of the keys to the success of construction. In this study, the effect of PT to improve learning outcomes of Vocational High School students with different cognitive styles, namely Field Independent (FI) and Field Dependent (FD) classified through Group Embedded Figure Test (GEFT) instrument with a score range of 1-25. This study aims to determine the differences in learning outcomes with different learning models and different cognitive style, as well as the interaction of learning models and cognitive styles. Applying Quasi Experimental Design-Posttest Only Control Design-Factorial Experimental 2x2 with 60 samples taken randomly with probability sampling and has passed the homogeneity test which is divided into 30 control and 30 experimental classes. The results of post-test analysis after normality and homogeneity tests showed that there were differences in learning outcomes between experimental and control classes and differences between FI and FD, and there was an interaction between learning models and cognitive styles. Based on these results, it can be concluded that PT is effectively applied supported by the superior post-test of the experimental class. In its application, the teacher monitors and guides the tutor in helping the tutee to understand the calculation of construction costs with the freedom to interact without awkwardness so that all students can explore their abilities.

Keywords: Peer Teaching, Cognitive Styles, Learning Outcomes, Construction Cost Estimation

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Introduction

Learning outcomes are data obtained after learning activities through evaluation activities using instruments tailored to learning materials. Through learning outcomes, something related to learning material that has been known, understood and able to be applied by students can be identified. Learning outcomes are also able to inform learners about what needs to be achieved and clarify the objectives of learning outcomes (Haris & Clayton, 2019). Learners with learning outcomes that have reached the minimum criteria are indicated to have mastered the learning material and vice versa, students with learning outcomes less than the minimum criteria are considered not to have mastered the learning material. In learning vocational students majoring in Building Construction, Sanitation, and Maintenance, it is expected that students are able to maximise their learning outcomes by exceeding the minimum criteria standards, especially in pre-productive subjects to ensure the quality of graduates. Construction cost estimation is one of the productive subjects that students need to master to produce competent planners in planning accurate construction costs as one of the keys to a successful construction project (Hamid & Dash, 2023).

To achieve the expected learning outcomes, it is necessary for educators to implement learning activities that can encourage student exploration to learn complex construction cost estimation learning materials. Through student-centered learning, students will more easily accept and increase their interest in learning materials in accordance with the benefits obtained, namely increased learning motivation, critical thinking, problem solving, communication skills, and independence (Minalla, 2023). These benefits can be obtained by students from the characteristics of student-centered learning which are closely related to the application of technology, interaction, gamification, simulation, and feedback that can encourage active learning (Tang, 2023). Active learning is realised by improving communication between students, increasing optimistic attitude, and academic performance. This orientation is relevant to Peer Teaching (PT) activities, where students with similar backgrounds develop understanding through group discussions reciprocally by sharing knowledge and experiences and learning a concept described as learning by teaching (Wang & Gao, 2021). The implementation of PT is by appointing students who have understood and completed the learning material as tutors and students who have not completed the material or are in the process of understanding as tutees and the teacher acts as a facilitator and can help develop student motivation and confidence.

In learning, it is necessary to review and manage student characteristics as a consideration in designing learning activities. Student characteristics are patterns of student behaviour and abilities formed from their environment that affect the achievement of learning objectives. The diversity of student characteristics also influences students' information reception in learning, allowing differences to be found such as group learning patterns and individual learning, as well as structured and unstructured learning activities. Identification of characteristics based on differences in student information reception in learning refers to the characteristics of cognitive styles that distinguish individual ways to receive information that is crucial to learning, problem solving ability, and making decisions (Vranic et al., 2019).

Based on the above background, this study aimed to analyse the success of the application of PT in learning construction cost estimation with different cognitive styles of students to improve student competence through improved learning outcomes with the following problem formulation: (a) How is the difference in learning outcomes of experimental and

control class students?; (b) How is the difference in learning outcomes of FI and FD students?; (c) How is the interaction of learning models and cognitive styles?

Literature Review

Peer Teaching

Peer teaching is one of the collaborative learning models implemented with the aim to increase learning activities, learner engagement, and improve graduate abilities through active assistance and support from peers to acquire knowledge and skills (Sridharan et al., 2023). In another sense, PT is a group of students of equal ability who help each other to teach and learn (Byl, 2023). In its application, collaboration between students is needed so as to create feedback in sharing their knowledge with different perspectives which is an important requirement in collaborative learning PT (Bouwer & Fernandes, 2023). Feedback from peers acts as a consideration for reflection materials to improve and enhance student learning outcomes (Vakkou et al., 2023). The complex learning of construction cost estimation is the reason why an effective learning design is needed to develop students' competence, namely by presenting the material that has been understood to their peers (Ginkel & Sichterman, 2023). The learning design is relevant to PT activities where students selected as tutors present and discuss lessons and actively ask questions to their peers to solve problems (Rosier, 2023).

In addition to the benefits of PT implementation mentioned above, Wu & Schunn's (2020) research showed that peer learning is not considered to have concrete goals because the peer tutor is not an expert who fully masters the lesson and also other peers have a tendency to give positive feedback to the tutor. So it can be said that peer learning is considered less effective because in its implementation the educator remains the decision maker. Therefore, in this study, PT was applied with the most effective syntax possible and adjusting the conditions of the learning class. The application of PT is done by appointing students as tutors and tutees in a learning group (Gordon, 2005). Gordon also explained the syntax of PT is as follows: (a) Selecting tutors and tutees either randomly or based on student achievement and learning outcomes, students selected as tutors are required to understand the quality or standard of learning outputs that must be achieved because a tutor is trusted to evaluate the tutee's understanding; (b) Designing learning programmes containing learning activity plans, learning plans according to feedback, and treatment given in the learning process; (c) Monitoring; (d) Evaluation. The procedure for implementing PT is also explained in Tullis & Goldstone's (2020) research as follows: (a) Providing questions by the educator; (b) Students answer these questions independently; (c) Students discuss questions with their peers. The study also proved that PT had a positive impact on improving learning accuracy and increasing self-confidence.

Cognitive Style

Cognitive style is a difference in individual abilities in thinking, problem solving and receiving and processing information (Marjuwita et al., 2020). Through the analysis of cognitive style learning variables, information on cognitive processes and student learning processes can be known as a consideration for selecting learning models (Cintamulya et al., 2019; Salwah et al., 2020). Cognitive style is one of the characteristic dimensions that can inform different thinking processes and problem solving in exact sciences (Setyana et al., 2019; Cahyono et al., 2019), which is relevant to the analysis of the application of learning

models with different cognitive styles in construction cost estimation subjects. In addition, cognitive style is also one of the psychological aspects that contribute to improving student learning outcomes in understanding exact sciences (Saputra et al., 2018).

In this study, the analysis was conducted on the type of cognitive style of psychological aspects, namely field dependent (FD) and field independent (FI) from several other types of cognitive styles that can be known from the cognitive style test Group Embedded Figure Test (GEFT) because it has a high level of relevance to education and has been widely applied in the world of education (Susandi et al., 2019). In the exact sciences, the characteristics of students with FD cognitive style tend to take longer in problem solving because of the difficulty in processing information to meet the indicators of problem solving, while students with FI cognitive style have the ability to meet the indicators of problem solving with a shorter time with the ability to process information better although there are still some errors (Setyana et al., 2019; Susandi et al., 2019; Panjaitan, 2018).

Construction Cost Estimation Learning Outcomes

Learning outcomes are achievements obtained by students after the learning process which represents the quality of the learning process related to the absorption of material by students as indicated by test scores given by teachers which are influenced by internal and external factors (Eriyanto et al., 2021; Sihotang et al., 2020). Learning outcomes are also defined as students' abilities in the form of behavioural changes obtained from the learning process which are classified based on Bloom's Taxonomy theory into three domains, namely cognitive, affective, and psychomotor (Ashary et al., 2023). In this study, the learning outcomes of construction cost estimation are focused on the learning outcomes of the cognitive domain. Cognitive learning outcomes are learning outcomes that focus on mastering concepts to solve everyday life problems by emphasising thinking skills, application of learned knowledge, interpretation, analogy, and creating ideas (Ilma et al., 2022).

In exact sciences, cognitive learning outcomes play a role in developing students' character and thinking skills. In construction cost estimation learning, learning outcomes are limited to the aspects of remembering, understanding, and applying construction knowledge including labour and material cost estimates (Idan & Dheyab, 2019). Results that have reached the minimum criteria indicate that learning has been achieved optimally, otherwise if there are still weaknesses in learning activities, low learning outcomes will be obtained (Adijaya et al., 2022). This happens because of the relationship between learning outcomes and learning activities so that the application of effective and innovative learning models is needed to improve learning activities and outcomes (Baziat et al., 2024).

Conceptual Framework

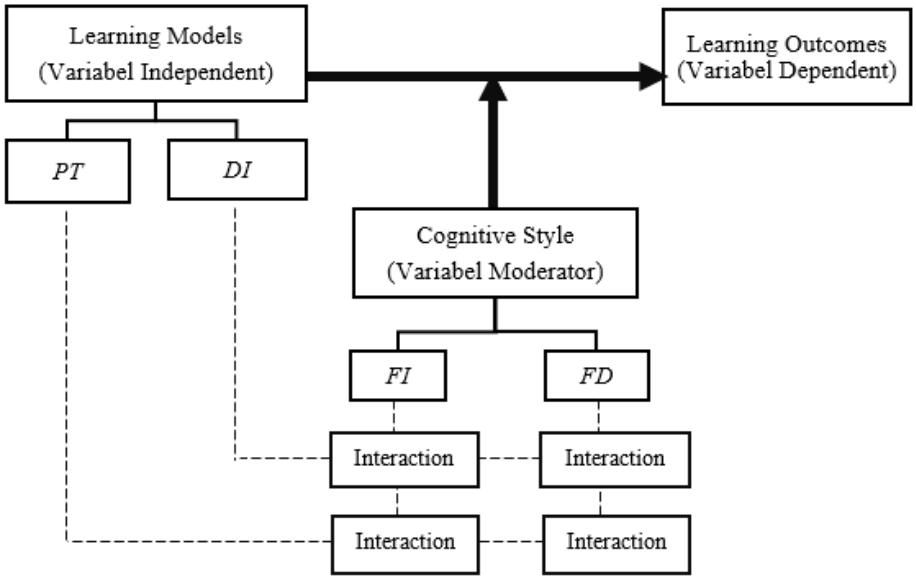

Figure 1: Conceptual Framework

Based on the literature study, the author argues that the application of learning models, which in this study focuses on PT, affects student learning outcomes. The correlation of the two variables is also influenced by moderator variables in the form of psychology of students' cognitive styles that are relevant to the field of education. The influence of the moderator variable is likely to increase learning outcomes or cause a decrease in learning outcomes after the implementation of PT. For this reason, it is necessary to conduct further analysis to determine whether or not there is an interaction between the learning model variables and cognitive styles that have a significant effect.

Methodology

Quasi-experimental was chosen based on the subjects in the study that had been previously formed by the school, namely class XII building construction, sanitation, and maintenance (KGSP) 1, KGSP 2, and KGSP 3 where the subjects were not randomly selected to show the effect between interventions and outcomes with a Posttest-only design with nonequivalent groups, namely experimental research (X O1) using a control group (O2) which was reviewed from the pre-test results (Campbell & Satanley, 1966; Harris et al., 2006; Leatherdale, 2019).

Participants were taken from a population of 104 vocational high school students majoring in KGSP and 60 students were taken as samples.

Data Collection

In this study, the data taken after determining the sample is the data classification of students' cognitive style. This data was taken by giving the GEFT instrument by Witkin consisting of 25 cognitive questions divided into 7 questions for session 1 for simulation, 9 questions for session 2, and 9 questions for session 3 which were run within 19 minutes before learning began. Classification is based on the following score range:

Table 1: Cognitive Style Analyst Score Range

No.	Score	Cognitive Style
1	0-11	*Field Dependent*
2	12-18	*Field Independent*

After obtaining student cognitive style data, PT learning was carried out with Heating, Ventilation, and Air-Conditioning (HVAC) material in accordance with a validated lesson plan in the experimental class and Direct Instruction (DI) conventional learning model in the control class at the first meeting for 180 minutes and learning outcomes data were taken in both classes at the second meeting.

Data Analysis

Data learning outcomes of each class with differences in cognitive styles that have been collected then analysed with a two-way Anova approach through SPSS software that is widely used in factorial design with two independent variables to compare the effect of two variable factors with minimum error and efficient (Verma, 2013). Through two-way Anova also obtained information on the interaction of two independent variables that can only be obtained from cells with more than one subject (Verma, 2013).

Table 2: Factorial Variables 2x2

Learning Models \ Cognitive Style	Y_1	Y_2
X_1	X_1Y_1	X_1Y_2
X_2	X_2Y_1	X_2Y_2

From the two-way Anova analysis SPSS will produce a Significance value (Sig.) to interpret the hypothesis which if the Sig value. <0.05 H_a is accepted, H_0 is rejected, if Sig. > 0.05 H_a is rejected H_0 is accepted (Landau & Everitt, 2003; Verma, 2013). In the ANOVA study, the hypothesis of each factor and the interaction hypothesis were determined (Verma, 2013).

Table 3: Hypothesis

No.	Hypothesis null (H_0)	Hypothesis alternative (H_a)
1	There is no difference in learning outcomes between the control and experimental classes.	There is a difference in learning outcomes between the control and experimental classes.
2	There is no difference in learning outcomes between students with FI and FD cogitive styles	There are differences in learning outcomes between students with FI and FD cogitive styles
3	There is no interaction between learning model and students' cognitive style.	There is an interaction between learning model and students' cognitive style.

Result

The results of post-test analysis showed the value of Sig. 0.001 <0.05 which indicates that Ha is accepted and H0 is rejected with the interpretation that there are differences in learning outcomes between experimental and control classes, students with FI and FD cognitive styles, and there is an interaction between learning models and cognitive styles of students.

Table 4: Anova Results

Tests of Between-Subjects Effects					
Dependent Variable: Learning Outcomes					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	6595.430[a]	3	2198.477	5.285	.003
Intercept	337728.989	1	337728.989	811.898	.000
Model	5258.107	1	5258.107	12.640	.001
Characteristic	295.656	1	295.656	.711	.403
Model*Characteristic	498.107	1	498.107	1.197	.279
Error	23294.570	56	415.974		
Total	376450.000	60			
CorrectedTotal	29890.000	59			
a. R Squared = .221 (Adjusted R Squared = .179)					

The hypothesis of the accepted learning model factor is also evidenced by the superiority of the average value of learning outcomes of the experimental class compared to the control class of 85.147> 66.256 which shows a significant difference.

Table 5: Estimated Marginal Means Learning Model

1. Learning Model				
Dependent Variable: Learning Outcomes				
			95% Confidence Interval	
Learning Model	Mean	Std. Error	Lower Bound	Upper Bound
PT	85.147	3.757	77.620	92.674
DI	66.256	3.757	58.729	73.782

On the cognitive style factor, the existence of significant differences is also indicated by the average learning outcomes of FI students are superior compared to FD students with a value of 77.941 > 73, 462.

Table 6: Estimated Marginal Means Cognitive Style

2. Cognitive Style				
Dependent Variable: Learning Outcomes				
			95% Confidence Interval	
Cognitive Style	Mean	Std. Error	Lower Bound	Upper Bound
FI	77.941	3.498	70.934	84.948
FD	73.462	4.000	65.449	81.474

The accepted hypothesis on the interaction hypothesis is also reinforced by the Estimated Marginal Means graph which shows the lines intersect, which means there is an interaction between the learning model and cognitive style factors.

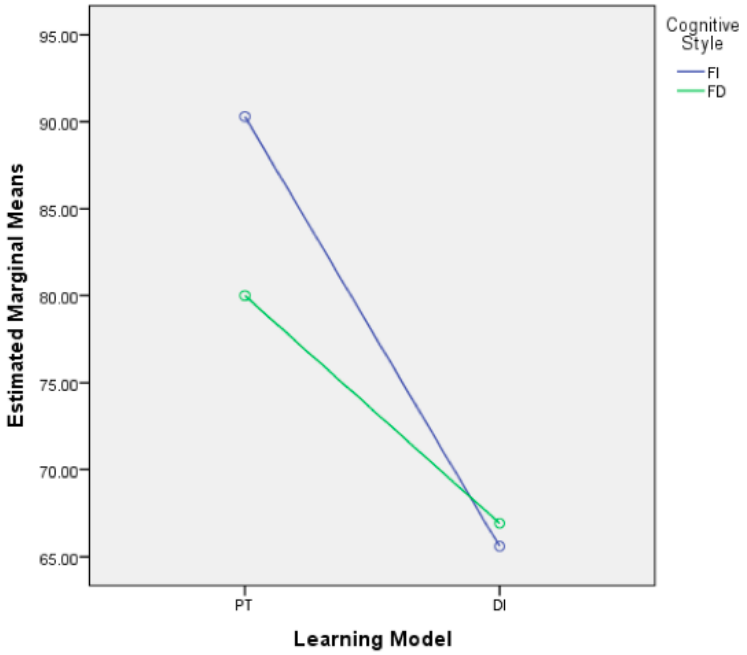

Figure 2: Estimated Marginal Means of Learning Outcomes

The interaction graph is translated by a Table 7 that shows the average learning outcomes of the experimental class with the PT model which shows a higher average than the control class with the DI model. The table also shows the difference in learning outcomes based on cognitive style which shows FI is superior in the experimental class and FD is superior in the control class.

Table 7: Estimated Marginal Means Learning Model*Cognitive Style

3. Learning Model * Cognitive Style					
Dependent Variable: Learning Outcomes					
Learning Model		Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
PT	FI	90.294	4.947	80.385	100.203
	FD	80.000	5.657	68.668	91.332
DI	FI	65.588	4.947	55.679	75.498
	FD	66.923	5.657	55.591	78.255

Discussion

The superior learning outcomes of the PT class indicate that both tutor and tutee students have a level of understanding of the material that is superior to DI class students because students are more free to explore their knowledge independently outside the learning process with the teacher and know their strengths and weaknesses through feedback from their peers to understand the learning material (Sukumaran and Dass, 2014). The running of learning activities by students in groups independently on construction cost estimation material occurs because the application of PT is able to improve students' metacognitive abilities to plan, monitor, and evaluate their own learning strategies so that students better understand the

learning material (Baltzersen, 2024). Metacognition is part of mathematical problem solving that helps students to formulate the right answer by identifying the problem that needs to be solved and determining the solution (Sutama et al., 2021).

In the implementation of PT, the improvement of metacognitive skills is obtained through the HVAC work calculation assignment activities in groups by planning the HVAC work description and materials, exchanging information related to the HVAC work volume calculation formulation, each group member monitors each other regarding the assignment indicators worked on, and evaluates the progress of the work that has been achieved between the tutor and tutee by checking the worksheet in Excel together. The implementation of learning is more effective by implementing PT which has a positive impact on both tutors and tutees compared to DI to improve student learning outcomes. Essiam et al. (2020) also mentioned in their research that PT has a positive impact on improving achievement and building student character. Dewantono & Murtisari (2023) also explained that the benefits received by tutees in the implementation of PT are increased evaluation skills from the feedback provided by tutors and students who are selected as tutors can also improve their understanding of the material through the delivery of material outlines to tutees.

However, in the experimental class there are still 5 students with learning outcomes below the standard which indicates that there is a need for intervention in the form of reviewing the implementation of learning, especially in the interaction between tutors and tutees in one group with the hope that tutors have an advantage in understanding the material to help tutees. Based on the results of previous research which states that interaction between tutors and tutees through discussion activities can improve tutee understanding which affects the achievement of learning outcomes (Tullis & Goldstone 2020; Safari et al., 2022). In addition to reviewing the interaction between tutors and tutees, another thing that needs to be considered is the quality of students selected as tutors who must meet the criteria of learning outcomes, ability to receive instructions from teachers, and good communication with classmates to achieve learning goals. The influence of tutor quality in the PT model is mentioned in Winterton et al.'s research, (2020) which states that suitable tutors are students with higher learning outcomes, have received or understood instructions from the teacher, and have good communication skills with their peers to create good relationships so that PT can run optimally. Not only the quality of tutors, tutees are also required to take initiative and be responsible for themselves in learning activities to achieve success and realise collaborative learning (Camayang & Bautis, 2020).

Based on cognitive style, PT is effectively applied to FI students as evidenced by the superior average post-test which is evidence that the selection of learning models that are in accordance with cognitive styles needs to be considered in learning activities to achieve learning success (Rezeki et al., 2020; Son et al., 2020; Surur et al., 2020). In the application of PT, students with FI cognitive style dominate learning in groups with a higher level of confidence in conveying the subject matter that has been understood to their peers in carrying out their role as tutors in tutoring activities which is able to improve their metacognitive abilities in planning, monitoring, and evaluating problems encountered in learning activities. Whereas in students with FD cognitive style, students still have difficulty solving problems in learning activities which are then assisted by peer tutors so that these students are able to catch up. In the control class, the average post-test results are superior obtained by FD students who tend to be in accordance with its characteristics, namely students need help from educators to explore their ability to learn material (Silma et al., 2024). For this reason, it can be said that cognitive style contributes to the implementation of PT which affects

learning outcomes (Sianturi et al., 2022). Students with FI cognitive style have the ability to solve problems more easily and quickly and have high confidence in carrying out their role both as tutors and tutees to make decisions and students with FD cognitive style who still have difficulty determining the formulation used to solve problems in solving construction cost estimation (Sutama et al., 2021).

In its application, it is known that the relationship between each learning model applied to the experimental class and the control class has an interaction with the cognitive style of students. In this case, cognitive style is not as a classification between the differences in the tendency of students to learning activities such as group and individual learning, but rather as an individual differentiator in receiving learning materials include reflection and impulsiveness, abstract attitudes and concrete attitudes, as well as dependence and independence (War & Kharbirymbai, 2024). In the control class (DI model), showed compatibility with FD cognitive style indicated by the superior average score that students need help from educators to prepare structured learning. Whereas in the experimental class, PT is able to reach both types of cognitive styles, namely FI who have the ability to think proactively so that they can easily understand the material which later these students will help and provide external reinforcement in the form of instructions to their peers or tutees or students with FD cognitive style. From the results of the interaction test between the learning model and cognitive style, it can be concluded that the PT model has suitability with material indicators and learning objectives of construction cost estimation that is effectively applied with different cognitive styles of students because of its characteristics that can reach all students with FI and FD cognitive styles. Nevertheless, in the experimental class there were still differences in learning outcomes between FI and FD students. For this reason, it is necessary to review the implementation of PT so that both different cognitive styles of students can achieve maximum learning outcomes.

Conclusion

Based on the results of research that has been known, there is a significant difference in learning outcomes between the experimental class with the PT model and the control class with the superiority of the average learning outcomes by the experimental class, there is a difference in learning outcomes between students with FI and FD cognitive styles with the superiority of the average learning outcomes by FI students, and there is an interaction between the learning model and the cognitive style of students who contribute to efforts to improve learning outcomes. So it can be concluded that PT is effectively applied to the learning of construction cost estimation that can improve student learning outcomes in cognitive style differences.

Acknowledgments

The authors would like to thank the Universitas Negeri Surabaya and SMK Negeri 5 Surabaya for supporting and participating in this research. Also thanks to other parties who have helped and motivated the author to prepare this research.

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Addressing Waste as an Educational Matter: The Remida in Reggio Emilia Case Study

Eloisa Di Rocco, Fondazione Reggio Children, Italy
Veronica Pacini-Ketchabaw, Western University, Canada

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
The large waste material generated by production systems is part of the environmental emergency affecting the planet. While governments address the issue in technical and mechanical ways, the humanities and ecological sciences question what pedagogies can support a paradigm shift in educational thinking and practices. New feminist materialisms put matter, care, and the concept of interdependence between humans and nonhumans at the center of the debate. This article proposes to consider waste as subject-material worthy of listening as a practice of care, analyzing the case study of Remida, a project part of the educational system of Reggio Emilia (Italy). The first part of this contribution presents the pedagogy of listening practice with children in Reggio Emilia schools, within which Remida's philosophy is situated. The second part examines the activities of the Remida Center between 2021 and 2023, using an ethnographic method. One of the two authors has been carrying out activities in the Remida Center for 12 years, consisting of collecting industrial waste material and proposing it not as an object to be used but as a co-constructor of the educational experience of children and adults. We use data from pedagogical documentation, literature, and direct experiences within the Remida Center. We show that a pedagogy of listening and care extended from children to waste materials helps to see waste as a subject worthy of respect and attention.

Keywords: Waste, Remida, Pedagogy of Listening

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Introduction

As recent studies described, waste greatly impacts global pollution, climate change, and the related loss of biodiversity (UNEP & ISWA, 2024), which will deliver today's children a difficult world. Seen only as a problem to be managed, governments mainly adopt technological solutions to increase the rate of waste recycling (Ureta, 2016). However, part of the solution remains educational and cultural.

We can learn about waste and *with* waste (Hird, 2012). Instead of recounting waste as dangerous or a problem to be solved, waste pedagogies ask what education is possible in a way where (children's) bodies and waste are inseparable.

This article proposes revisiting some waste materials experiences at the Remida Center in Reggio Emilia in light of waste pedagogies and feminist materialist vitalism that considers matter vibrant and active.

This article's discussion of waste as an educational subject is thus based on a theoretical framework that has two pillars:

(a) *Waste pedagogies and the new feminist materialism*
(b) *The pedagogy of listening*

In the first part, we present how waste pedagogies conceptualize waste materials in connection with other living and nonliving matter, as feminist materialist scholars Haraway, Tsing, and Bennett argue. In the second part, we present the pedagogy of listening, caring, and relationship as practiced with children in the early childhood centers and preschools of Reggio Emilia, within which Remida's philosophy is situated.

One of the authors, Di Rocco, has been working at the Remida Center since 2012 while the other author, Pacini-Ketchabaw, has known and frequented the Remida Center for a long time.

Consulting the pedagogical documentation produced at Remida, we noted many encounters between humans and matter in which listening and care play an important role in building new ways of living and learning *with* waste. Following a post-human and post-qualitative approach (Taylor & Hughes, 2016), we propose these ethnographic materials to highlight how matter can be active and not passive. And how the agency of discarded materials is a great educational opportunity.

Waste Pedagogies and New Feminist Materialism

Waste studies question the practices surrounding waste, such as recycling. They argue that waste is not automatically disgusting, harmful, or morally offensive and that the boundary between waste and products is socially constructed and part of larger economic systems (Liboiron & Lepawsky, 2022).

Waste studies aim to investigate these systems to understand how waste arises, offering a critical reading of the most common and normative notions of waste.

Instead of narrating waste as dangerous to children, or a problem to solve, waste pedagogies ask what education is possible in a way where (children's) bodies and waste are inseparable.

Inspired by philosopher Donna Haraway's imaginative Chtulucene theory (2016), which envisions a world in which the boundary between synthetic and natural is blurred and animal, plant, and robotic species blend to produce queer creatures, waste pedagogies also welcome waste among the collaborative and generative entities that help shape the world in which children live and learn.

Collaborative and empathic approaches can offer children a way to live with waste (Pacini-Ketchabaw & MacAlpine, 2022) starting with children's inescapable relationship with it. Our lives are inextricably entangled with the materials we produce, use, discard, and then try to manage (Davis, 2015). Matter is everywhere, outside and inside human bodies, and so is waste. Microplastics are in the air and oceans, the flesh of the fish we eat, and human breast milk (Ragusa et al., 2022).

We find it important to consider our relationship with matter and waste because they have an affective and agential nature. They react and transform (Tsing, 2014). They act on us. Waste materials are not static and inert (Bennett, 2010). Rather they transform and mutate, both independently and interdependently of humans.

Waste pedagogies aim to open our perception to human-waste relations so that we can respond thoughtfully and ethically to children's encounters with the vibrant life of waste.

Keeping in mind that "we can no longer separate our fleshy human bodies from synthetic polymer bodies" (Pacini-Ketchabaw & MacAlpine, 2022, p. 4), staying with the problem as feminist scholar Donna Haraway suggests (2016), creates the conditions for different and unexpected futures.

The new feminist materialism inherited the concept of the "common worldling" from Latour (2010) to overcome a binary view between human and nature, nature and culture, artificial and natural, with no boundaries even between humans and nonliving subjects. Therefore, objects can be fully active operators. Materialist thought upholds the principle of shared relational agency, whereby human beings never act alone, independently of the rest, because they depend on and are composed of all the other forces and life forms acting around them, and even inside their bodies (Haraway, 2017).

Many experiences that carry on the work of early childhood education with waste, draw on the posthumanist framework and the new materialism, placing matter, bodies, and their interdependence at the center of the debate. Scholars who embrace the posthumanist framework question the stewardship model of environmental education that underlies the most popular and traditional waste education programs (Cutter-Mackenzie-Knowles & Siegel, 2019), arguing that these must go beyond "habitual-behavioural approach as well as of a rational action approach" (Jørgensen et al., 2017, p. 2) such as simply respecting, cleaning up one's environment, recycling, and reusing waste.

A posthumanist perspective on waste proposes to move to a new model of education, in which nonhuman entities are recognized as co-actors and shapers of the world, and to conceive of matter as central to educational work with children, not for children to shape it but for matter to shape children.

The Pedagogy of Listening

The pedagogy of listening is one of the theoretical pillars of the educational philosophy called the Reggio Emilia approach, practiced in early childhood centers and preschools in Reggio Emilia (Italy). Inspired by philosopher Emmanuel Levinas' theory of Encounter with the Other (1989), listening is an attitude of openness necessary for knowledge construction (Giudici et al., 2011). The literature speaks of the need for sensitive and active listening to children, humans, and all living and nonliving subjects (Rinaldi, 2021).

The Reggio Emilia approach took shape after World War II, inspired by the thought of Dewey, Vygotsky, and Freire. It argues that listening is an àntidote to human authoritarian power because being open and sensitive to otherness allows one to perceive connections between entities far apart. Beginning with listening to children, considered by fascist schools and behavioral studies as empty vessels to be filled with information, the pedagogy of listening invites the decentralization of the competent adult through encounters with diversity, a condition necessary for a fair, democratic school, and free society (Dahlberg & Moss, 2004).

In light of Jane Bennet's new vitalist materialism (2010), we want to highlight those aspects of the Reggio Emilia approach that recognize the possibility of pedagogical listening to waste. Listening to waste might help us rethink our relationship with waste and the general role of matter in early childhood educational practices. Paying attention to waste might give us a better understanding of how matter is not dead but alive and active, constantly changing like every organic and nonorganic being.

Remida, the Creative Recycling Center of Reggio Emilia

This work proposes to address waste as a possible object of a pedagogy of listening, analyzing the Remida Center case study in Italy, a project part of the Reggio Emilia approach. One of the authors, Di Rocco, has been working at the Remida Center since 2012 while the other author, Pacini-Ketchabaw, has known and frequented the Remida Center for a long time.

Remida is an educational research center focused on industrial waste materials. Since its founding in 1996, Remida has collected materials classified as "waste" by industries, making them the subject of pedagogical, social, ethical, and cultural investigation through activities with children, teachers, researchers, and professionals.

Remida is a project of the Reggio Children Foundation, Iren, a waste management company, and the Municipality of Reggio Emilia.

Remida's materials come from local companies that dispose of waste, failed materials, stocks, or surplus production destined for disposal. They are new materials, arriving in large quantities and varieties. They are discarded because they are nonconforming, imperfect, and damaged. When something is no longer useful, it is thrown away and waste is sent to recycling or, for the most part, to the landfill.

In Remida you can find papers, plastics, metals, and textiles discarded from industrial production. They arrive without an identity or function, sometimes dirty and all mixed up.

Remida aims to transform this material from waste to intellectual matter (Gandini & Kaminsky, 2005). The goal is not to reuse materials by creating objects, but how it questions us and opens us to ecological reflection. Materials are not there for the use and consumption of people, to perpetuate consumerist logic, instead, they are seen as subjects to be listened to, cared for, and given attention to.

Through investigating materials, Remida's philosophy has developed an idea of waste as a *matter of care* (Puig de La Bellacasa, 2017), rather than useless things to upcycle and be used.

Two Children Encounter a Waste Cardboard Box

The Reggio Emilia approach uses a methodology of observation and analysis called pedagogical documentation (Giudici et al., 2011). Over nearly 30 years, Remida documented hundreds of encounters between waste materials, students, and educators of all ages, nationalities, cultural backgrounds, and geographical origins. And also between human beings, other living things, and natural phenomena. Using this method at Remida we participated in many encounters between humans and matter in which listening and care played an important role.

Sticking to a posthuman and post-qualitative approach (Taylor & Hughes, 2016), we examined this documentation trying to resist the temptation to focus only on the human aspect (Pacini-Ketchabaw et al., 2024).

Adopting an ethnographic method, we chose an experience documented by one of the authors, to support our thesis. Namely, that matter is not passive, it acts on the environment and us, and listening to the agency of matter is a great educational opportunity.

Figure 1: Two Children in the Remida Center. Photo by Eloisa Di Rocco
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In Figure 1, two children from a Reggio Emilia municipal preschool are in Remida. During an activity with paper, the two want to make a hole in a cardboard box with a hole puncher. The task seems difficult. The two children are decided not to be given help. No teacher intervenes in this moment of mutual acquaintance. The reason is not because there is a technical problem to solve that we, as adults, choose to let the children solve. Rather, it is because in front of us, we see a valuable opportunity for both children and adults, to know what relationships of mutual force and agency bind together humans and matter. The cardboard of the box is strong; it resists the children's will to make the hole. The children are active toward the material but the material is also active toward the two children.

The girl and the boy eventually give up making the hole in the cardboard. We do not consider it a defeat, an accident, or a mistake. On the contrary, it is an opportunity to learn that humans have limits and that matter has a force that acts despite humans.

Children learn from the environment and others because they know that there is much to learn from everything around them: from human and nonhuman beings. “Children are the greatest ‘listeners’ to the reality around them,” writes pedagogist Carla Rinaldi, “children listen to life in all its forms and colors, and listen to others” (Giudici et al., 2011, p. 82).

Examples like this make it clear that it is not only humans who act on matter and that the boundary between agent and acted-upon subject is often blurred and dynamic. But connections and boundaries need to be listened to.

Conclusion

Matter is vibrant and active. We live, mutually concerning matter, in a relationship of interdependence. The agentivity of matter is visible if we listen to what matter has to say. The dimension of listening is the opposite of the will to manipulate, use, and exploit; operations that turn matter into waste and pollution.

Rethinking waste in education through a pedagogy of listening makes it possible to consider waste not as a *matter of concern* but as a *matter of care* (Puig de La Bellacasa, 2017), thus worthy of attention and possible co-constructors of the educational experience. Looking at and thinking about waste as an educational matter can corroborate a culture of imperfection and limit, and, at the same time, resist the binarisms of Western schooling (living-nonliving, human-matter, object-subject, product and waste, useful and useless).

The pedagogy of listening applied to matter is a pedagogy that enlightens relationships and connections. Encountering the otherness can help us coexist with all presences and life forms on the planet, to learn and construct a collective and multispecies knowledge, with all material presences, including waste.

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Contact email: e.dirocco@remida.org

The Unspoken Voices: Access to Food Choices and Implications Among International Graduate Students at the University of British Columbia

Momodou Barry, University of British Columbia, Canada

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
The number of international graduate students enrolled at Canadian universities has continuously increased, indicating the importance of their cultural and economic contributions. The difficulties international graduate students encounter in obtaining food, which have an impact on their academic performance and general well-being, have received little attention. This study investigates how University of British Columbia (UBC) international students see food access and how it affects their academic experience. Six qualitative interviews with international graduate students at UBC were conducted. The research found that finding food acceptable for one's culture to be a challenge, and logistical issues, including time limits, underemployment, and lack of family support, can make it difficult to access food choices. It was discovered that these issues have a negative impact on these students' health and academic performance, emphasizing a crucial area for action. The results highlight the necessity for Canadian governments and academic institutions to acknowledge and tackle the food access difficulties encountered by international graduate students. Improving this student population's access to reasonably priced, culturally relevant food choices might significantly impact their well-being and academic performance.

Keywords: Academic Performance, Canada, Food Choices, International Graduate Students, Qualitative Research, Ethnography

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1. Introduction

Enrollment of international university students is increasing across Canadian university campuses since they find Canada an appealing destination to complete their overseas education since completion from a Canadian university offers a road to permanent residency. According to UBC Annual Enrolment Report 2022/23, it has seen an increasing number of international students, from 13,712 in 2018/19 to 15,149 in 2022/23 for the Vancouver campus (University of British Columbia, 2023) see Figure 1. According to Singer (2024) and Torontosun (2024), 355,000 international students in Canada were granted permanent residency status in 2021–2023, which fueled economic expansion by bringing in new consumers and labor. At the beginning of 2020, Canada benefited from over $22 billion economically, with over 640,000 international university students contributing annually, supporting around 170,000 economic jobs (Anderson, 2015; El-Assal & Thevenot, 2020; Government of Canada, 2019). International university students pay a more significant amount of tuition than local students, significantly boosting Canadian universities' revenue streams (Guo & Guo, 2017).

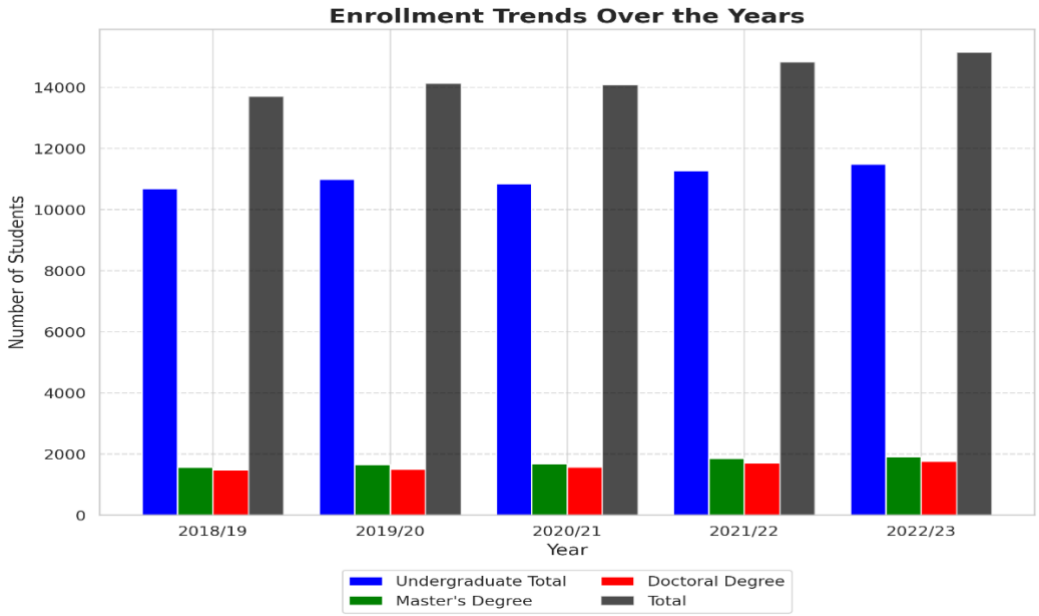

Figure 1: Enrollment Trends Over the Years

Regarding Canadian universities and the country's economy, international university students are economically significant but also face a high risk of not having access to their choice of foods (Aljaroudi, 2018; Mollaei, 2023). As defined by Eufic, “Food choice refers to how people decide on what to buy and eat” (Eufic, 2024). A multitude of factors influence food choices, which are intricate and influenced by biological factors like hunger, appetite, and taste; psychological factors like mood, stress, and guilt; physiological factors like access, education, and time; social factors like culture, family, and peers; and economic factors like cost, income, and availability. Food choices are also influenced by attitudes, convictions, and knowledge about food (Eufic, 2016). However, these factors may have differing effects depending on an individual's background, personality, social circles, and sociocultural standing. Financial limitations resulting from higher tuition costs for students (Shi et al., 2021; Tam et al., 2017) and limits on international university students' work hours are the unique factors influencing eating choices among international university students (Frank, 2018; Sanchez-Serra & Marconi, 2018). A research conducted at a large public university in

western Canada found that International students' access to food choices was caused by their inability to pay for costly tuition (J. J. Farahbakhsh, 2015; Hague et al., 2004; Xiao et al., 2018). Financial difficulties faced by international students were caused by several factors, such as little or no financial aid from their universities or families, expensive living and tuition cost. International university students had fewer ways to manage their dietary or food choices as compare to domestic students (J. Farahbakhsh et al., 2015; Hague et al., 2004).

International students' dietary choices are influenced by price, but other considerations are typically disregarded. Being entirely responsible for food choices for the first time can change eating patterns (Hilger et al., 2017; Martín Piñeiro, 2022; Papadaki et al., 2007). International university students in Canada, like other immigrants, may have trouble finding meals that meet their cultural and religious dietary constraints (Aljaroudi, 2018; Shi et al., 2021).

A lack of food choices can hurt international university students' academic performance, nutrition, physical and emotional health, and social lives. They struggle to meet basic requirements, worry about food shortages, can't study, and have trouble socializing (Bruening et al., 2017; Enriquez & Archila-Godinez, 2022; J. Farahbakhsh et al., 2015; J. J. Farahbakhsh, 2015; Lambert et al., 2019; C.-C. Lee et al., 2023; Lordly et al., 2021; Mhurchu et al., 2010; Morris et al., 2016; Ssali, 2019).

Therefore, it is crucial to conduct research on the experiences of international university students with access to food choices to help develop strategies to lessen the impact of limits on their access to food choices, as well as to improve the positive experiences of studying in Canada. We provide the answers to questions from qualitative interviews with international graduate students who face difficulties accessing food choices. The questions addressed (a) challenges in accessing food choices and (b) consequences of limited access to food choices on the university experience.

2. Methods

2.1. Study Design

This qualitative descriptive study of access to food choices among international graduate students took place at the UBC, Canada. The goal of qualitative descriptive studies is to present an in-depth account of events in the everyday language of those events; this design was appropriate for obtaining direct and useful insights from international graduate students about food choices that higher education policy makers can utilise without requiring extensive interpretive intervention (Major, 2023; Sandelowski, 2000).

2.2. Participants

This study recruited international graduate students through friends, classmates, and other personal connections who indicated their willingness to participate in individual interviews about their experiences with access to food choices. The given emails were used to get in touch with consenting participants to ask them to confirm their willingness to participate. To be included in the study, participants had to (a) be an international graduate student enrolled in the UBC, and (b) lives in British Columbia without relatives.

2.3. Data Collection

Individual, semi-structured interviews were used to gather data about the perspectives of international graduate students experience with access to food choices. The interview guide was created by the larger body of literature on the subject. 6 international graduates were selected using convenience sampling, and the interview questions were then pilot tested with them; this procedure made it easier to see any limitations on the interview questions and to understand how participants may understand and respond the questions (Creswell, 2019). Graduate students were selected since this was the level of study where most international students attempting to get access to food choices were enrolled. Small editing adjustments and improvements were made in response to these pilot interviews to enhance the interview questions' readability, clarity, and order.

The study also included an ethnographic approach in addition to semi-structured interviews to capture the complex, day-to-day experiences of foreign graduate students with relation to their dietary choices. To supplement the interview data with rich, contextual insights into the participants' actual experiences, this comprised observational sessions and casual encounters with the participants in both university settings and their houses (Ariell, 2023; Conde-Caballero et al., 2021).

The participants were asked the following questions that were modified from previous studies (Aljaroudi, 2018; Aljaroudi et al., 2019; Bessey et al., 2020; Lambert et al., 2019; Shi et al., 2024; Xiao et al., 2018).

a) Challenges in accessing food choices
b) Consequences of limited access to food choices on the university experience

Five of the participants in the study were given an individual meeting in a private location on campus in March 2024 by the researcher, who was also an international graduate student at the time the study was done. One of the participants interviewed was done in an ethnography way. Participants were encouraged to answer the topics in greater detail by using prompts and probing questions. The interviews took place between 20 and 40 minutes, were audio recorded, and were verbatim transcribed. For descriptive reasons, sociodemographic and educational information (e.g. student status) was gathered. To maintain anonymity, identifying information (such as name, ethnicity, country of origin, etc.) was removed. There was no compensation made to participants for their participation. Prior to the collection of data, participants provided signed and informed consent.

3. Data Analysis

Descriptive statistics were used to describe the participants' sociodemographic and educational characteristics. Conventional content analysis was utilised to do qualitative data analysis at the manifest level (Lindgren et al., 2020). Data were gathered over the course of a week, and processing didn't stop until the data was saturated. When the study produced no new categories, data saturation was deemed to have been reached (Bremnes et al., 2018; Klassen et al., 2012). An inductive approach was used to identify and categorise terms and expressions pertaining to obstacles in obtaining food choices and their effects on the university experience. The complete data set was then subjected to improved codes, with new codes being created repeatedly as needed. Afterwards, comparable codes were divided into groups, which were then examined and combined. Peer debriefing was implemented to

improve the data coding and analysis process's credibility (Holloway, n.d.; Ponterotto, 2015). For every category and subcategory, supporting quotations are included.

4. Results

The study involved 6 international graduate students, ages ranging from 27 to 39 years old, with an average age of 29.9. There were three male and three female. Students (60%) received funding from their families, research assistantships, or teaching assistantships. Students (20%) were financially supported by scholarships or bursaries and students (20%) from savings. African (n = 2), Asian (n = 2), European (n = 1), and Middle Eastern (n = 1) students were enrolled full-time. Each of the (n = 6) participants was enrolled in graduate school. Living with other people (n = 3), single (n = 3, not married, or cohabiting with a partner). Out of the three participants who were living with others, all of them (n = 3) did not live with family or relatives. The following lists the categories and subcategories that are associated with obstacles to obtaining access to food choice and the resulting effects on the university experience.

4.1. Challenges in Accessing Food Choices

Logistical challenges and acquiring food that is appropriate for one's culture were found to be the two primary types of obstacles to food choices. To ensure their access to food choices, students identified several logistical obstacles, including lack of family support, difficulties with underemployment or unemployment and time restraints. In addition, problems with acceptability, cost, and availability were linked to barriers to consistently obtaining culturally appropriate meals.

4.2. Logistical Challenges

4.2.1. Lack of Family Support

As the participants have expressed, the lack of family goes beyond providing logistical help and encompasses a more profound loss of culinary legacy and custom. The participant's attempts to reproduce traditional dinners provide a painful example of the emotional aspects of food access difficulties, as they are challenged with obstacles related to the availability of ingredients and culinary equipment. A participant expressed this idea by saying:

> “Without parents or other family members, it's just me. My schedule is so busy that I can't always make home-cooked meals, I miss its comfort. I'm on my own, figuring out how to live this path and accepting that fact.” (#2)

Some students mentioned that when they ran out of choices or needed help with some ingredients for meals, they want to prepare, it was difficult for them to get it because they didn't have family or close friends nearby.

> “Being away from home means that I don't have close family to turn to for help when I run out of supplies or require the ingredients for a particular a meal.” (#5)

4.2.2. Under-Employment/ Unemployment

Four participants said that finding work as an international student made it difficult to have access to food choices. They discovered that job possibilities frequently favoured those with Canadian citizenship or permanent residency, even after their student visa limits were eased to allow them to work more than 20 hours per week off-campus until April 2024. As an example:

> "I've been looking for a job anywhere and have been desperately looking for any way to get some money. Despite having a master's degree, it has been quite difficult for me as a foreign student to obtain work, even as a cleaner. I've been looking nonstop since coming here in September 2023, but it's been an uphill struggle. Regretfully, as a foreign student, I frequently get disregarded in favour of those who are citizens or permanent residents of Canada." (#1)

Talks about underemployment revealed not only financial limitations but also a feeling of dissatisfaction with the local labour market, which further complicated their access to food by preventing them from affording to try and buy ingredients that are specific to their culture and are frequently expensive.

4.2.3. Lack of Time

The accounts of hurriedly preparing meals expose a problem that goes beyond simple schedule issues; they underscore the decline in culinary skills and the acceptance of less-than-ideal food selections, prompted by the unrelenting demands of academic responsibilities. Time limits made it difficult for all six participants to get access to food choices. They mentioned how they spend most of their time to attend classes and study at the university because they are full-time students. They mentioned that there was not enough time to cook, which made it difficult for them to cook nutritious and culturally appropriate meals. When faced with time restrictions, all participants expressed a preference for quick and easy meals over traditional and culturally significant foods, which often needed more preparation time.

> "I found it to be really difficult since I came here in September. In every semester, I am busy because courses are from 9 am to 5 pm. I don't have enough time with this schedule to make meals the way I wanted them. I had to rely on eating my meal at the NEST during my lunch break." (#4)

> "Say, for example, I am always engaged with my studies due to the coursework load, so making a meal like kaldereta is a hard because it takes two hours or longer to prepare and giving it this much amount of time is intimidating as I have lot of schoolwork to do." (#6)

4.3. Appropriate Cultural Food Accessibility

According to the participants' accounts, the trip to specialty stores highlights the extent to which they go to obtain food that is appropriate for their culture. They face obstacles such as geographic and practical limitations, but also the harsh reality of price differences, which make these efforts to obtain food both financially and physically taxing.

4.3.1. Acceptability Issues

Three participants pointed out that the cuisine in Vancouver, Canada, is not the same as what they are used to from their home countries in terms of halal, quality, flavour, and aroma. Taste and Halal were significant factors in determining the food choices of the students; some chose not to eat local dishes that did not fit the halala and flavour profiles of their own regional cuisines (#3 and #5). The following quotations highlight these ideas:

> "I can't help but want the tastes of home-made meals not just the food per se, but also the way it's seasoned and cooked. Replicating those similar preferences is difficult in Vancouver. My appreciation of the cuisine is significantly impacted by the fact that its core is different here. It can affect my appetite and how much I eat if the flavour is absent." (#3)

> "I have noticed that a lot of the recipes here are made with non-halal meats like salami, ham, and bacon etc. or are prepare in the same pots with halal meats like beef or chicken. Halal dietary standards are violated by these ingredients. These components are frequently included in recipes for things like beef or chicken balls. This makes it difficult for me to follow my halal dietary rules." (#5)

4.3.2. Financial Stress

All six participants reported that finding foods that fit their cultural preferences was not difficult, but getting their hands on them was. They saw that these foods were far more expensive than what they would have paid in their countries. One of the participants stated:

> "The limited availability of culture food leads to the high cost as compared to conventional foods available in the stores. Therefore, it's difficult to afford the foods I am accustomed to." (#2)

4.3.3. Lack of Availability

Four participants encountered difficulties locating cultural food that are commonly found in grocery stores in their home countries. One of the participants said:

> "Even when I go to local markets in Vancouver, I can't find the food or the ingredients I am accustomed to cook my own food. For example, I can't find guinea pepper seeds, dry smoked fish, and cow foot etc. that I am accustomed to." (#3)

4.4 Effects of Limited Access to Food Choices on the University Experience

A participant's uncommon break from their regular lone eating habits sharing meals at home serves as a small-scale version of the larger obstacles to food access. It demonstrates how sharing meals with others not only lessens feelings of alienation from mainstream food culture but also briefly closes the distance to one's cultural origins.

Regarding the effects of limited food choices on the university experience, two groups were identified: (1) academic underachievement and (2) poor health. These included being unable to focus, absences from lectures and tests, and being in a poor physical, mental, and social condition.

4.4.1 Academic Underachievement

According to three participants, having trouble focusing during lectures, doing schoolwork, and performing well on tests was caused by their limited access to food. One of the participants said:

> "I find it difficult to concentrate in class when I'm upset about not being able to buy the food I truly want or the supplies to cook it. There are moments when I simply want to go out of here and find the meal, I'm craving somewhere else in town, but having classes and particularly during tests makes that impossible. I just eat whatever is around the university." (#1)

Two participants indicated that having limited access to food choices had a detrimental affect on their attendance at midterm examinations and in class. A participant said:

> "Getting holds of the food I need has proven difficult since my arrival, particularly halal choices. Sometimes I use the little ingredients I have at home to make meals instead of attending class since preparing those meals take long. I skip some test when I'm low on energy from not eating enough to think clearly because I know my scores will be terrible. At times, I'd prefer to go without food on campus rather than consume the same things." (#6)

4.4.2 Poor Health

The contrast between dining in a group and on one's alone provides insight into the emotional and social dimensions of food access. The companionship and laughter that surround a meal provide a striking contrast to the typical lonesome and frequently disappointing dining experiences, underscoring the complex relationship between food access and general well-being that extends beyond simple nutritional consumption.

4.4.3 Poor Mental Health

Four students brought up the psychological implications of not having access to food choices, including emotions of impatience, worry, rage, stress, and anxiety. A participant stated:

> "I find myself thinking about what to eat next every day starting from breakfast, lunch, and dinner. I was used to having a wide range of food choices available to me every day back home. Here, I must think ahead for both today and tomorrow at the same time, figuring out when I'll have time to cook and where to get the supplies. I occasionally must travel all the way to Richmond to shop for necessities at a Chinese store. It's late when I get back home, and I still have homework to finish. It's emotionally and psychologically exhausting." (#4)

4.4.4 Poor Physical Health

Two participants brought up the connection between their physical health and having limited access to food choices because sometimes even after eating some food, they still yearn for the food they are missing. One participant exclaimed:

> "Sometimes I eat just to stop feeling hungry, but even after I've eaten, I still feel like I need something more because the food didn't really give me what my body needs. But I must eat to survive, so I eat whatever's available. Then, a few hours later, I start feeling cold and weak, which tells me that what I ate didn't really do the trick, it's like my body's way of saying it needs something that it is used to." (#2)

4.4.5 Poor Social Condition

Two participants said that their inability to choose their food choices kept them from participating in day-to-day social activities, such as hanging out with their friends in restaurants or going sightseeing the city. One of the participants described going through a period of social withdrawal because of low energy:

> "My friends often appreciate the food that's served at restaurants even though I don't always like it, so I feel like the odd one out when I go out and socialise. For this reason, I frequently lack the energy to go out and meet new people." (#6)

5. Discussion

This qualitative study sheds light on food access barriers and their effects on international graduate students' university experiences in Canada. Financial insecurity is a key barrier to food access for overseas graduate students (C.-C. Lee et al., 2023; Shi et al., 2021, 2021). International graduates have financial hardship due to employers prioritizing citizens and permanent residents and employment issues, according to this survey. Canada allows only full-time international graduate students to work 20 hours per week without a work visa, but they can work full-time during school holidays. International graduate students with work permits can work off campus for more than 20 hours per week during regular academic sessions under a temporary governmental regulation from 11/15/2022 until 4/30/2024 (Canada, 2024). According to our interviews, the pilot programme, which allows students to work full-time during academic sessions, may significantly impact international graduate students' choices for food. By making this program permanent or eliminating it, employers may be less reluctant to hire full-time international graduate students. Due to the program's uncertain future, employers are cautious to hire international graduate students full-time. Clarifying the program's status may help these students get food by preventing them from being overlooked in favor of citizens or permanent residents. Consider how a full-time work may affect international graduate students' academic performance.It could interfere with their ability to sleep, study, and prepare healthful meals (Kamitewoko, 2021; Kwadzo, 2014).

Other than financial issues, international graduate students face non-financial barriers to food choices. University scheduling, schoolwork, and distance to food stores limit time to cook and acquire ingredients (Alakaam et al., 2015; O'Sullivan & Amirabdollahian, 2016; Shi et al., 2021; Shi & Allman-Farinelli, 2023). International graduate students eat less home-cooked cuisine and more convenience items than domestic students (Lee et al., 2018, 2018; Njambi, 2023). This research supports these findings and suggests that non-financial eating restrictions may affect overseas graduate students more. The first time they manage food-related obligations alone and live far from family and friends may affect their eating habits.

The study found that international graduate students struggled to follow dietary appropriateness, which balances food choices with cultural, religious, and ethnic preferences (Hingley, 2016; Khanna, 2022; Timiryanova, 2019). Due to dietary acculturation,

international graduate students, like many Canadian immigrants, may not be able to eat their sacred foods (Aljaroudi et al., 2019; Elshahat & Moffat, 2020; Zou et al., 2022), such as unfamiliarity with local cuisine and services (Brady & Chen, 2023; Griffith et al., 2016; Kim, 2017; Kirkpatrick & Tarasuk, 2010). Accessibility, time, affordability, convenience, and taste preferences are reasons international graduate students stick to typical diets. Religious and cultural upbringings often influence their tastes (Horacek & Betts, 1998; Yan & FitzPatrick, 2016). This study found that students from Africa, Asia, and the Middle East had problems finding indigenous cuisine; some had to go significant distances on public transportation to find them. These findings make it crucial to provide international graduate students with food choices, especially culturally significant traditional food. This method can substantially help their cultural adjustment (Amos & Lordly, 2014; Bista, 2017; Shi et al., 2021, 2024). To aid cultural adaptation, prior studies suggest educational institutions with international students to create social, cultural, and intellectual engagement programs (Rathakrishnan et al., 2021; Wu et al., 2015; Xu et al., 2022).

Lack of food choice hinders food access for recent immigrants in Canada (Berggreen-Clausen et al., 2022; Vahabi & Damba, 2013; Viola, 2022). The study shows how important it is to inform international graduates about the campus local food choices during orientations.

The participants admitted not knowing about the university's international student services such as intercultural, financial, and interpersonal support, and Canadian cuisine culture programs. All these could improve their access to a wider variety of food choices (Bruening et al., 2017; Cuy Castellanos & Holcomb, 2020; J. Farahbakhsh et al., 2017). Thus, international graduate students need support and programs to improve their health and well-being, including access to a range of cuisine. To promote, publicize, and customize these resources and services for these students, further steps may be needed.

In Canada, elements such as tuition fees, school schedules, and unemployment influence food choices (Entz et al., 2017; Hattangadi et al., 2019; Silverthorn, 2016). Many universities and colleges offer food banks and other charity resources for international graduate students. Several participants in the survey thanked the campus food bank for its variety. They also noted a major drawback: food banks may not contain culturally appropriate items. Due to their reliance on donated goods, food banks cannot address the diverse cultural and ethnic needs of international graduate students. Since it ignores students' cultural preferences, this mismatch can affect food access choices (Bazerghi et al., 2016; Hattangadi et al., 2019; Oldroyd et al., 2022; Silverthorn, 2016).

International graduate students' limited access to food choices may have a negative impact on their academic performance (Aljaroudi, 2018). This study found that limited food choices hindered international graduate students' ability to study, pay attention in class, and do well on tests. Few food choice access caused much worse effects, disrupting academic performance (Leung et al., 2019; van Woerden et al., 2019). International graduate students may suffer from poor mental and physical health and high stress due to limited food choices (Aljaroudi et al., 2019; Lambert et al., 2019; Ssali, 2019; Xiao et al., 2018). Due to limited food choices and a growing fatigue with eating the same foods that are readily available, students skip meals, which is the root of these problems (Aljaroudi, 2018; Bessey et al., 2020; Lambert et al., 2019; Ssali, 2019). International graduate students in this study experienced severe physical and mental effects from having limited food choices. In addition to feeling irritated from hunger, they also reported having low energy. They said that having little funds caused them to experience psychological suffering, such as tension and anxiety, which might

worsen issues with their academic performance. These results show that limited access to food choices has a negative effect on one's physical and mental health as well as contributing to continuous stress related to the cost and accessibility of culturally appropriate food.

Through semi-structured interviews and ethnographic methods, international graduate students' food choice access issues are illuminated. Undergraduate students' perspectives were excluded because the study only involved international graduate students and one university. The findings may not apply to different academic settings or adequately represent the experiences of all international students. Our findings are based on the sample's perceptions, as with any qualitative study. In structuring this research, the study aimed to examine how limited food choices affect academic performance, which may have overlooked other important effects on international graduate students. Despite these shortcomings, the study is based on real-life experiences of international graduate students who freely discussed consequences beyond academic accomplishment and their overall well-being. These first-hand stories are crucial to the creation or improvement of university, provincial, and federal food choice access programs.

6. Conclusions

Acknowledging the significant contributions that international graduate students make to Canadian campuses, universities have a social responsibility to assist their success. The contributions come in two types: non-financial such as encouraging cross-cultural interchange and diversity leading to internationalization and financial such as covering living and tuition costs (El Masri, 2020; McCartney, 2021; Sabzalieva, 2021). This study shows that international graduate students face specific non-financial and financial access food choice constraints. Due to the lack of culturally appropriate cuisine, its cost, and its time, their academic performance and health negatively impacted. An environment on campus with a variety of affordable, culturally appropriate food choices may improve student satisfaction, eating habits, and overall welfare, which would boost academic performance. University actions for international graduate students may solve these issues. This might be done by setting up campus communal kitchens and hosting free workshops on cooking with Canadian cooks who demonstrate how to cook cultural cuisines.

It might be beneficial to make information easily accessible about cultural food businesses and services in the city or inviting some of those businesses to open stores on campus. Enacting policy modifications to reduce barriers to food access, such as reducing variable tuition fees for international students, offering affordable housing choices, and broadening the requirements for Canadian scholarship eligibility since most of the scholarships available are for Canadian permanent residency holders and citizens. Such programmes might not only boost the number of international students who pay for their tuition, but they could also advance social justice (El Masri, 2020; McCartney, 2021; Sabzalieva, 2021).

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Contact email: momodoubarry1994@gmail.com

Strategic Innovation to Enhance Kurikulum Merdeka at Universitas Multimedia Nusantara Indonesia Through E-learning Content Production

Annita, Universitas Multimedia Nusantara, Indonesia
Natalia Depita, Universitas Multimedia Nusantara, Indonesia

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
E-learning Content Production (ECP) is an elective course the Film Department at Universitas Multimedia Nusantara (UMN) offers. Students learn to develop asynchronous content for academic and non-academic purposes. This research aims to develop the course's strategies to enhance the implementation of Kurikulum Merdeka at UMN. Kurikulum Merdeka, initiated by the Indonesian Ministry of Education, is a curriculum designed to have learner-centered principles, contextual, essential, accountable, and involve various stakeholders. The research question focuses on how the ECP enhances Kurikulum Merdeka at UMN. This course specifically teaches students how to create, produce, and manage asynchronous content while aligning it with the principles of Kurikulum Merdeka. This descriptive study employs a case study approach to explore ECP. The data is gathered through class observation and analysis of alpha and beta tests of the asynchronous content. This course provides numerous benefits for both students and teachers. In addition to acquiring knowledge and skills in asynchronous material production, students can collaborate with teachers, share the project's copyright, and fulfill academic and non-academic requirements. Teachers can use the project as asynchronous class materials and engage in collaborative research with students. The study shows that collaborative work between students as creators and teachers as guides/users encourages the creative results of asynchronous content that accommodates the needs of the subjects created and innovative aspects of learning.

Keywords: E-learning, Applied Teaching and Learning Strategies, Asynchronous, Kurikulum Merdeka

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Introduction

The implementation of Kurikulum Merdeka, initiated by the Indonesian Ministry of Education in 2022, has dramatically impacted Indonesia's education system (Sarnoto et al., 2022). This curriculum is targeted to enhance the learners' quality, skill, and knowledge. Apart from its promising perks, educational institutions in the country face many challenges when applying it. One of the significant challenges is the adjustment toward allocating 20 credits of Merdeka Belajar Kampus Merdeka (MBKM) content. MBKM has to be a part of a university program that implements student-centered learning aimed at credible and noble students' characters (Setiawan & Suwandi, 2022). MBKM has several programs that students can choose such as internships, independent study, teaching campus, Indonesian International Student Mobility Awards (IISMA), humanitarian projects, entrepreneurship, rural development/thematic community services, and student exchange (International Program Industrial Engineering, n.d.)—replacing 20 credits out of the significant curriculum consequently resulting in the elimination of essential courses, which might create critical gaps in students' knowledge and skill (Kusumo et al., 2022; Pakpahan et al., 2023; Prakoso et al., 2023; Pratikno et al., 2022). This study aims to develop strategic innovations to enhance the implementation of Kurikulum Merdeka at Universitas Multimedia Nusantara (UMN) through the production of e-learning content. Students produce the content by collaborating with lecturers, assisted by the Learning Center Department of UMN. All the students participate in the Elearning Content Production class, an elective course provided by the Film Department of UMN. This course is the answer to the various needs of the university's asynchronous material, applying the MBKM curriculum and the needs of students to earn student activity credits.

Since its implementation in 2022, Kurikulum Merdeka has significantly impacted the Indonesian education system. The demand to build an Industry 4.0 community pushes the students to master technology (Erstad & Voogt, 2018; Student Affairs Universitas Multimedia Nusantara, 2023). Students must acquire various skills and knowledge needed in the Industrial Revolution (Wahyuni et al., 2023). Educational institutions must change their curricula from teacher-centered to learner-oriented to implement the Kurikulum Merdeka. However, this shift comes with its challenges because of the need for familiarity, support, and facilities (Fazis & Febrian, 2023; Matsuyama et al., 2019; Singh et al., 2005; Wahyuni et al., 2023).

To answer this challenge, the writers developed an innovative elective class called E-learning Content Production (ECP) for the Film Department of UMN. This class teaches students to create, produce, and manage asynchronous content. This class collaborates with the UMN Learning Center Department. In this class, students work in groups supervised by assigned teachers, who will give them the syllabus of designated courses that will be turned into asynchronous content. After the midterm test, the materials will be developed and produced starting week 8. Students will chunk out the materials and turn them into reading materials, learning videos, quizzes, discussion forums, and assignments. This class integrates e-learning and collaborative learning practices to produce asynchronous modules for other courses needed (Lam et al., 2010; Ngai et al., 2019).

Besides getting the skill and knowledge to produce asynchronous materials, students will also benefit by getting points for student activity (Satuan Kredit Kegiatan Mahasiswa or SKKM). During their study at UMN, students are required to fulfill student activity points. SKKM aims to prepare students' soft skills to work in the industry. Specifically, this research prepares students to perform in the film industry. Each student is required to fulfill 20 SKKM

points, which are divided into four fields:

1. Academic Activities
2. Extracurricular Activities
3. Community Service
4. Organization and Personality Development (Student Affairs Universitas Multimedia Nusantara, 2023)

Students will earn academic points by participating in this class. This could happen because the students develop and produce asynchronous material during the E-learning Content Production Class. The asynchronous material is then registered as intellectual property rights.

This research aims to enhance the implementation of the Kurikulum Merdeka at UMN by developing effective strategies for its implementation. The methods include exploring and utilizing the ECP as a course that teaches students to produce asynchronous modules. In this class, they learn to understand the context of the subject to be made and discuss the plan with the PIC assigned and supervised by the ECP teacher.

Research Question

How does E-learning Content Production enhance Kurikulum Merdeka at Universitas Multimedia Nusantara Indonesia?

The research will focus on the class observations and analysis of alpha and beta tests of asynchronous modules produced by ECP students. The study was conducted during the even semester of the 2023/2024 academic year. There were two classes of ECP with a total of 66 students who worked on ten projects (8 courses and two modules for Health and Safety Environment). A comprehensive overview of the ECP and its relevance to Kurikulum Merdeka will also be discussed.

Research Method

The research employs a case study approach to explore ECP. The data is gathered through class observation and analysis of alpha and beta tests of the asynchronous content. ECP was conducted during the even semester of the 2023/2024 academic year, starting 29 January – 31 May 2024. There were two classes, with 33 students enrolled in each class. From the first to seventh meetings, the teacher taught about the history of distance learning and theories about asynchronous learning. Before the midterm test, students learned how to do asynchronous modules, which included chunking the materials, designing the modules, and turning them into reading text, videos, quizzes, discussion forums, and assignments. After the midterm test, students were divided into groups of 3-5 and assigned to produce asynchronous modules for ten selected courses. After all modules were completed, alpha and beta tests were conducted. The alpha test was conducted in week 12, while the beta test was conducted in week 14. The alpha test evaluated initial functions and content appropriateness to the materials. The beta test was to assess user experience and readiness for implementation.

Result

The output of this course is 20 asynchronous modules, which 20 groups of ECP students produce. The modules are as follows:

Table 1: List of Modules and PIC

No	Modules	PIC	Language	Class	Group
1	Campus dress code	Student service officer	Indonesia	A	1
2	Polite greetings	Bahasa Indonesia lecturer	Indonesia	A	2
3	AR634 Project Management: Week 2	Architectural lecturer	Indonesia	A	3
4	AR634 Project Management: Week 10	Architectural lecturer	Indonesia	A	4
5	DKV 104 Photography Principles	Visual Communication Design lecturer	English	A	5
6	FG 141 Research Methodology: Artistic Research Method	Film lecturer	Indonesia	A	6
7	FG 141 Research Methodology: Creative Process	Film lecturer	Indonesia	A	7
8	FM 632 Indonesia Film History: Narrative film in Java 1920 - 1942	Film lecturer	Indonesia	A	8
9	FM 632 Indonesia Film History: Japanese Propaganda Films in the Archipelago 1942-1945	Film lecturer	Indonesia	A	9
10	ARS 543 Advanced Computational Design	Visual Communication Design lecturer	Indonesia	A	10
11	ID 401 2D-3D Assets: Character Design	Visual Communication Design lecturer	English	B	1
12	ID 301 Interactivity: Digital Game	Visual Communication Design lecturer	English	B	2
13	FIL632 Intro to Moving Image Production in Film: Time Management for Film Productions	Film lecturer	Indonesia	B	3
14	FIL632 Intro to Moving Image Production in Film: Timeline & Budget for Film Productions	Film lecturer	Indonesia	B	4
15	DKV310 Visual Communication Design 2: Layout and Grid for Design	Visual Communication Design lecturer	English	B	5
16	FG211 Color Theory and Design Principles	Film lecturer	Indonesia	B	6
17	DKV 214 Creativity Theory: Scope of Creativity	Visual Communication Design lecturer	English	B	7
18	DKV 810 Seminar: Presentation Manner	Visual Communication Design lecturer	English	B	8
19	FG 622 Visual Development: Basics of Global & Indonesian Architectural Styles	Film lecturer	Indonesia	B	9
20	Health and Safety Environment for Shooting. Micro Sleep / Safety Riding Procedure.	Film lecturer	Indonesia	B	10

Every group uploaded and arranged the modules to training center.umn.ac.id, a Moodle-based platform provided by the Learning Center Department. Each module comprises reading material, a learning video, a quiz, a discussion forum, and an assignment. Each video should be at most 10 minutes. When they managed the module in the platform, every group was assigned a teacher role.

Each group pitched its concept to the assigned PIC, who were lecturers who taught the courses. Students were given the freedom to create their ideas for their videos. They could use or combine animation, live-action, and typography to make the video. They had to get approval on the script and storyboard from the PIC before they could shoot the video.

Alpha Test

The alpha test was conducted in week 12. Students had to upload and arrange the modules in the platform (trainingcenter.umn.ac.id). After that, the ECP teacher sent the alpha test to the PIC of each group, which evaluated the content of the module. The PIC had to check the content of the modules and test the function. The example of the alpha test result is attached at the end of this article. The alpha test result was sent to the students and ECP teacher. If revisions were needed, students would revise the module within two weeks.

Beta Test

The beta test was to assess user experience and readiness for implementation. The test was conducted in week 14. Each group was assigned to evaluate two other groups. They would check the features and functions of the modules, ensure the modules worked adequately on different devices, and monitor how users interact with the modules (feature usage and completion of each task). They didn't check the security, bug, and technical issues since the university's IT department did that. After checking, students had to fill in the beta testing form. Students could check the results and make revisions if needed. The form is as follows: bit.ly/LCP_Beta_Test. The result is attached to the end of the article.

Figure 1: Example of Video Created by ECP Students

Figure 2: Example of Video Created by ECP Student

Figure 3: Example of Video Created by ECP Student

Figure 4: Example of Video Created by ECP Student

Discussion

1. **The need to enhance Kurikulum Merdeka**
   Implementing Kurikulum Merdeka at the university level has been challenging since it reduces 20 credits out of the core curriculum. The missing credits raised a big concern because students will need more skills and knowledge in film production. Thus, a way out is required to answer the problem. ECP is a project-based course in which students learn to produce asynchronous modules. To accomplish this, students must analyze the syllabus, chunk out the materials, and turn them into elements of the online module. After that, students also have to pitch their ideas to the PIC of each project, who acts as a "client." By doing so, students would learn the soft skills of communication and negotiation, which are essential in the film industry. Besides soft skills, students also learn hard skills such as producing, shooting, and editing educational videos. By doing this, students benefit from the course despite the fact that the curriculum has been reduced to fit in Kurikulum Merdeka.

2. **Strategic innovation to implement Kurikulum Merdeka and fulfill academic and non-academic requirements**
   The concept of Kurikulum Merdeka is that students can learn whatever they like. Thus, this course is designed to be project-based. It is a 3-credit course in which students produce a set of asynchronous modules that include videos, reading materials, quizzes, discussion forums, and assignments. Both students and teachers (PIC and ECP teachers) share the copyrights of the videos. These copyrights benefit both sides. Students can claim them as SKKM points (non-academic activities), whereas lecturers can claim the required academic workload.

Conclusion

E-learning Content Production is an elective course the Film Department offers to answer Kurikulum Merdeka. This course helps students gain skills and knowledge in producing asynchronous modules. Students also own copyrights and get the non-academic credit points (SKKM) they need for graduation requirements. Teachers also benefit from this course. The ECP lecturer and the PIC assigned for each group also co-own the copyrights to the material. These help them fulfill their required academic workload.

For further research, there are some suggestions as follows:

1. Effectiveness of asynchronous materials produced by E-learning Content Production students
2. The impact of the non-academic credit points (SKKM) toward students' overall readiness for graduation, particularly in creative fields where content production is essential
3. The effect of the asynchronous modules toward faculty productivity and academic workload

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Contact email: annita@umn.ac.id

Human Resource Management Practices Towards the Performance of Teachers in the Province of Capiz

Paul Henry Bocboc, Archdiocese of Capiz, Philippines
Maria Aurora G. Victoriano, Capiz State University, Philippines

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
The study explored the human resource management practices and the performances of teachers among Catholic and Parochial Schools in the Province of Capiz as a basis for the development of an intervention program. The researcher assessed the demographic profile of the respondents, the human resource management practices, and the teachers' performance. The respondents of the study were composed of 170 teachers from 19 schools in the Capiz. The study employed a descriptive-correlational research design, and the survey questionnaire was utilized as the main tool for the gathering of data for the study. The research found that the human resource management practices in terms of job training, and supervision were very good, good in terms of motivation and engagement; human resource management practices in terms of engagement were significantly related to age and years of teaching experience, and job training and supervision were significantly related to highest educational attainment; human resource management practices in terms of job training, motivation, engagement, and supervision to the teachers' performance. The researcher recommended that school administrators through the HRDO and school heads to take consideration the need in providing assistance to teachers who want to pursue a postgraduate degree, providing support for necessary training programs, conducting supplemental activities for teachers to increase the motivation and engagement, investing on human resources in its retention and succession plans, and that other studies should also be conducted in the future to further explore other factors that are related to human resource management practices and teachers' performance.

Keywords: Human Resource, Management, Practices, Teachers, Performance

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Introduction

In most aspects of work, variation in performance is attributed to several factors. The school has a significant role in the performance of the teacher. Whatever the performance of the teacher becomes the performance of the school. The teacher is one of the main components that make education meaningful and productive. A teacher is a person who teaches, guides students, motivates them, tries to solve students' problems, and has the academic knowledge and skills of their profession. A democratic management giving importance to people is required to make teachers happy in their workplace, reveal their talents, actively use their potential, and meet organizational objectives. It is an essential duty of the school administration to merge corporate objectives with individual goals.

Educational organizations can adapt to today's conditions and develop only by equipping teachers with new skills and knowledge and managing administrations effectively. Various variables, such as teachers being happy, satisfied, motivated by their profession, motivation, and defining their personal needs and goals clearly, are all under the responsibility of HRM.

According to Noe et al. (2018), an organization performs best when all these practices are managed well. Employees and customers at schools with effective HRM tend to be more satisfied, and the companies tend to be more innovative, have greater productivity, and develop a more favorable reputation in the community.

With the sudden shift in the educational landscape brought by the COVID-19 pandemic, private schools have quickly ventured into the "unknown unknowns" as they strive to help their workforce adapt to and cope with radical changes occurring in the work-social environment. Teachers' school engagement has been affected due to limited face-to-face interaction among stakeholders and the skeletal workforce scheme. Moreover, teaching performance might be adjusted due to shelter-in-place orders and remote working conditions. This has likely further limited the segmentation between work and private spheres leading to more significant difficulties in "unplugging" from work demands Chawla et al. (2020).

Terhile et al. (2016) and Kiprop (2017), human resource management practices seem to be a new concept in the educational sector. These practices, if not considered by heads of senior high schools, can have daring consequences on management roles.

An educational institution's HRM practices encompass a range of activities, including recruitment, selection, training, performance appraisal, compensation, and employee relations. When aligned strategically with the institution's goals, these practices can enhance teacher motivation, job satisfaction, and, consequently, their performance. While a substantial body of research examines human resource management practices in various organizational contexts, the relationship between human resource management practices and teacher performance in educational settings remains an area with significant gaps in understanding. There is a need for a comprehensive investigation into the specific HRM practices that influence teacher performance and the mechanisms through which these practices exert their impact. As a result, understanding and implementing effective human resource management practices for teachers is vital for promoting professional growth, job satisfaction, and optimal performance. Hence, this study will be conducted.

Statement of the Problem

This study aimed to determine the human resource management practices and the performances of teachers among Catholic and Parochial Schools in the Province of Capiz with an end view of making a formal plan of remediation for the professional development of teachers.

Specifically, it seeks to answer the following questions:

1. What is the profile of the respondents in terms of:
   1.1 sex;
   1.2 age;
   1.3 years of teaching experience;
   1.4 highest educational attainment?
2. What is the level human resource management practices in terms of:
   2.1 job training;
   2.2 motivation;
   2.3 engagement;
   2.4 supervision?
3. What is the level of performance of the teachers?
4. Is there a significant relationship between the level of human resource management practices and the profile of the respondents?
5. Is there a significant relationship between human resource management practices and teachers' performance?
6. What enhancement program can be proposed based on the findings of the study?

Methodology

The study used the descriptive-correlational research design. This was used to determine the human resource management practices toward the teachers' performance. Descriptive research uses collected data to describe persons, settings, organizations, and phenomena to describe a particular population's present behavior or characteristics.

The respondents of the study were one hundred seventy (170) teachers of the different catholic and parochial schools in the province of Capiz, namely: Colegio de la Purisima Concepcion, St. Mary Academy of Capiz, St. Anthony College Hospital of Roxas, Our Lady of Grace Academy, College of St. John Roxas, University of Perpetual Help System, St. Pius X Seminary, Capiz Commercial Center, Parish School of St. Isidore High School Department, Parish School of St. Isidore Elementary Department, St. Catherine Academy, Our Lady of Snows Institute, St. Lawrence Parochial School, Our Lady of Mercy Institute, Child's Academy, Our Lady of Fatima Academy, St. Martin Academy, Our Lady Most Holy Rosary Academy, Nuestra Señora Del Pilar, and Sta. Monica Parochial School.

A Likert-type scale survey questionnaire adopted from the study of Obeng (2022) was used in the study. The instruments have three (3) parts. Part I dealt with the demographic profile of the respondents. Part II, on the other hand, dealt with human resource management practices as perceived by the teachers. Part III dealt with the data on the performance of the teachers.

Maximum care was used to ensure the anonymity and safety of the respondents. Respondents in this study were informed through informed consent of the anonymity of their identity about the goals of the study, and that they could skip questions or stop at any time.

Data collection for this study was guided by a descriptive strategy. The data collected were retrieved from quantitative instruments.

Permission to conduct the study was asked from the Catholic Schools Superintendent and/or their respective School Heads. After the approval of the study, the researcher created a timeline to conduct the study. Each school was visited, and respondents were invited to participate in the survey. The questionnaires were administered personally based on prepared schedules. After the administration of the questionnaire, they were retrieved, checked, tabulated, and analyzed.

In developing the output of the study in the proposed program, the human resources management practices towards the performance of the teachers were considered with the end-view of enhancing the human resource management practices, as well as the teachers' performance.

For a meaningful interpretation and analysis of the study, the data were subjected to the following statistical treatment such as frequency, percentage, mean, chi-square, and Pearson r Product Moment Correlation.

Results and Discussion

Profile of the Respondents

In terms of sex, majority of the respondents were female with a frequency of 107 and a percentage of 62.9%. Meanwhile, 63 teachers were male with a percentage of 37.1%. This interprets that most teachers were female. Until today, the teaching profession is still dominated by females. As to respondents' age; most of them were below 30 years old with a frequency of 123 and a percentage of 72.4% while 47 respondents were 30 years old and above, with a percentage of 27.6%. This interprets that most of the teachers who participated in this study are below 30 years old. Most of the teachers in private schools are young and newly graduated. After graduation, young teachers target the private school as their first training grounds for future employment with the public schools. In term of the years of teaching experience, it can be noted that most of them have been teaching for less than 3 years with a frequency of 98 and a percentage of 57.6%. This was followed by those who have been teaching for 3-10 years with a frequency of 46 or equivalent to 27.1 and the lowest frequency of 26 were teachers who have been teaching for more than 10 years with a percentage of 15.3% of the total number of selected respondents for the study. It interprets that most of the respondents have a teaching experience of less than 3 years. It is a general observation that the majority of the new teachers are hired by private institutions. They tend to settle for a while in the school despite the less competitive salary. In most case, only very few get to stay for longer years. Most contracts in private schools are good for a year or two. Most teachers after acquiring the required number of years of experience for employment with the public school where salaries and benefits are higher and job security are more guaranteed once they are hired. As to the respondents' highest educational attainment, it can be noted that most of them are college graduates only with a frequency of 122 and a percentage of 71.8%. This was followed by those who are at the master's level with a frequency of 34 or equivalent to 20%; next were teachers who are master's degree holders with 12 respondents or equivalent to 7.1%, and lastly, teachers who are in doctorate degree level with 2 respondents, equivalent to 1.2% of the total number of selected respondents for the study. It interprets that most of the respondents or teachers are college graduates only.

This is connected the two prior variables, age and years of experience. Since they are young and fresh from graduation college, most of these teachers are yet to enroll for post graduate studies.

Level of Human Resource Management Practices in Terms of Job Training

Based on the findings presented, with regards to the level of human resource management practices in terms of job training, the indicator “Seminars are frequently organized to update us on new developments” obtained the highest weighted mean of 4.35 with a standard deviation of 0.91 and verbally interpreted as “Very Good,” followed by the indicator “There is a defined process for orienting new employees” obtained the second to the highest weighted mean of 4.33 with a standard deviation of 0.86 and verbally interpreted as “Very Good.”

Meanwhile, the lowest indicators were “There is a well-structured approach to training staff” and “Promotes new staff to learn under experience ones to help develop their skills,” which obtained the lowest mean score of 4.29 with a standard deviation of 0.88 and 0.89, respectively, were verbally interpreted as “Very Good.” This interprets that the secondary schools implemented that their editorial heads or managers must qualify.

By recognizing teachers' roles as lifelong learners and assisting them in navigating the complexities of today's education, job training and ongoing professional development for teachers can improve student results and the effectiveness of the educational system as a whole.

Although organizing seminars is very challenging and time consuming, teachers receive opportunities to grow their knowledge, skills and expertise through regular workshops. This can enhance their classroom management techniques, subject knowledge, teaching methods in educational technologies and innovative approaches.

The result implies that frequent or regular training for teachers can be very helpful for career advancement and classroom performance. However, it must address challenges and make sure that seminars are aligned with the institution’s goals and needs of teachers as it is also crucial in the success of its implementation.

Ampoamah (2016) emphasized that training is essentially a learning experience, that aims at changing the skills, knowledge, attitudes or social behaviour of a person relatively constantly. This means that employees' abilities and expertise must be improved so that they can perform in both current and future jobs and tasks efficiently The results of this study agree with Sedega et al. (2019) who concluded that a majority of teachers viewed or rated INSET programs as adequate and very efficient in terms of teaching and learning. On the other hand, the majority of the leaders (70%) rejected teachers' claim that the INSET teaching and learning programs in the district were very effective.

Level of Human Resource Management Practices in Terms of Motivation?

As to the level of human resource management practices in terms of motivation, the indicator “Good performers are publicly recognized for their good work done" obtained the highest weighted mean of 4.29 with a standard deviation of 0.87 and verbally interpreted as "Very Good,” followed by the indicator “The institution has in place flexible working hours its

workforce" obtained the second to the highest weighted mean of 4.27 with a standard deviation of 0.96 and verbally interpreted as "Very Good." Meanwhile, the lowest indicator, "When employees are due for promotion, they are well communicated on what is expected of them," obtained the lowest mean score of 4.05 with a standard deviation of 0.97 and all were verbally interpreted as "Good."

Teachers who are motivated are more likely to put up the effort necessary to provide high-quality instruction. This kind of motivation have significant implication on the motivation of teachers as this can foster autonomy in their workplace, can reduce stress in balancing work commitments, building trusts to employees and can attract and retain talented individuals. Providing teachers appreciation for their accomplishments has a significant impact on their motivation. It improves their self-esteem and job while also reinforcing positive actions, encouraging ongoing growth, and fostering a pleasant workplace culture. As a result, the educational environment is more effective and interesting for both teachers and students.

The results of this study do not support the findings of Martin et. al. (2018) et. al. (2018) which indicated that human resource management practices were not highly effective as some areas needed management attention and enhancement. It further suggested that DepEd may improve the implementation of its teacher selection and staffing process, continue in investing in training and development, salary increase, implement an institutionalize Employee Assistance Program (EAP).

Levels of Human Resource Management Practices in Terms of Engagement?

The findings showed the level of human resource management practices in terms of engagement. Further, the indicator, "Employees effectively collaborate in the school," obtained the highest weighted mean score of 4.40 with a standard deviation of 0.82 and verbally interpreted as "Very Good," followed by the indicator "Employees have nominated staff who represent them in management meetings," obtained the second to the highest weighted mean score of 4.18 with a standard deviation of 0.90 and verbally interpreted as "Very Good." Meanwhile, the indicator "There are flexible means such as suggestion boxes where staff could channel their grievances or suggestion" obtained the lowest weighted mean score of 4.02 with a standard deviation of 1.03 and verbally interpreted as "Good."

The starting point that fosters productive, enriching, and helpful learning environments is teachers' participation. Engaged teachers help students have better learning experiences, and contribute to the institution's overall success. By building a good work environment, supporting shared goals, and fostering skill development, effective collaboration among teachers can greatly increase engagement. Results imply that teachers foster a sense of belongingness which allows them to work together towards common goals. Teachers' engagement and motivation can benefit from one another's knowledge through ongoing learning and skills development.

Further, according to Kiprop (2017), essential management and leadership skills play a key role in ensuring discipline in schools. It was further elaborated that all strategies under active leadership have a high degree of consensus. This demonstrates that teachers, parents, and students felt that efficient leadership enhances discipline in schools.

Level of Human Resource Management Practices in Terms of Supervision?

In connection with the level of human resource management practices in terms of supervision, the indicator which obtained the highest mean was “There is regular supervision and guidance by management” which got a mean of 4.44, with a standard deviation of 0.82 and verbally interpreted as “Very Good.” It was followed by the indicator “Management shows a genuine interest in leading the school” which got the second to the highest mean score of 4.35 with a standard deviation of 0.83 and verbally interpreted as “Very Good.”

Meanwhile, the indicator “management has the ability to detect errors and effectively resolve them” obtained the lowest mean score of 4.18 with a standard deviation of 0.91 and was verbal “Good.”

As support to the findings above, according to Fasbender & Gerpott (2021), one can say that an efficient leader must have the ability to manage time, monitor the work atmosphere, delegate tasks and motivate the staff. They stated that supervision is the relationship between senior and junior professional staff where senior staff evaluates the junior staff over time, monitor them and act as an interim guide through leadership and personal influence. Supervisors assign tasks and anticipate accuracy and timely performance of the tasks assigned. Regular supervisory oversight and direction has the ability to significantly improve productivity, encourage growth, and provide a favorable work environment for both teachers and the institution. It is essential for an institution to manage a balance, making sure that teachers' supervision is beneficial, considerate, and in line with the needs and objectives of the organization. Results imply the importance of supervision in the workplace. This could lead to more focused and effective work, increased job satisfaction, professional growth, effective environment, and transparency between the management and employees.

Level of Teachers’ Performance?

It can be noted that the level of teachers’ performance got an overall weighted mean of 4.06 with a standard deviation of 0.57 and was verbally interpreted as "Very Satisfactory." This interprets that the teachers performed very well in class instruction and management based on their respective evaluations.

To effectively teach, a teacher must possess the necessary knowledge to enable them to effectively explain facts in order to meet the course's objectives. The findings of this study agree with Ereje and Ambag (2020) who revealed that the teachers' Performance was highly satisfactory as assessed by students. Assessment of the students is just one of the sources of evaluation scores or ratings of teacher’s performance in an academic institution in a specific period.

Significant Relationship Between the Level of Human Resource Management Practices and the Profile of the Respondents?

Based on the findings presented, with regards to the relationship between the level of human resource management practices and sex, it showed that the job training (sig=.1.052 with a p-value of <.305); motivation (sig=.1.150 with a p-value of <.284); engagement (sig=.172 with a p-value of <.678); and supervision (sig= .412 with a p-value of <.521) showed no significant relationship with the sex and thus accepted or retain the null hypothesis of no significant relationship found.

On the other hand, Table 12 below presents the significant relationship between the level of human resource management practices and age.

As regards to the relationship between the level of human resource management practices and age, it showed that the job training (sig=.854 with a p-value of <.355); motivation (sig=1.438 with a p-value of <.230); and supervision (sig= 1.609 with a p-value of <.205) showed no significant relationship with age and thus accepted or retain the null hypothesis of no significant relationship found.

Meanwhile, the engagement (sig= 3.863 with a p-value of <.049) shows a positive significant relationship that was shown in Cramer's V column. This means that the assessment of the level of human resource management practices in terms of engagement is related to age of the teachers. The older the respondents are, the higher their assessment of the level of human resource management practices in terms of engagement. Thus, it rejected the null hypothesis of no significant relationship found.

In the study conducted by Khalil et al (2017), it was indicated that male instructors felt that training and development practices were the most satisfying Comparing recruiting, selection, and compensation processes. They added that the professors in private institutions thought that training and development practices were the most effective human resource management practice. On the other hand, when compared to training and development, salary, and other human resource management strategies, female teachers felt that recruiting and selection were the most satisfactory procedures.

As regards to the relationship between the level of human resource management practices and years of teaching experience, it showed that the job training (sig=.1.578 with a p-value of <.209); motivation (sig=2.731 with a p-value of <.098); and supervision (sig=1.422 with a p-value of <.233) showed no significant relationship with years of teaching experience and thus accepted or retain the null hypothesis of no significant relationship found.

Meanwhile, the engagement (sig= 4.813 with a p-value of <.028) shows a moderate and positive significant relationship that was shown in Cramer's V column. This means that the assessment of the level of human resource management practices in terms of engagement is related to years of teaching experience. The longer the respondents are in service, the higher their assessment of the level of human resource management practices in terms of engagement. Thus, it rejected the null hypothesis of no significant relationship found.

As regards to the relationship between the level of human resource management practices and highest educational attainment, it showed that the job training (sig=.3.234 with a p-value of <.072); and engagement (sig= 2.917 with a p-value of <.088) showed no significant relationship with highest educational attainment and thus accepted or retain the null hypothesis of no significant relationship found.

Meanwhile, the motivation (sig=5.181 with a p-value of <.023); and supervision (sig=4.619 with a p-value of <.032) show a moderate and positive significant relationship that was shown in Cramer's V column. This means that the assessment of the level of human resource management practices in terms of motivation and supervision is related to of highest educational attainment. The longer the respondents are in service, the higher their assessment of the level of human resource management practices in terms of motivation and supervision. Thus, it rejected the null hypothesis of no significant relationship found.

Significant Relationship Between the Level of Human Resource Management Practices and Teachers' Performance?

With regards to the relationship between the level of human resource management practices and teachers' performance, it showed that job training (sig= .587 with a p-value of <.000); motivation (sig= .596 with a p-value of <.000); engagement (sig= .670 with a p-value of <.000); and supervision (sig= .626 with a p-value of <.000) showed a high and positive significant relationship with the teachers' performance and thus accepted or retain the null hypothesis of no significant relationship found.

The results of this study support the findings of Waseem et al. (2013) which revealed that HRM practices in the educational sector will have a positive impact on teachers' performance through HRM outcomes, which will enhance the quality of education and the excellence of teachers.

On the other hand, the findings of the study by Sedega et al. (2019) revealed that most teachers who attended in-service training did not work efficiently to recognize the use of appropriate teaching and learning materials (TLMs).

Enhancement Program Can Be Proposed Based on the Findings of the Study?

Table 1: Proposed Human Resource Management Plan For Teachers

KEY AREA	OBJECTIVES	STRATEGIES/ ACTIVITIES	PERSONNEL INVOLVED	TIME FRAME	EXPECTED OUTCOME
Employees Trainings and Developmental Programs	To develop plans and strategies during the trainings to help in enhancing the performance of both management and employees	Proposed trainings that would enhance both the management and teachers such on leadership and helping teacher associates progress together.	Management such as admins, teaching and non-teaching personnel	One month before opening	High percentage of participation from the management and personnel. Useful trainings and approaches for the whole academic year
Motivates an open communication programs for the employees	Administrators must acknowledge that if they want to create an efficient school relation, they may need to look carefully at the importance of effective communication.	For the employees to be motivated, the management should have to look at the means of communication they employ with them.	Management such as admins, teaching and non-teaching personnel	Whole year round	Regular communication such as regular meetings, and assembly to discuss school management.

Engage with the employees' feedbacks, suggestions, and recommendations	To encourage an open communication between employee and the management by addressing suggestions and clarifications.	Make the educators feel as though they are being heard. There must be a way to make their opinions just as valuable as the administrators'. Such boxes should be easily accessible and visible for everyone.	Employees	Whole year round	Visible and accessible suggestion boxes in the campus. And there must be a regular collection and discussion among the employees.
Supervisory on school management that needs immediate actions.	To create a 'task force' program that has the ability to detect errors and effectively resolve them.	A 'task force' that involves teachers on enhancing and addressing immediate actions. Involving teachers because they are on the front line of the management.	Management such as admins, teaching and non-teaching personnel	Whole year round	A working 'task force' must be visible and operational in the community in address issues and immediate actions.

Conclusions

Based on the findings of the study, the following conclusions were drawn: The study concluded that the profile of the respondents shows that majority of the respondents were female, aged below 30 years old, had less than 3 years of teaching experience, and were college graduates only; The human resource management practices among catholic and parochial schools in terms of job training were very good; The human resource management practices among catholic and parochial schools in terms of supervision were very good. The human resource management practices among catholic and parochial schools in terms of motivation and engagement were good; The performance of teachers are among catholic and parochial schools was "Very Satisfactory." There is a significant relationship between human resource management practices in terms of job training and supervision to highest educational attainment. Further, the findings concluded that there is a significant relationship between the human resource management practices in terms of job training, motivation, engagement, and supervision to the teachers' performance.

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Factors Affecting Students' Mathematics Academic Performance in the IB MYP Programme: Basis for the Formulation of an Action Plan

John Linga, Tamagawa Academy (K-12) & University, Japan

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
Mathematics is considered one of the most important subjects around the world and plays a crucial role in the advancement of Science and Technology. This study aims to determine the factors affecting students' Mathematics academic performance in the Tamagawa Academy - International Baccalaureate Middle Years Programme. The study employed the descriptive survey in gathering the quantitative data and correlational method of research to determine the factors affecting students' Mathematics academic performance. Fifty-two students participated in this study consisting of 25 boys and 27 girls. A purposive sampling technique was used in selecting the participants. A research-made questionnaire was used to collect data from the students; the questionnaire was made with the 5-point Likert scale of measurements. The instrument reliability was checked by using Cronbach's Alpha which shows a 0.90 coefficient value. The Pearson Correlation Coefficient was used to check the relationship between independent variables (attitudes toward mathematics, study habits, achievement motivation, and communication) on the dependent variable (academic performance). The results revealed that there is a positive correlation between the dependent variable and independent variables in the range of 0.395, 0.326, 0.446, and 0.459 respectively with the significant level at 0.05. The study suggests intervention activities that will gain interest among students such as academic support and the Math Day program to create an environment of camaraderie among students. Leadership teams and teachers should bear in mind that factors like attitudes toward mathematics, study habits, achievement motivation, and communication have significant importance on students' academic performance.

Keywords: Academic Performance, Achievement Motivation, Study Habits, Attitudes Toward Mathematics, Correlation, Cronbach's Alpha

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Introduction

Mathematics is considered as one of the most important subjects around the world and plays a crucial role in the advancement of Science and Technology. Many scholars share the same view that Mathematics is the foundation of scientific and technological development (Iddrisu et al., 2023). Likewise, a lot of scholarly educational research emphasizes the importance of mathematical knowledge and its utilitarian values. Almost everyone uses mathematical knowledge in their daily lives. This implies that learning Mathematics should not be taken for granted, as its purpose is to develop students' ability to solve a range of simple to complex mathematical problems through the application of Mathematics to familiar and unfamiliar situations.

Various empirical studies have been conducted on the factors affecting students' academic performance (Dagnew, 2017; Landicho, 2021; Ullah & Almani, 2022). These studies have found that there are three factors that consistently influence students' academic performance. These factors are school-related factors, student-related factors, and family-related factors. However, the most important factors that have a massive influence on students' academic performance were cognitive factors (attitudes toward Mathematics), behavioral factors (achievement motivation), and environmental factors (school support and facilities) (Dagnew, 2017; Ullah & Almani, 2022). Educators should understand these factors to enhance teaching and learning methodologies.

The academic performance of students in the IB MYP Division has been observed to be affected by several factors. Some of the factors observed are attitudes toward mathematics, study habits, achievement motivation, and communication skills. In Hwang and Son (2021) study, it was found that there is a positive relationship between students' attitudes toward mathematics and mathematics achievement. With these findings, educators need to evaluate students' attitudes toward mathematics and provide appropriate teaching strategies, teaching materials, and class activities to help stimulate the development of a positive attitude towards mathematics. In the study of Sakirundeen and Sanni (2017), it was found that there is a significant relationship between time allocation for study and academic performance which implies that the more time students allocated to study the better the academic performance. A recent study found that there is a significant and positive correlation between motivation and its dimensions with academic performance; it was found that both intrinsic motivation and extrinsic motivation have a moderate correlation with academic performance in mathematics (Yarin et al., 2022). In the study of Lomibao, et al (2016), it was found that challenging students to communicate both orally and in writing in mathematics class help deepen students' conceptual understanding and improve mathematics performance.

In view of the cited information gathered and observations made, the researcher found it necessary to conduct a study on factors affecting students' Mathematics academic performance in the IB Middle Years Programme (MYP). The results of the study will serve as a basis for formulating an action plan.

Theoretical Framework

The study is anchored on a Social Cognitive Theory of Bandura (Eggen & Kauchak, 2001), which explains that behavior, the environment, and personal factors; such as academic performance and motivation, all influence each other. For instance, a student's low academic performance in Mathematics (a personal factor) is influenced by the student's attitudes and

motivation (a behavioral factor) about the ability to do Mathematics. Student's attitudes and motivation influence academic performance, and language ability influences academic performance. Social cognitive theorists call this mutual influence reciprocal causation. Behavioral factors can promote or hinder the development of the capabilities of students. In this study, the behavioral factor consists of attitudes toward Mathematics, study habits, and achievement motivation while a personal factor consists of communication skills and academic grade. These factors can cause positive expectations that can increase students' academic performance in Mathematics if properly handled.

Conceptual Paradigm

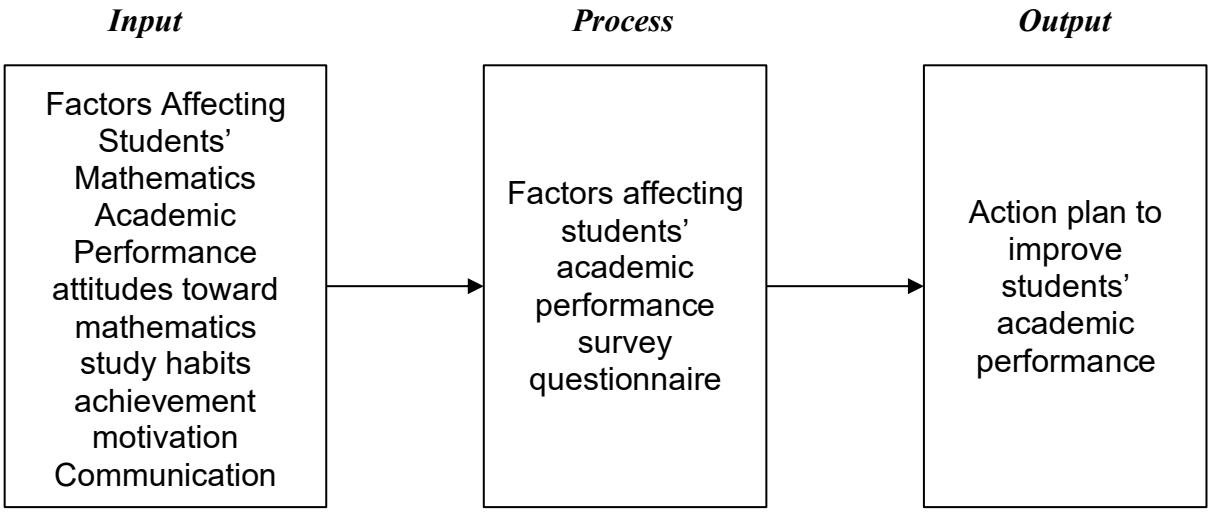

Figure 1: Research Paradigm on Factors Affecting Students' Mathematics Academic Performance

Figure 1 shows the paradigm of the study. The researcher follows the input-process-output to attain the objectives of the research. The input consists of the factors affecting students' performance which are student-related. The process includes the survey questionnaire as a tool to know the factors affecting student performance in Mathematics. The output entails the proposed action plan to improve students' academic performance.

Statement of the Problem

This study aims to determine the Factors Affecting Students' Mathematics Academic Performance in the IB MYP Programme: Basis for the Formulation of an Action Plan.

Specifically, this study sought to answer the following questions;

1. What are the factors that could affect the Mathematics academic performance of the IB MYP students;
    - 1.1 attitudes toward Mathematics,
    - 1.2 study habits,
    - 1.3 achievement motivation, and
    - 1.4 communication.

2. Is there a significant relationship between students' attitudes toward Mathematics, study habits, achievement motivation, and communication to students' academic performance?
3. Based on the findings of the study, what action plan can be formulated to improve students' academic performance?

Hypothesis

Ho: There is no significant relationship between students' attitudes toward Mathematics, study habits, achievement motivation, and communication to students' academic performance.

Scope, Delimitation, and Limitation of the Study

This research covered the analysis of data gathered from a questionnaire on factors affecting students' Mathematics academic performance in the IB MYP Programme Division. The respondents were Grade 6 students at Tamagawa Academy with a total of 52 students: 25 boys and 27 girls.

In this study, stakeholders such as parents, subject teachers, subject leaders, coordinators, and a head of the division were not included. Also, the study did not address environmental factors outlined in the social cognitive theory as a potential factor affecting students' academic performance.

The data collected were limited to responses from Grade 6 students in the IB MYP Programme Division of Tamagawa Academy.

Significance of the Study

The findings of this study on the factors affecting students' academic performance in Mathematics will help the researcher in developing an effective action plan to improve students' academic performance. Also, the result of this study will greatly benefit the school leaders, coordinators, teachers, and students. Moreover, the results will help stakeholders to better understand the factors affecting students' academic performance in the IB MYP Division. In addition, the findings will be useful in formulating intervention programs to improve student performance in Mathematics.

Literature Review

Mathematics has always been a very interesting subject to teach because it involves conceptual understanding and has a real-life application. The ability to use mathematical knowledge in familiar and unfamiliar situations is something that students need to practice and apply. Such applications can give students insights that school mathematics is practical and useful - insights that can motivate students to achieve good academic performance. According to Social Cognitive Theory of Bandura (Eggen & Kauchak, 2001) there are factors that affect students' academic performance. In various scholarly studies, the attitudes toward mathematics, study habits, achievement motivation, and communication skills are some factors that could affect students' academic performance.

Students' Attitudes Toward Mathematics

In the study of Hwang and Son (2021) and Capuno, et al. (2019), it was found that there is a positive relationship between students' attitudes towards mathematics and mathematics achievement. While, in the study of Ghimire (2021), it was found that there is a positive correlation between the attitudes of students towards success in mathematics with their performance in mathematics. Likewise, in the study of Landicho (2021), it was mentioned that students always want to get good grades in tests, quizzes, written works and performance tasks.

Students' Study Habits

In the study of Sakirundeen and Sanni (2017) and Capuno, et al. (2019), it was found that there is a significant relationship between time allocation for study and students' academic performance in mathematics. Similarly, Bibi (2020) states that there is a significant relationship between students' study habits and academic performance which means that students who are performing better in mathematics have better study habits than students who allocate small amounts of time. This result was supported by the study of Saranya (2024), which states that students who have regular study schedules tend to perform better academically than those who lack this habit. The study of Sasi and Anju (2020) reveals that there is a positive correlation between students' study habits and academic performance. It means that the increase in hours of study directly affects the increase of academic performance of students.

Students' Achievement Motivation

The study of Tremblay (2016) states that intrinsic/achievement motivation naturally leads to higher achievement in mathematics. Similarly, in the study of Manhas (2017) and Mastur (2020) state that there is a significant and positive correlation between achievement motivation and academic achievement. Therefore, it can be concluded that the higher achievement motivation students have in studying, the better academic performance will be.

Students' Communication Skills

The study of Thangadurai and Selvam (2017) states that the communication skills of higher secondary students is positively correlated with academic performance. This implies that good communication skills both oral and written will yield better academic performance. Similarly, the study conducted by Hidayati (2020) states that communication skills of the students can be improved by using the Project Based Learning Model. The model has a positive impact on students' interest to learn mathematics and it can contribute in achieving high academic performance.

Methodology

The study employed the descriptive survey in gathering the quantitative data and correlational method of research to determine the factors affecting students' Mathematics academic performance. The researcher considered the methods appropriate to use because "it determines the relationships among two or more variables and explores the implications for cause and effect" (Fraenkel et al., 2020, p.12). Best, et al. (1998) define descriptive research

as a "method of research which seeks to find answers to questions through the analysis of variables and their relations."

Fifty-two students participated in this study consisting of 25 boys and 27 girls. A purposive sampling technique was used in selecting the participants in this study. A research-made questionnaire was used to collect data from the students; the questionnaire was made with the 5-point Likert scale of measurements. The instrument reliability was checked by using Cronbach's Alpha which shows a 0.90 coefficient value.

Table 1: Reliability Statistics of the Questionnaire

Scales	Cronbach's Alpha	Number of Items	Mean	SD	Interpretation
Attitudes toward Mathematics	0.68	5	4.04	0.52	Reliable
Study habits	0.67	5	3.77	0.32	Reliable
Achievement motivation	0.73	5	3.93	0.28	Reliable
Communication	0.81	5	3.62	0.10	Very Reliable
Overall	0.90	20	3.84	0.35	Very Reliable

The validity and reliability are the requirements of the instrument for an accurate result. The questionnaire reliability was checked by using Cronbach's Alpha (Internal Consistency Reliability Analysis) which the results were shown on Table 1.

Legend: Cronbach's Alpha Value (Adhika, A., 2017)

Cronbach's Alpha Value	***Level of Reliability***
0.0 - 0.20	Less Reliable
> 0.20 - 0.40	Rather Reliable
> 0.40 - 0.60	Quite Reliable
> 0.60 - 0.80	Reliable
> 0.80 - 1.00	Very Reliable

The researcher utilized a statistical tool to quantify the responses of the students by using weighted mean. A 5-point Likert scale is used in the responses of the students on factors affecting students' Mathematics academic performance with verbal interpretation.

Scale	***Range Interval***	***Interpretation***
1	*1.00 - 1.79*	*Strongly disagree*
2	*1.80 - 2.59*	*Disagree*
3	*2.60 - 3.39*	*Undecided*
4	*3.40 - 4.19*	*Agree*
5	*4.20 - 5.00*	*Strongly Agree*

The following statistical instruments were used: weighted mean, ranking, standard deviation, and a Pearson correlation coefficient.

Weighted Mean, Standard Deviation, and Ranking were utilized to determine the factors affecting students' Mathematics Academic Performance along the following variables: attitudes toward Mathematics, study habits, achievement motivation, and communication.

Pearson Correlation Coefficient was used to investigate the interrelationships between independent variables (attitudes toward mathematics, study habits, achievement motivation, and communication) and a dependent variable (academic performance).

Results and Discussion

The purpose of this study was to find out the factors affecting students' Mathematics academic performance at Tamagawa Academy - IB MYP Division. There were 52 students participating in this study. A questionnaire was administered to the respondents for data collection and students' academic performance was checked through the students' academic Math results. Detailed findings were shown in the tables below.

Table 2: Responses of Students Regarding Attitudes Toward Mathematics

Statement	N	Mean	SD
I enjoy the challenges presented by Mathematics problems.	52	4.17	0.76
I listen actively to the lecture of my Math teacher	52	4.17	0.71
I participate actively in class discussions and clarify information that I do not understand.	52	3.81	0.74
I want to get good marks in the summative assessments.	52	4.73	0.60
I get frustrated when the discussion is interrupted by inattentive classmates.	52	3.33	1.00

Table 2 shows responses of students regarding their attitudes toward Mathematics. It can be noticed that the attitude of students towards Mathematics is to always get good marks in the summative assessments with a weighted mean of 4.73 and standard deviation of 0.60. Ranked 2.5, students enjoy the challenge of Mathematics problems and listen actively to the lecture of their Mathematics teacher with a weighted mean of 4.17 and standard deviations of 0.76 and 0.71 respectively. Next to it is students actively participating in class discussions and clarifying information that they do not understand with a weighted mean of 3.81 and standard deviation of 0.74. Lastly, students get frustrated when the discussion is interrupted by inattentive classmates with a weighted mean of 3.33 and standard deviation 1. These results were supported by the study of Landicho (2021), which mentioned that students always want to get good grades in tests, quizzes, written works and performance tasks.

Table 3: Responses of Students Regarding Study Habits

Statement	N	Mean	SD
I do my homework regularly.	52	4.27	0.77
I spend more time doing difficult Math problems.	52	3.58	0.96
I see to it that school clubs do not hamper my studies.	52	3.46	1.07
I study and prepare for formative and summative assessments.	52	3.90	1.07
I study the presentations uploaded on Math Google Classroom.	52	3.65	0.86

Table 3 shows the indicating factors on study habits among students. Among the determining factors on study habits, the first rank is to do my homework regularly with a weighted mean of 4.27 and standard deviation of 0.77. Second in the rank is to study and prepare for formative and summative assessments with a weighted mean of 3.90 and standard deviation of 1.07. Third in the rank is to study the presentations uploaded on Math Google Classroom with a weighted mean of 3.65 and standard deviation of 0.86. Fourth in the rank is to spend more time doing difficult Math problems with a weighted mean of 3.58 and standard deviation of 0.96. Fifth in rank is to see to it that school clubs do not hamper students' studies with a weighted mean of 3.46 and standard deviation of 1.07. These findings were supported by the study of Sakirudeen and Sanni (2017), which states that there is a significant relationship between time allocation for study and students' academic performance in mathematics. Likewise, the results were supported by the study of Saranya (2024), which states that good learning habits, such as regular study schedules, active participation in class, keeping up-to-date with course materials, and seeking help when needed, tend to perform better academically than those who lack these habits.

Table 4: Responses of Students Regarding Achievement Motivation

Statement	N	Mean	SD
I am confident I can understand the complex concepts taught in Mathematics class.	52	3.58	0.80
I believe that I will use the concepts learned in IB MYP Mathematics in my daily life.	52	3.71	0.80
I think that learning IB MYP Mathematics is important because it stimulates my thinking skills.	52	4.17	0.83
I am confident that I can get good marks in IB MYP Mathematics assessments If I study hard.	52	4.21	0.85
I think learning IB MYP Mathematics prepares me into a challenging IB Diploma Programme.	52	4.00	0.84

Table 4 shows the responses of students regarding achievement motivation. The results revealed that students are confident that students can get good marks in IB MYP Mathematics assessments if students study hard with a weighted mean of 4.21 and standard

deviation of 0.85; think that learning IB MYP Mathematics is important because it stimulates students thinking skills with a weighted mean of 4.17 and standard deviation of 0.83; think learning IB MYP Mathematics prepares students into a challenging IB Diploma programme with a weighted mean of 4.00 and standard deviation of 0.84; believe that students will use the concepts learned in IB MYP Mathematics in students daily life with a weighted mean of 3.71 and standard deviation of 0.80; and students are confident that they can understand the complex concepts taught in Mathematics class with a weighted mean of 3.58 and standard deviation of 0.80. These results were supported by the study of Tremblay (2016), which states that intrinsic/achievement motivation naturally leads to higher achievement in mathematics.

Table 5: Responses of Students Regarding Communication

Statement	N	Mean	SD
I can understand most of the terminologies in Mathematics.	52	3.63	1.01
I can read and interpret complex graphs and charts.	52	3.77	0.81
I can write and concise reports in Criteria C and D assessments.	52	3.56	0.78
I can communicate coherent mathematical lines of reasoning.	52	3.52	0.80
I can use appropriate mathematical language in both oral and written statements.	52	3.62	0.80

Table 5 shows responses of students regarding communication. The results revealed that students can read and interpret complex graphs and charts with a weighted mean of 3.77 and standard deviation of 0.81; can understand most of the terminologies in Mathematics with a weighted mean of 3.63 and standard deviation of 1.01; can use appropriate mathematical language in both oral and written statements with a weighted mean of 3.62 and standard deviation of 0.80; can write clear and concise reports in Criteria C and D assessments with a weighted mean of 3.56 and standard deviation of 0.78; and can communicate coherent mathematical lines of reasoning with a weighted mean of 3.52 and a standard deviation of 0.80. These results of the study were similar to the study conducted by Hidayati (2020), which states that communication skills of the students can be improved by using the Project Based Learning Model. The model has a positive impact on students' interest to learn mathematics and it can contribute in achieving high academic performance.

Table 6: Descriptive Statistics of The Variables Considered in the Study

Statistics	Variables				
	Attitudes Towards Mathematics	Study Habits	Achievement Motivation	Communication	Academic Performance
Mean	4.04	3.77	3.93	3.62	30.71
SD	0.52	0.32	0.28	0.10	6.11
Variance	6.44	9.69	8.07	10.01	36.56

Table 6 shows the descriptive statistics of the variables considered in the study. The means, variances, and standard deviations of the scores of students' attitudes towards Mathematics, study habits, achievement motivation, communication, and academic performance of the students were displayed.

Table 7: Correlation Between Attitudes Toward Mathematics and Academic Performance

		Attitudes Towards Mathematics	*Academic Performance*
Attitudes Towards Mathematics	Pearson Correlation	1	0.395
	Sig. (2-tailed)		.00
	N	52	52
Academic Performance	Pearson Correlation	0.395	1
	Sig. (2-tailed)	.00	
	N	52	52

Correlation is significant at the 0.05 level (2-tailed)

Table 7 shows the correlation between the attitudes toward mathematics and academic performance. The correlation coefficient between the attitudes of students toward mathematics with their academic performance is 0.395, which is significant at 0.05 level of significance. This refers to the fact that the variable attitudes toward mathematics and academic performance is positively correlated which suggests us to conclude that the students who have positive attitudes toward mathematics have comparatively better academic performance. This result was supported by the study of Hwang and Son (2021), which stated that there is a positive relationship between students' attitudes toward mathematics and mathematics achievement. The result implies that students with high academic achievement are more likely to believe that learning mathematics is empirical in daily life and enjoy challenges presented by mathematics. Likewise, the result from the study of Ghimire (2021) stated that there is a positive correlation between the attitudes of students towards success in mathematics with their performance in mathematics.

Table 8: Correlation Between Study Habits and Academic Performance

		Study Habits	*Academic Performance*
Study Habits	Pearson Correlation	1	0.326
	Sig. (2-tailed)		.00
	N	52	52
Academic Performance	Pearson Correlation	0.326	1
	Sig. (2-tailed)	.00	
	N	52	52

Correlation is significant at the 0.05 level (2-tailed)

Table 8 shows the correlation between the study habits and academic performance. The correlation coefficient between the study habits with their academic performance is 0.326, which is significant at 0.05 level of significance. This refers to the fact that the variable study habits and academic performance is positively correlated which suggest that the students who have good study habits have comparatively better academic performance. This result was supported by the study of Bibi (2020), which states that there is a significant relationship between students' study habits and academic performance. It means that students who are high achievers have better study habits than those who are low achievers. Likewise, the study of Sasi and Anju (2020) reveals that there is a positive correlation between students' study habits and academic performance. It means that the increase in hours of study directly affects the increase of academic performance of students.

Table 9: Correlation Between Achievement Motivation and Academic Performance

		Achievement Motivation	*Academic Performance*
Achievement Motivation	Pearson Correlation	1	0.446
	Sig. (2-tailed)		.00
	N	52	52
Academic Performance	Pearson Correlation	0.446	1
	Sig. (2-tailed)	.00	
	N	52	52

Correlation is significant at the 0.05 level (2-tailed)

Table 9 shows the correlation between the achievement motivation and academic performance. The correlation coefficient between the achievement motivation with their academic performance is 0.446, which is significant at 0.05 level of significance. This indicates that the variable achievement motivation and academic performance is positively correlated which suggest us to conclude that the students who have positive achievement motivation have comparatively higher academic performance. This result was supported by the study of Manhas (2017) and Mastur (2020), which states that there is a significant and positive correlation between achievement motivation and academic achievement. Therefore, it can be concluded that the higher achievement motivation students have in studying, the better academic performance will be.

Table 10: Correlation Between Communication and Academic Performance

		Communication	*Academic Performance*
Communication	Pearson Correlation	1	0.459
	Sig. (2-tailed)		.00
	N	52	52
Academic Performance	Pearson Correlation	0.459	1
	Sig. (2-tailed)	.00	
	N	52	52

Correlation is significant at the 0.05 level (2-tailed)

Table 10 shows the correlation between communication and academic performance. The correlation coefficient between communication with their academic performance is 0.459, which is significant at 0.05 level of significance. This indicates that the variable communication and academic performance is positively correlated which suggests us to conclude that the students who have better communication have comparatively higher academic performance. This result was supported by the study of Thangadurai and Selvam (2017), which states that the communication skills of higher secondary students is positively correlated with academic performance. This implies that good communication skills both oral and written will yield better academic performance in IB MYP.

Conclusions

With reference to the findings and discussions mentioned above, the following conclusions were derived: Students' attitudes towards mathematics, study habits, achievement motivation, and communication were positively correlated and significant in relation to academic performance. It can be concluded that students' attitudes towards mathematics is positively correlated to the academic performance of students which means that the attitudes the students hold towards mathematics clearly reflects their academic performance. Therefore, as a mathematics teacher it is important to develop a program that would improve students' attitudes towards mathematics that will result in better academic performance in mathematics among students. Students' study habits and academic performance is positively correlated which means that the increase in hours of study directly affects the increase of students' academic performance. Students' achievement motivation and academic performance is positively correlated; therefore, it can be concluded that the higher achievement motivation students have in studying, the better academic performance will be. Students' communication skills and academic performance is positively correlated which implies that good communication skills both oral and written will yield better academic performance in IB MYP.

Recommendations

There are various factors in-school that could influence the quality of academic performance of students. This study only focused on four factors that influence the students' academic performance - attitudes towards mathematics, study habits, achievement motivation, and communication. As educators our responsibility is to educate our students effectively so that they may be able to show quality academic performance. To be able to achieve this objective it is essential to understand some of the factors that influence students' academic performance.

In light of the findings and conclusions, the following recommendations are offered:

1. Intervention activities that will gain interest among students such as academic support programs for those students who struggle academically and the Math Day program to create an environment of camaraderie among students.
2. Leadership team and teachers should bear in mind that factors like attitudes toward mathematics, study habits, achievement motivation, and communication have significant importance on students' academic performance. By preparing some kind of experience like boot camp, conferences, and workshops it might help students.
3. Similar studies can be conducted to determine if there is an improvement on the student academic performance applying intervention activities.

Acknowledgments

The researcher wishes to express his sincerest gratitude to his family who supported the researcher in every way they could and who were the foremost reason for the researcher's continuing endeavor to make them proud, Tamagawa K-12 and University, and to God Almighty.

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Contact email: john.linga@t.tamagawa.ed.jp

Navigating Pedagogical Disparity: Faculty Approaches and Tools for Enhancing Teaching Skills

Elizabeth Jerome, Atlas SkillTech University, India

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
Design education is continuously evolving, especially in how educators foster creative thinking. The effectiveness of faculty in delivering quality teaching is a significant challenge within a multidisciplinary design school. Some faculty highly prioritise innovative pedagogical techniques and interactive learning environments, while others rely on traditional methods, needing more dynamism to inspire and empower aspiring designers. The differences in teaching approaches among faculty have a significant impact on students' learning and aspirations, at times leading to a decrease in their trust in both their faculty and the institution. Addressing this matter requires a joint effort from faculty and institutional leadership. Hence, this study employed a mixed-method approach to examine pedagogical differences in design education. Surveys and interviews were used to gather data from faculty with teaching experience ranging from one to fifteen years to understand disparities and inform more equitable teaching practices. In addition, comprehensive desk research was conducted to analyse the pedagogical approaches and their evolution from the Bauhaus era to the present, encompassing various socio-economic and cultural contexts. The study analysis showed that Professional development initiatives, including workshops and mentorship programs, can provide the tools and support needed to enhance teaching skills and expertise. Design schools should help build a cohesive culture that prioritises recruiting and retaining faculty committed to engaging in innovative teaching practices. Regular feedback from faculty members and fostering a sense of community and collaboration can help highlight areas for improvement and encourage a culture of continuous growth and progress.

Keywords: Design Education, Pedagogical Innovation, Student Engagement, Professional Development, Experiential Learning

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Introduction

The field of design education has undergone significant transformations, with a shift towards cultivating creative, adaptable, and interdisciplinary thinkers who can address complex, real-world challenges. Traditionally, design education has been grounded in theoretical instruction, with an emphasis on outcomes, aesthetics and vocational training. However, as industries demand designers who can think critically and work collaboratively across disciplines, there is a pressing need to re-evaluate teaching methods in design schools.

Evolution of Design Education

Design education has long been shaped by the principles of notable early institutions, particularly the Bauhaus, which championed the importance of functionalism and craftsmanship (Meyer & Norman, 2019; Avital & Monga, n.d.). This foundational approach, while significant, seems increasingly inadequate in addressing the complexities of the 21st century (Pontis & van der Waarde, 2020; Charalambous & Christou, 2016). With the rapid evolution of technology and shifting societal needs, a more holistic approach to design education is essential, one that transcends mere aesthetics (Weil & Mayfield, 2020; Whitney & Nogueira, 2020). Educators today are called to integrate a variety of teaching methodologies that include real-life problem-solving, collaborative projects, and the development of interdisciplinary skills (Avital & Monga, n.d.; Chitte, Sandhu, & Bhardwaj, n.d.; Cluckan, 2016). This shift is crucial for preparing students to meet the diverse and dynamic professional demands they will encounter in their careers.

Challenges in Current Pedagogy

Despite the progressive strides made in design education, a lingering challenge persists an overwhelming emphasis on aesthetics at the expense of social impact. This trend has led to a growing underappreciation of design's vast potential to contribute to societal well-being. Current research advocates for a design education revitalization that emphasizes practical application, user-centred design, and the cultivation of critical thinking skills (Pontis & van der Waarde, 2020).

Inconsistency in Teaching Approaches: The need for more standardization in pedagogical practices across faculty leads to uneven learning experiences, which can diminish student engagement and affect learning outcomes (Avital & Monga, n.d.; Sarkar, n.d.; Murray, n.d.).

Eroded Trust and Institutional Perception: Disparities in teaching quality contribute to a reduction in student trust toward faculty and institutions, emphasizing the need for a more cohesive, student-centred educational approach (Charalambous & Christou, 2016; Cluckan, 2016).

Need for Faculty Development: Faculty members often lack the training to integrate innovative, student-focused teaching practices, highlighting a gap in professional development within the academic structure (Singh & Gupta, 2021; Whitney & Nogueira, 2020).

Addressing these challenges requires a structured analysis of current teaching methods and an exploration of effective pedagogical practices and professional development opportunities (Meyer & Norman, 2019; Weil & Mayfield, 2020; Pontis & van der Waarde, 2020).

By addressing these critical components, institutions can better equip students to tackle the multifaceted challenges they will face in a rapidly changing world (Figure 1).

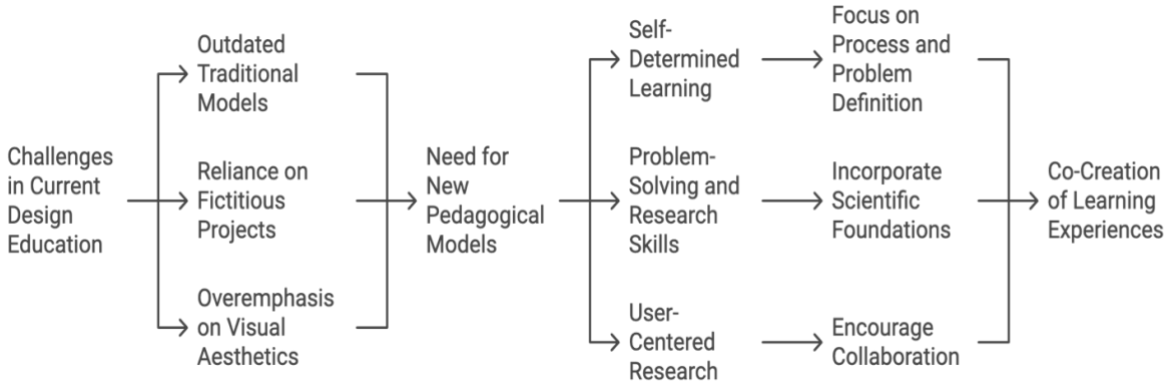

Figure 1: Challenges and Need for New Pedagogical Models

Professional Development for Faculty

In light of these challenges, the National Education Policy (NEP) 2020 strongly emphasizes the importance of continuous professional development (CPD) for educators, recognizing that staying informed about evolving educational standards is not merely beneficial but essential. Research indicates that effective CPD should not be viewed as a collection of static training programs; instead, it should be a dynamic and iterative process (Singh & Gupta, 2021). This approach ensures that faculty members receive ongoing support and resources, enabling them to align their teaching practices with the ever-changing landscape of academic needs (Singh & Gupta, 2021).

Innovative Approaches in Design Education

To foster innovative teaching and learning, recent studies have illuminated the benefits of adopting experiential learning models within design education (Avital & Monga, n.d.; Chitte et al., n.d.; Cezzar, 2020). These models emphasize multidisciplinary collaboration, hands-on projects, and inquiry-based methods. By engaging students in active learning and providing opportunities for real-world application, these innovative techniques have proven to enhance student engagement significantly (Meyer & Norman, 2019; Weil & Mayfield, 2020; Whitney & Nogueira, 2020). Furthermore, such approaches prepare graduates for the intricate realities of contemporary design work, ensuring they possess not only the technical skills but also the critical thinking and problem-solving abilities necessary for success in their future careers (Figure 2).

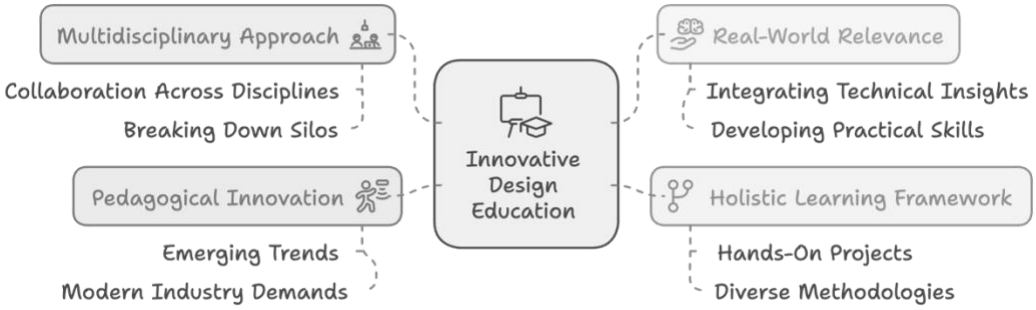

Figure 2: Innovative Design Education *(Figure generated using Napkin AI)*

This study aims to investigate the relationship between teaching methodologies and student outcomes, with a focus on the following objectives:

- *Evaluating Innovative Techniques:* Determine how innovative methods, such as project-based and hands-on learning, impact student engagement and comprehension in design education.
- *Influence of Professional Development:* Assess the role of faculty professional development in promoting the adoption of these innovative techniques.
- *Impact on Student Trust:* Explore the effect of teaching methods on student perceptions of trust and satisfaction with their educational institution.
- *Feedback Mechanisms:* Analyse how feedback from students and peers influences faculty satisfaction and continuous improvement in teaching.

By addressing these objectives, the study seeks to highlight the significance of institutional support and professional growth in transforming design education.

Methodology

A mixed-method approach was employed to gather quantitative and qualitative data, enabling a comprehensive examination of faculty and student perspectives on teaching methods in contemporary design education. The two stakeholder groups identified for this study are Design faculty and students in the second, third and fourth year of the undergraduate course- Bachelor in Design in Mumbai. The survey was shared with 40 design faculty members, of which 15 responded. Additionally, the student survey was shared with 80 students, of which 33 responded. Faculty participants varied in age, experience, and institutional affiliation, providing a diverse perspective on teaching practices.

Two structured questionnaire surveys were designed to capture perceptions from two groups- design faculty and students. Faculty surveys focused on teaching methods, professional development engagement, challenges with innovation, and institutional support. Student surveys explored their learning experiences, engagement with innovative methods, and perceptions of faculty's teaching effectiveness.

The questionnaire included a mix of questions- close-ended, open-ended, contingency, and matrix. Statistical tools were used to examine relationships between variables, including T-tests, ANOVA, correlation, and regression analysis. Multiple hypotheses regarding the impact of professional development, feedback, and teaching methods on student satisfaction and faculty innovation were tested to draw meaningful insights.

Findings and Discussion

The study responses' analysis indicates that while a majority of faculty members employ project-based learning (86.7 %) and group work (93.3 %), traditional lectures (80 %) still dominate. This reliance on conventional methods may hinder student engagement and adaptability, suggesting the need for greater emphasis on experiential learning.

As shown in Figure 3, on a scale of 1 to 5, most respondents rated their use of innovative pedagogical techniques between 1 and 3, indicating limited incorporation. However, a few educators reported higher scores, showing active integration of innovative methods. While faculty preferred online CPD programs, participation rates were low, and they had mixed perceptions about their benefits. This suggests a disconnect between professional

development opportunities and educators' practical needs, emphasizing the need for targeted and relevant training programs.

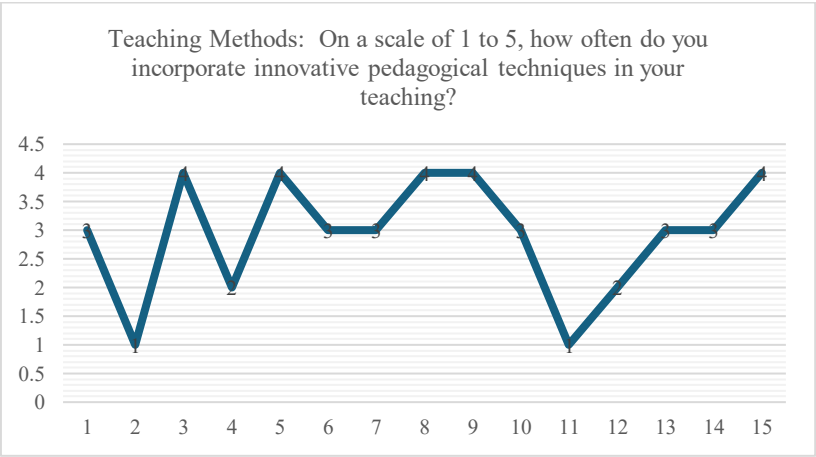

Figure 3: Integration of Innovative Pedagogical Techniques

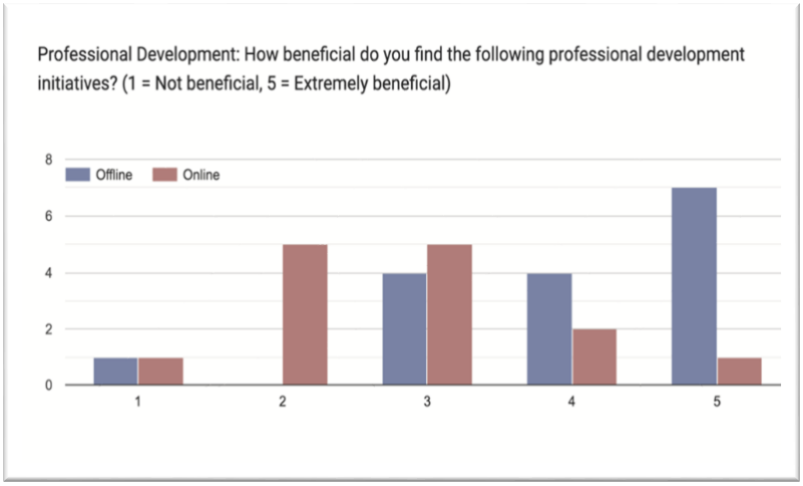

Figure 4: Benefits of Professional Development

Faculty cited various barriers to adopting new methods, including limited institutional support, rigid curricula, time constraints, and infrastructure limitations. These challenges underscore the need for administrative flexibility and resources to enable faculty to experiment with novel teaching practices. The study participants were also asked to elaborate on the challenges they face in implementing Innovative teaching methods.

- Adopting new teaching methods can be challenging due to infrastructure limitations, time constraints, rigid timetables, and resistance to change.
- Implementing innovative methods demands extra time and resources, and concerns about student engagement and outcomes add complexity.
- Aligning techniques with course structures and ensuring hands-on learning outside the classroom poses logistical and safety challenges.

Students reported higher levels of engagement and satisfaction with project-based and hands-on learning approaches. In contrast, traditional lectures and online modules were perceived as less effective, underscoring the potential of interactive methods in fostering meaningful learning experiences.

Table 1: Hypothesis Table

Hypothesis 1 (Professional development programs)	(H1.0): Faculty members who engage in more professional development programs (workshops, mentorship) do not demonstrate a higher incorporation of innovative teaching methods.
	(H1.1): Faculty members who engage in more professional development programs (workshops, mentorship) demonstrate a higher incorporation of innovative teaching methods.
Hypothesis 2 (Feedback mechanism for faculty)	(H2.0): The presence of regular feedback mechanisms from students and peers does not lead to an increase in faculty satisfaction and continuous improvement in teaching approaches.
	(H2.1): The presence of regular feedback mechanisms from students and peers leads to an increase in faculty satisfaction and continuous improvement in teaching approaches.
Hypothesis 3 (Impact of teaching Method on students)	(H3.0): Differences in teaching methods (traditional vs. innovative) do not significantly impact student trust and satisfaction with the institution.
	(H3.1): Differences in teaching methods (traditional vs. innovative) significantly impact student trust and satisfaction with the institution.
Hypothesis 4 (Hands on and Project-based learning)	(H4.0): Students do not perceive Hands-on learning and project-based learning as more effective than traditional lecture-based teaching in design education.
	(H4.1): Students perceive Hands-on learning and project-based learning as more effective than traditional lecture-based teaching in design education.

Demographics

Fifteen of the forty design faculty and thirty-three of the eighty students who received the questionnaire responded. The study sample included Design faculty from varying design disciplines such as Interior design, Communication Design, Product Design, Animation and VFX and Fashion design. The distribution of design faculty was noticed to be even across specialization, whereas the distribution of design students was as follows: 72.7% from the Third year, 21.2 % from the second year and 6.1 % from the Fourth year.

Professional Development Programs

The variables considered here were the Number of Professional Development programs attended (Independent variable) and the frequency of Innovative teaching methods used by faculty (dependent variable). The latter was measured on a scale of 1 to 5 where 1 was *'never'* and 5 was *'always'*.

Table 2: Effectiveness of Hands On and Project Based Learning According to 3rd Year Students

	Professional Development: In the past year, how many professional development programs related to teaching-learning have you participated in (Offline or Online)?	**Teaching Methods: On a scale of 1 to 5, how often do you incorporate innovative pedagogical techniques in your teaching?**
Mean	1	2.933333333
P- value	0.00656827	
t Critical	1.701130934	

As seen in Table 2, the p-value is significantly lower than the typical threshold of 0.05. Hence, H1.0 is rejected. This suggests that participation in professional development programs may be significantly related to the adoption of innovative pedagogical techniques. Faculty participating in more professional development programs tend to use innovative teaching techniques more frequently.

In addition to Professional development programs, the 15 Design faculty were also asked to highlight other approaches and tools for enhancing teaching skills. The findings highlighted that Technology integration in education is pivotal for fostering an engaging learning environment. Learning Management Systems (LMS) streamline the organisation of course materials and facilitate access for both students and instructors. Utilizing lecture recording technologies and implementing flipped classroom models can enhance flexibility and promote active engagement among learners. Interactive methods such as gamification and storytelling can further deepen the involvement of students by making learning more enjoyable and relatable. Effective communication tools are essential for maintaining student participation and fostering peer collaboration, contributing to a vibrant educational atmosphere. Faculty development plays a crucial role as well; platforms like Coursera, edX, and LinkedIn Learning enable continuous skill enhancement, while regular peer review sessions facilitate the exchange of best practices. Finally, adapting teaching methods to accommodate diverse learning styles and collaborating with universities on curriculum development are key strategies for personalized and enriched educational experiences.

Feedback Mechanism for Faculty

The study revealed that feedback mechanisms were inconsistently utilized, limiting their potential to impact teaching satisfaction and improvement. Students placed significant value on transparency, fairness, and active engagement, indicating that faculty who prioritize these aspects can build stronger, trust-based relationships with students.

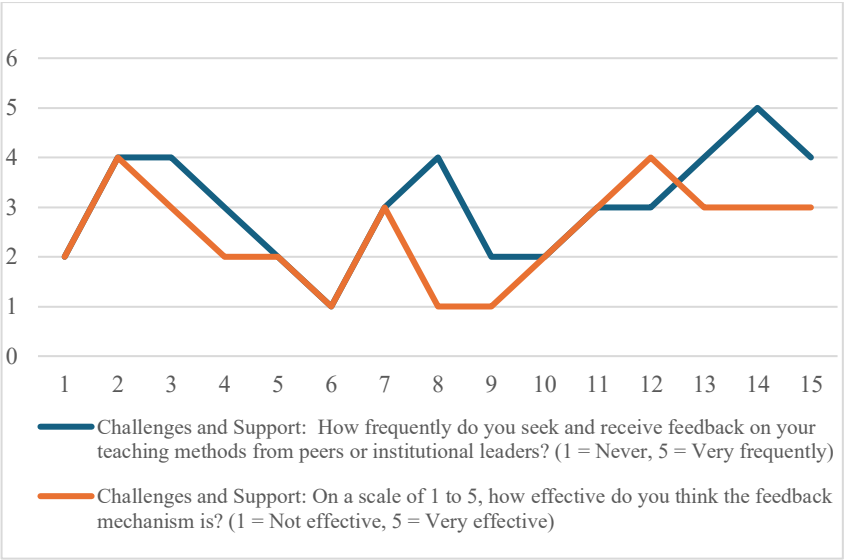

Figure 5: Impact of Feedback Mechanism on Faculty Satisfaction and Improvement

The effectiveness rating is 0.559, emphasising that few respondents view the feedback mechanisms as largely ineffective. Hence, H2.0 cannot be rejected.

The data suggests both low frequency in seeking feedback and ineffectiveness in the feedback mechanisms. This indicates a need for institutions to strengthen their feedback systems, encourage more regular feedback-seeking behaviours, and improve the quality and impact of feedback mechanisms in supporting teaching improvement.

Impact of Teaching Method on Students

A p-value of < 0.05 is achieved between the groups of *'type of teaching method'* and *'students trust and satisfaction'* which indicates a statistically significant difference between groups, leading to the rejection of H3.0. This highlights that the teaching methods used by faculty significantly impact students' satisfaction and trust in the institution.

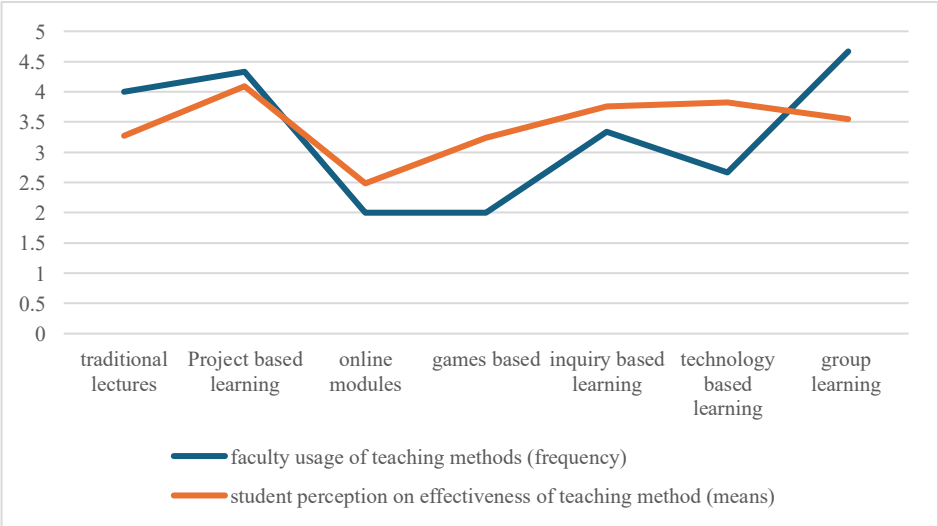

Figure 6: Role of Academia and Practice for Skill Development

Additionally, the graph strengthens the argument that some teaching methods correlate with students' effectiveness ratings, with project-based learning exhibiting the most robust results

alignment. The design faculty were asked for their views on additional strategies to enhance student trust and satisfaction with the institution. Most respondents emphasized the following points, as seen in Figure 8.

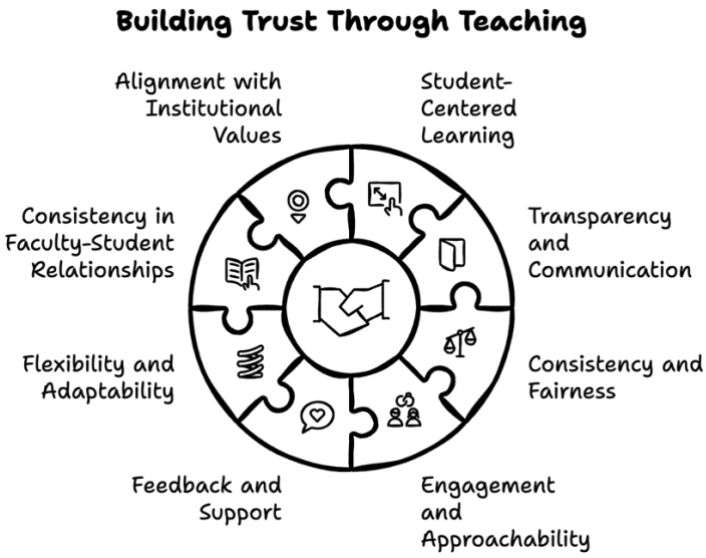

Figure 7: Building Trust Through Teaching *(Figure generated using Napkin AI)*

Aligning faculty with the institution's values is crucial for cultivating trust at the university. Students tend to trust faculty who tailor their teaching approaches to address individual needs, as this personalization improves engagement. Clear communication regarding course objectives creates a trustworthy environment, while fairness and consistency in grading further reinforce that trust. Actively involving students in learning activities shows faculty dedication, and providing regular constructive feedback helps build strong relationships. Finally, faculty adaptability to evolving student situations adds to a secure and trustworthy educational atmosphere environment.

Hands-On and Project-Based Learning

The variables considered here were the Type of teaching method used by faculty (Independent variable) and students' perception of the effectiveness of the teaching method used by faculty (dependent variable). The latter was measured on a scale of 1 to 5 where 1 was ineffective and 5 was most effective.

As seen in Table 3, it is evident that 3rd year design students find Project-based learning (p-value < 0.05) and hands-on learning (p-value < 0.05) significantly more impactful and effective than other mediums of teaching.

Table 3: Effectiveness of Hands On and Project Based Learning According to 3rd Year Students

3rd year students	**Groups**	**Average**	**F**	**P-value**
	Traditional lectures	3.125	**8.10155641**	**1.9976E-10**
	Project-based learning	4.04166667		
	Online modules	2.41666667		
	game based learning	3.16666667		
	Hands-on Learning	4.125		
	inquiry based learning	3.70833333		
	Technology-based learning	3.75		
	Group learning	3.54166667		
	Other	3.33333333		
Tukey HSD / Tukey Kramer		**P-value**		
Year of college - Project based learning		**0.002956**		
Year of college – Hands on learning		**0.0008245**		

As seen in Table 4, the 2nd year students too significantly agree that Project-based learning (p-value <0.05) and hands-on learning (p-value < 0.05) are more impactful and effective than other mediums of teaching. Additionally, they highlight that technology-based learning and traditional methods of learning are simultaneously more impactful than other methods, such as online modules, inquiry-based learning, game-based learning, and group learning. This could be related to 2nd-year students not being as exposed and mature as 3rd-year students. Students in the 2nd year are learning multiple software programs and are enamoured by the immense possibilities that these programs allow them within their projects. Therefore, they might find technology-based learning more impactful. In contrast, 3rd-year students have already been exposed to this software in their 2nd year, so they do not feel it is more impactful.

Table 4: Effectiveness of Hands-On and Project-Based Learning According to 2nd Year Students

2nd year students	**Groups**	**Average**	**F**	**P-value**
	Traditional lectures	3.71428571	**4.222816**	**0.00028873**
	Project-based learning	4.14285714		
	Online modules	2.71428571		
	game based learning	3.42857143		
	Hands-on Learning	4.42857143		
	inquiry based learning	3.57142857		
	Technology-based learning	4		
	Group learning	3.57142857		
	Other	2.85714286		
Tukey HSD / Tukey Kramer		**P-value**		
Year of college – Traditional Lectures		**0.03695**		
Year of college – Project-based learning		**0.002852**		
Year of college- hands on learning		**0.000416**		
Year of college- Technology based learning		**0.007045**		

The above findings highlight that other teaching mediums, such as online modules and game-based learning, need reassessment and enhancement to improve their effectiveness. Hence, H4.0 is rejected.

Conclusion

The findings of this study highlight the limitations of traditional teaching methods in design education, which may restrict the broader adoption of innovative approaches. Faculty participation in professional development programs remains low, partly due to a mismatch between the content of these programs and educators' actual needs. Furthermore, students are more engaged when interactive and hands-on teaching methods align with the competencies required in contemporary design industries. Institutional support and constructive feedback systems are crucial in fostering a learning environment where faculty can adopt innovative pedagogical practices. By aligning teaching approaches with student needs and professional demands, design education can create more effective, adaptive, and inclusive learning experiences.

The study further concludes by highlighting the following recommendations for design institutions and universities:

- Tailored CPD: Align CPD programs with design education needs, emphasizing hands-on techniques and adaptive strategies.
- Improve Feedback Systems: Foster regular, meaningful feedback from students and peers for insights on teaching effectiveness.
- Revise Online Modules: Enhance digital modules for better engagement through interactive elements.
- Support Innovation: Offer logistical backing, flexible curricula, and resources to promote innovative teaching practices.

Acknowledgements

The author would like to express gratitude and appreciation to all the participants who spent their valuable time filling in the survey questionnaire.

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A Model for Linguistic Landscape Management: A Case Study on National Language Development in Government Public Spaces

Ahmad Khoironi Arianto, Ministry of Education, Culture, Research and Technology, Indonesia
Raden Bambang Eko Sugihartadi, Ministry of Education, Culture, Research and Technology, Indonesia

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
Public space is a picture of language use that is easy to observe. Public space becomes an uncontrollable language space if it is not well regulated. In Indonesia, public space has become a shared space that shows language contestation. This research seeks to describe the language of the government's public space as well as efforts to foster the language of the public space. This research is a descriptive qualitative study with a model of public space coaching issued by the Language Development and Guidance Agency, Indonesian Ministry of Education, Culture, Research and Technology. This research uses the framework of observation, education, and appreciation coaching. The results of this study describe four categories of public space language that exist in government institutions, namely the use of Arabic, the use of English, the use of mixed languages, and the use of Indonesian. After coaching, the use of foreign languages and mixed languages that are not in accordance with Indonesian language rules is reduced. This result can show the existence of the Indonesian language and a sense of pride in the Indonesian language. The coaching model is very effective to be the basis for fostering the prioritization of national languages in government institutions.

Keywords: Language Development, National Language, Public Spaces, Government Institutions

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Introduction

Public spaces are often viewed as domains of information exchange, but they are less frequently recognized as arenas for linguistic dynamics. The language of the public sphere is not only a means of communication, but is a marker of identity and a marker of national pride. The study of linguistic landscapes was initially carried out by Landry and Bourhis (1997) who focused on the language of the public sphere as limited to language studies, then Gorter (2006) expanded the initial study by exploring the interaction between majority and minority languages.

In many countries, language has become a crucial issue that has led to national conflict. In Belgium, the use of Dutch and French became a state issue. cultural identity issues escalated into social unrest. A clear illustration is that there is a lot of graffiti on the names of Dutch-language signboards. The dominance of Dutch speakers rendered French speakers marginalized, exemplified by deliberate vandalism of Dutch road signs to favor French (Black et al., 2011).

In Ukraine, one pretext for Russia's invasion was alleged discrimination against Russian speakers. Interestingly, the invasion prompted a shift among Russian speakers toward adopting Ukrainian (Lonngren, 2023). Meanwhile, India faces language conflicts despite its 20+ official languages. Efforts to promote Hindi as a national language sparked protests in non-Hindi-speaking regions, entangling linguistic and religious identities—Hindi symbolizing Hinduism and Urdu representing Islam (Das, 2002).

These examples underscore the potential for language to fuel conflicts when mismanaged. Thus, language conflict mitigation is essential, particularly in multilingual nations. National language development initiatives, starting early and focusing on harmonious multilingualism, are critical. In Indonesia, the national language policy emphasizes prioritizing Indonesian education while preserving regional languages and promoting foreign language proficiency.

Based on the Previous Research

Prior research on national language development spans diverse perspectives, including cultural identity (Shohamy, 2006), globalization (Backhaus, 2007), multilingualism (Shohamy & Gorter, 2009), education (Cenoz & Gorter, 2015), tourism (Phoocharoensil & Pongpairoj, 2017), and linguistic disparities in Indonesian public spaces (Fatmawati, 2018; Dibah, 2023; Arianto, 2023, 2024). In general, these studies are dominated by technical aspects and descriptions of language in the public sphere. Although there are, not many clearly regulate language policies to reduce language contestation in the public sphere.

This paper aims to provide a real picture of language use in government public spaces and language prioritization management through the national language development method that has been launched by the Language Development and Development Agency. This model uses elements of national language prioritization, regional language preservation, and foreign language acquisition.

The Concept of National Language Development

National language development and development is a structured and systematic effort to prioritize, improve, preserve, and promote language as a marker of national identity.

Language development and coaching are closely related to national language planning, which includes three main aspects: social function planning (Kloss, 1969), corpus planning (Haugen, 1983), and competency planning (Cooper, 1989).

In Indonesia, national language development is governed by Law No. 24 of 2009 on the National Flag, Language, and Emblem. This law regulates the use of Indonesian as the official state language. Government Regulation No. 57 of 2014 on the Use of Indonesian provides more detailed guidelines on the obligation to use Indonesian in various sectors, including in public spaces, advertisements, announcements, and signage. Furthermore, Ministerial Regulation No. 50 of 2015 on the Enhancement of Indonesian Language Use directs the proper and accurate use of Indonesian in public spaces, especially in communication media such as advertisements, signage, and slogans, to strengthen national identity.

Language Landscape

Landry and Bourhis (1997) initially conceptualized language landscapes as visual representations of language in public space elements. The main functions of the language public space are information and symbolic markers. The former is a practical function that focuses on communication, while the latter emphasizes pride of national identity. The study emphasized that language in public spaces reflects the status, power, and identity of ethnic and social groups.

The language of public space is also intertwined with the multimodal aspects of public space (Scollon & Scollon, 2003). Multimodal in public space discourse also needs to be considered because public space is not limited to writing, but also images, symbols, and other visual elements.

Shohamy (2006) reinforced Landry and Bourhis's viewpoint, asserting that linguistic landscapes are areas where language policy is at stake, addressing the complex issues between the national language and other languages. In the political realm, the language landscape of the public sphere is interpreted as a form of resistance to the dominance of the superior language over the language of minority groups (Jaworski & Thurlow, 2010). On the other hand, the language of the public sphere is a reflection of the application of the use of the national language (Hult, 2010).

The conclusion from these views is that the national language in the public sphere is important to foster a sense of language pride, implement national policies widely, and strengthen national unity.

Method

This research uses a qualitative descriptive approach in examining the phenomenon of language use in public spaces of government institutions. The source of data comes from the use of language in public spaces of government institutions. Data in the form of language in public spaces of government institutions. This research was conducted through the stages of observation, education, and appreciation. The observation stage is applied through data searches in government institutions, reporting, and proposing a memorandum of understanding between institutions. The education stage is a structured and massive assistance to fostered institutions on the use of language rules in public spaces. The

appreciation stage is a sign of respect to institutions that have made serious efforts in prioritizing the national language in the public sphere.

Findings

Some of the findings in this study will be presented in the form of images and tables to validate the data in accordance with the conditions observed in the field.

Figure 1: Data of Public Space in a Foreign Language (Arabic)

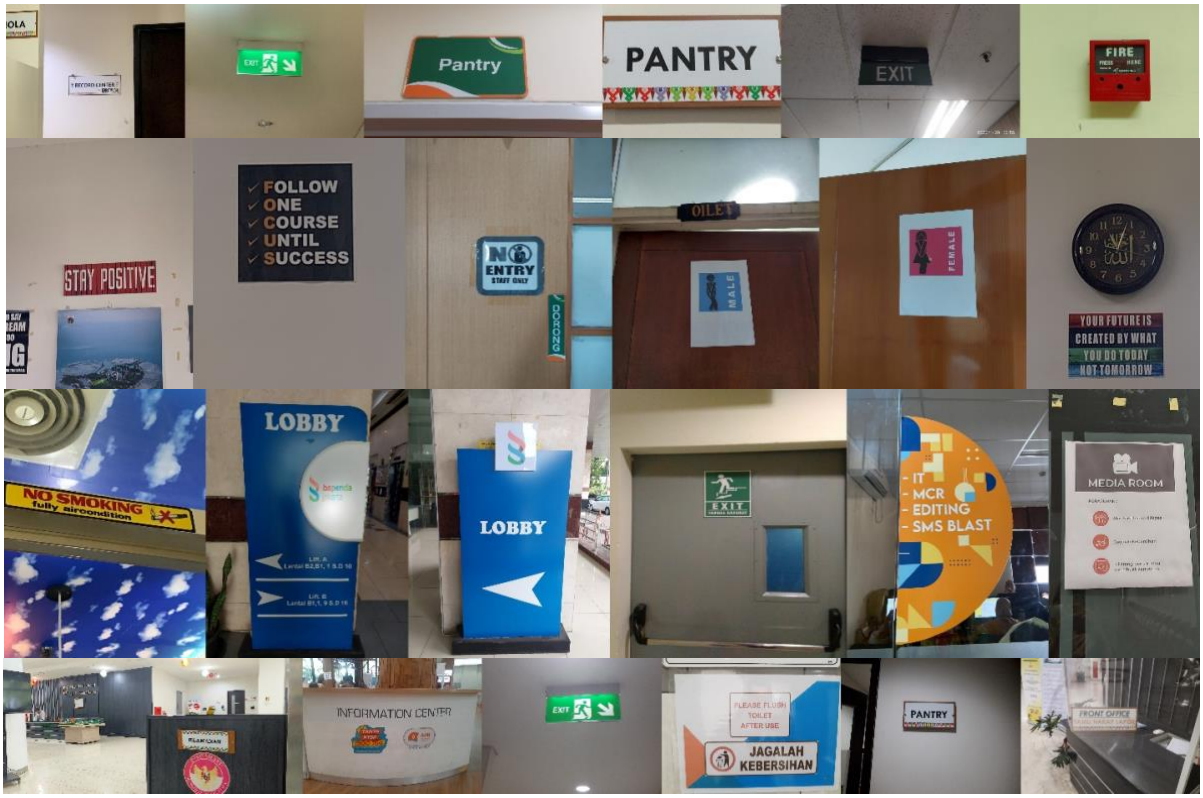

Figure 2: Data of Public Space in a Foreign Language (English)

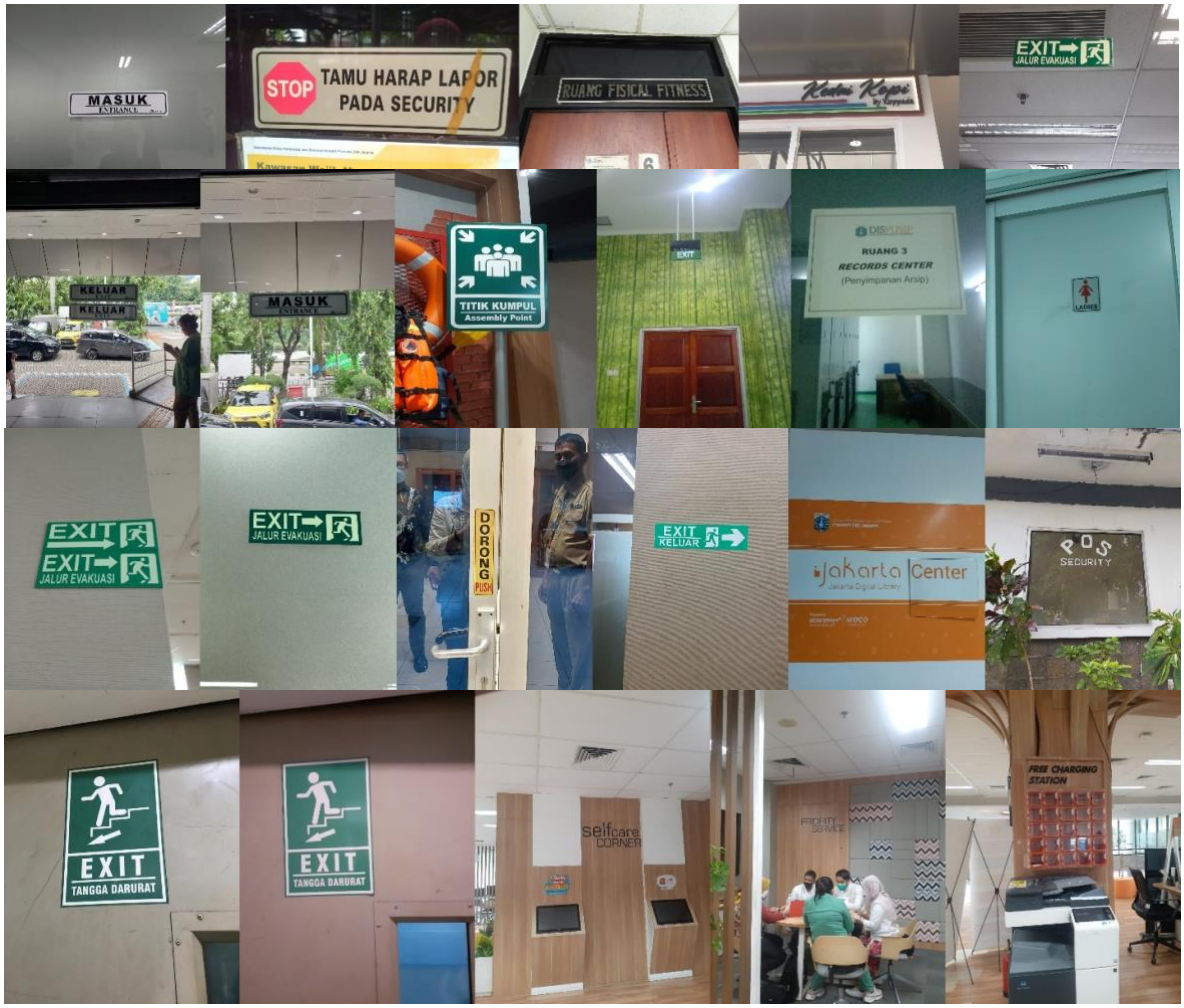

Figure 3: Data of Public Space in a Mixed Language

Figure 4: Data of Public Space in the National Language

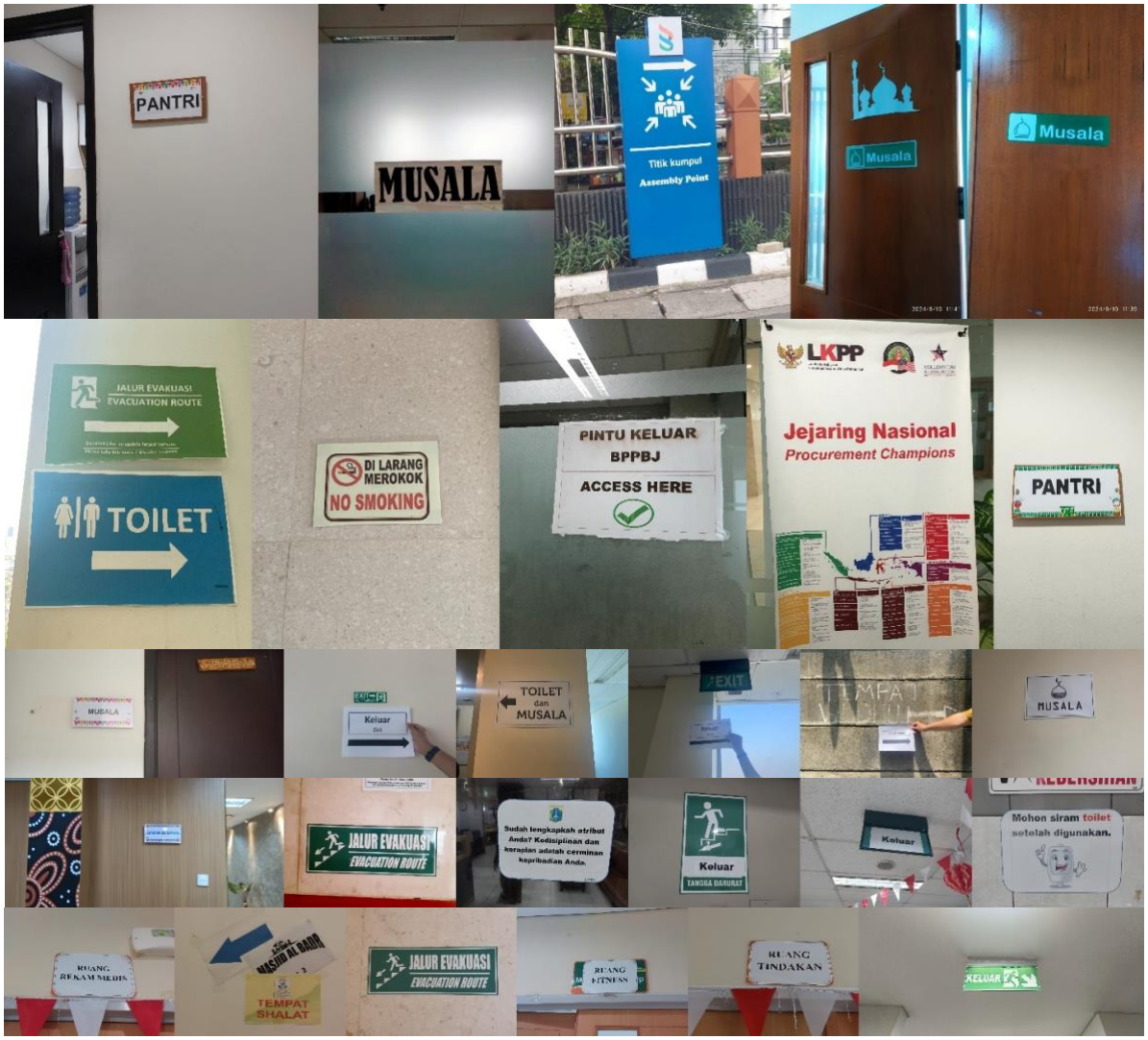

Figure 5: Data of Public Space That Has Been Developed

Table 1: Data on Language in Public Spaces of Government Institutions

Data 1	Public Space in Foreign Language (Arabic)	MUSHOLA, MUSHOLLA, WUDHU, SHOLAT,
Data 2	Public Space in Foreign Language (English)	RECORD CENTRE, EXIT, PANTRY, FIRE PRESS HERE, STAY POSITIVE, FOLLOW ONE COURSE UNTIL SUCCESS, NO ENTRY STAFF ONLY, MALE, FEMALE, YOUR FUTURE IS CREATED BY WHAT YOU DO TODAY NOT TOMORROW, NO SMOKING FULLY AIRCONDITION, LOBBY, EDITING, SMS BLAST, FRONT OFFICE, PLEASE FLUSH TOILET AFTER USE, SECURITY, INFORMATION CENTER
Data 3	Public Space in Mixed Language	MASUK (ENTRANCE), TAMU HARAP LAPOR PADA SECURITY, RUANG FISICAL FITNESS, KEDAI KOPI BY KOPPADA, EXIT (JALUR EVAKUASI), KELUAR (EXIT), TITIK KUMPUL (ASSEMBLY POINT), RUANG 3 RECORD CENTER (PENYIMPANAN ARSIP), POS SECURITY, EXIT (TANGGA DARURAT)
Data 4	Public Space in Indonesian Language	BADAN PENGEMBANGAN SUMBER DAYA MANUSIA, BADAN PENGELOLAAN KEUANGAN DAERAH, DINAS KESEHATAN, DINAS PERPUSTAKAAN DAN KEARSIPAN, BADAN PEMBINAAN BADAN USAHA MILIK NEGARA, BADAN PENGELOLAAN BENCANA DAERAH, DINAS PENDIDIKAN, DINAS KEBUDAYAAN, JALUR EVAKUASI, KAWASAN DILARANG MEROKOK, PINTU DARURAT, TOILET WANITA, TOILET PRIA, KLINIK PELAYANAN KONSULTASI
Data 5	Public Space has been developed	PANTRI, MUSALA, TITIK KUMPUL (ASSEMBLY POINT), JEJARING NASIONAL (Procurement Champions), PINTU KELUAR (ACCESS HERE), DILARANG MEROKOK (NO SMOKING), JALUR EVAKUASI (EVACUATION ROUTE), RUANG SINIAR, EXIT (KELUAR), TOILET DAN MUSALA, SUDAH LENGKAPKAH ATRIBUT ANDA? KEDISIPLINAN DAN KERAPIAN ADALAH CERMINAN KEPRIBADIAN ANDA, KELUAR (TANGGA DARURAT), KELUAR, RUANG TINDAKAN, RUANG FITNES, RUANG REKAM MEDIS.

Discussion

Linguistic landscape refers to the study of language use in public spaces, including signboards, traffic signs, and symbols that are part of visual communication in a given area. In the context of Indonesia, the use of the Indonesian language in public spaces is regulated by government policies to strengthen national identity and ensure accessibility of information for the entire population.

Based on the provided data, here is an analysis of the use of the Indonesian language in various public space elements:

- **Government Institutions**: Names such as *Badan Pengembangan Sumber Daya Manusia* (Human Resource Development Agency), *Dinas Kesehatan* (Health

Department), and *Dinas Perpustakaan dan Kearsipan* (Library and Archives Department) reflect efforts to use standard, formal Indonesian by government regulations.

- **Public Facilities**: Signs such as *Jalur Evakuasi* (Evacuation Route), *Kawasan Dilarang Merokok* (No Smoking Area), *Pintu Darurat* (Emergency Exit), *Toilet Wanita* (Women's Toilet), and *Toilet Pria* (Men's Toilet) demonstrate the use of simple, clear, and direct Indonesian for general public needs.
- **Special Services**: Examples such as *Klinik Pelayanan Konsultasi* (Consultation Service Clinic) show the use of formal Indonesian to convey the specific function of these services.

The use of Arabic in government public spaces, such as *Mushola, Musholla, Wudhu,* and *Sholat* reflects the use of language influenced by Islamic culture and religion in Indonesian society. Indonesian society is thick with the influence of Islam so that the use of Arabic is inevitable. Religious symbols, markers and language become spiritual and functional functions that are taboo to change in a religious society. *Mushola* and *Musholla* both mean a place for prayer, and *Wudhu* refers to the ritual of self-purification before prayer. According to Indonesian spelling rules, there should be no double consonants such as *sh, ll,* and *dh* so the correct spellings are *Musala, Salat,* and *Wudhu*.

The use of English in Indonesian public spaces is an influence of globalization. This internationalization of the national language is part of modernity, global accessibility, and convenience for foreigners. The use of the terms Record Center, Exit, Pantry, and Lobby are often seen in public spaces. This use presents challenges in terms of maintaining the national language and linguistic policy.

These English terms are not accompanied by their Indonesian equivalents, which contradicts Law No. 24 of 2009 on the Flag, Language, and State Symbols. This reflects a lack of implementation of national linguistic policies that prioritize the use of Indonesian. Excessive use of English without supporting the Indonesian language may undermine national values and cultural identity.

According to Law No. 24 of 2009, the Indonesian language must be used in public spaces, especially for official, safety-related, or general public information. Foreign languages are intermediary languages between multilingual speakers, but their use should not replace Indonesian as the national language.

The Indonesian government, through the Language Development and Fostering Agency, Ministry of Education, Culture, Research, and Technology, has created equivalent terms for foreign words, which can be accessed freely on the website Pasti.Kemdikbud.go.id (https://pasti.kemdikbud.go.id/home.php). This open access makes it easier for the public to find Indonesian equivalents for foreign words.

The use of mixed languages (English-Indonesian, Arabic-Indonesian, and English-Arabic) reflects the unique dynamics of language use in Indonesia. For Islamic-affiliated educational institutions, the consecutive use of Arabic, English and Indonesian is the general rule. Different things are found in nationally affiliated institutions. However, the use of foreign languages in public spaces requires national linguistic consistency in prioritizing Indonesian in public spaces.

The use of foreign terms, such as Exit, Record Center, out, in, and others reflects global language, but does not prioritize Indonesian so it needs a consistent arrangement, in the form of writing Indonesian at the beginning and foreign language at the end. These guidelines become a structured order that is consistent and can be applied to all linguistic conditions in public spaces.

Terms like *Ruang Fisical Fitness* demonstrate errors in both Indonesian and English. The term mixes Indonesian and English in its construction. In English, it should be written as *Physical Fitness*. This suggests a lack of attention to consistency and accuracy in the use of foreign languages. According to public space language guidelines, the correct usage should involve either only Indonesian (*Ruang Fitness*) or, in visual formats, an English translation presented in smaller font and placed below the Indonesian version.

The proper use of mixed terms can make it easier for local readers and, more importantly, emphasize pride in the national language. While English is often used to convey modernity or international appeal, overusing it without prioritizing Indonesian can diminish national identity.

The use of Indonesian in public spaces is essential for shaping national identity and strengthening unity among Indonesian citizens. Therefore, government policies must be implemented in a structured and systematic manner. Approaches such as observation, education, and appreciation can ensure that Indonesian is used optimally in public spaces, helping to achieve both communicative and normative objectives.

Observation, in this context, serves to gather data on the use of Indonesian in public spaces and to present findings to relevant government agencies for further action. The purpose of observation is to ensure that Indonesian is used in public spaces according to established regulations, identify issues or shortcomings in the implementation of language policies, and provide a strong basis for the government to formulate more effective policies in the future.

Observation is conducted through two main steps: data collection and submission to the relevant institutions. Data collection involves observing and documenting the use of the Indonesian language in various public spaces. The collected data includes the use of Indonesian, foreign languages, regional languages, and mixed languages in public spaces. This data collection should be done regularly and comprehensively to ensure that the results accurately reflect the implementation of the Indonesian language policy in public spaces.

Once the data is gathered and classified according to language standards, it is reported to the relevant institutions. This submission can take the form of a formal report detailing the language used in public spaces. The leadership of the institutions can use this data as a basis for decision-making to prioritize the use of the Indonesian language. Both the institutions involved in the language development process and the language agencies can establish a memorandum of understanding (MoU) to ensure good cooperation.

Education is an approach that involves the guidance and support of linguists for institutions. The aim is to raise awareness and understanding within the institution about the importance of using Indonesian in public spaces through direct and intensive mentoring. This approach focuses on fostering a sense of pride in Indonesian as the nation's unifying language, helping institutions and communities understand how to use Indonesian well in public spaces, as well

as encouraging government institutions to commit to using Indonesian on all communication platforms.

This assistance can be done through direct or indirect linguistic assistance by linguists to ensure the language development process runs effectively and efficiently. The essence of this support is to educate about the importance of Indonesian in public spaces. It can involve language experts to help enhance the institution's capacity to implement the Indonesian language in these spaces.

Appreciation is an approach that involves providing recognition or incentives to institutions that have successfully prioritized the use of the Indonesian language in public spaces. The aim is to encourage institutions to be more serious in implementing state policies related to language in public spaces, raise awareness that the use of Indonesian in public spaces is not only an obligation, but a positive value that should be appreciated, and motivate other institutions to consistently prioritize the use of Indonesian.

Institutions that have shown a strong commitment to using Indonesian in public spaces can be given official recognition. The form of appreciation to institutions can be in the form of award certificates, incentives for development costs, and/or media publications. The certificate of appreciation is in the form of an acknowledgement of the validity of the fostered and optimized institution in the use of the national language in public spaces. Incentives can take the form of financial support for further programs, additional training opportunities, or ease in the licensing process for institutions that implement language policies optimally. Public recognition can take the form of media coverage or social media exposure for institutions that are highly committed to the use of Indonesian in public spaces. This strategy can encourage other institutions to follow the good practices of language fostered institutions.

Conclusion

Based on the findings of this study, it can be concluded that the model for language development in public spaces, which includes three main components—observation, education, and appreciation—is an effective and efficient approach to improving the quality of language use in public spaces within government institutions. The observation process allows for identifying the use of foreign and mixed languages that do not comply with Indonesian language standards, as well as fostering inter-institutional collaboration. Education, through both online and offline guidance, maximizes the development of the national language in public spaces. Appreciation, in the form of awards for institutions that prioritize Indonesian in public spaces, can encourage other institutions to adopt similar practices.

Overall, this language development model has proven to have a positive impact on increasing the use of the Indonesian language in public spaces, while also supporting the government's efforts to strengthen national identity and facilitate effective communication. With consistent and sustainable implementation, this model can serve as a long-term solution to address the challenges posed by the use of foreign and mixed languages in public spaces, ensuring that Indonesian remains the primary language for public communication in Indonesia.

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Flipped Classroom and Blended Learning: How Do They Affect Design Students' Learning Motivation in the Post-pandemic Era?

Shen Qianhui, The Hong Kong Polytechnic University, Hong Kong SAR
Henry Ma, The Hong Kong Polytechnic University, Hong Kong SAR
KaYan Chung, The Hong Kong Polytechnic University, Hong Kong SAR
Yating Li, The Hong Kong Polytechnic University, Hong Kong SAR
Yuet Kai Chan, The Hong Kong Polytechnic University, Hong Kong SAR

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
In the post-pandemic era, education has significantly transformed, moving from traditional face-to-face teaching to blended learning, which combines online and offline methods. Online education has emerged as a flexible and accessible alternative, especially during extraordinary circumstances such as pandemics. This shift has increased the demand for student-centered blended learning methodologies to address the limitations of conventional educational systems. The flipped classroom approach, a form of blended learning, is widely recognized in higher education as an effective pedagogical strategy. However, there is a lack of comprehensive tools to assess the motivation of design students in flipped classrooms. This study aims to investigate the factors influencing the motivation of design students in flipped classrooms and to develop a motivation scale for this purpose. The research aims to explore the factors affecting design students' motivation in a blended learning environment, with a particular focus on flipped classrooms. Our objective is to develop a reliable and validated motivation scale to assess the motivation of design students in such settings. This scale will aid in evaluating and enhancing the effectiveness of flipped classroom pedagogy within design education.

Keywords: Flipped Classroom, Blended Learning, Design Education, Motivation

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Introduction

As for design students, learning motivation is crucial in flipped classrooms. In the post-pandemic era, education is embracing a new opportunity for intelligent transformation, with teaching modes gradually evolving from traditional offline classroom instruction to blended learning combining offline and online methods (Zhang, 2023). In extreme situations like pandemics, students quickly adapt to online learning, which may permanently alter Learning Delivery Models (LDM)(Lockee, 2021). Previously, design in higher education hardly used blended learning modes but studio-based learning because design education focuses on 'hands-on' and 'learning by doing' modes. Therefore, in the past, design education adopts face-to-face teaching methods, allowing students to acquire knowledge and experience from design assignments. As a result, design students may find it challenging to get used to the learning mode of blended learning, which may increase the extra learning load of design students. However, during the pandemic, the traditional face-to-face Learning Delivery Model (LDM) was not feasible, while online learning was compulsory. However, the pandemic made traditional face-to-face LDM impractical, necessitating a shift to online learning. This transition was supported by the flexibility and accessibility of online education (Zhu et al., 2020; Lockee, 2021). As online learning technologies advanced post-pandemic, design students became more accustomed to online learning, leading to higher education institutions in design being more open to blended learning. Although design education is returning to face-to-face learning post-pandemic, online learning elements are retained, which sets the stage for the implementation of blended learning and flipped classroom models in design education.

Previous studies have identified challenges faced by design students in blended learning environments, such as diminished motivation for online learning and difficulties adapting to the flipped classroom model (Gedera et al., 2015; Shapiro et al., 2017). Despite these challenges, the flipped classroom has the potential to boost motivation if tailored to the unique educational needs of design students. This study aims to explore factors influencing design students' motivation in the post-pandemic era by integrating flipped classroom and blended learning models, thereby addressing gaps in existing research.

Learning Model in Design Education

Design students, who traditionally engage in studio-based, hands-on learning, may face unique challenges when transitioning to a flipped classroom model. Understanding the learning model and factors influencing design students' motivation in this novel learning environment is essential for optimizing the effectiveness of flipped classrooms in design education.

Traditional Learning Model of Design Education

Although "learning by doing" has long been recognized as a fundamental approach in design education, there remains little consensus on its application in contemporary design courses. This is due to the shift from traditional offline courses to blended learning models, including innovative approaches like the flipped classroom. The learning process for design students is distinct from that of general students; for instance, design instructors often guide beginners through personal experiences and insights (Curry, 2014; Uluoglu, 2000, pp. 34 – 36). In this context, novice design students must develop their own understanding of implicit design knowledge. Dooren et al. (2014) propose that instructors assist students in clarifying the

design process, such as learning through doing and comprehending the process of learning through doing. However, specific design teaching methods need to be systematized to align with modern educational models, which will also influence students' motivation to engage in practical learning.

In this study, we have clarified the traditional design education model and the integration of the flipped classroom with a blended learning model. Currently, design education courses can be categorized into four types (Demirbas & Demirkan, 2007, p. 346):

(1) Foundation courses, which primarily involve theoretical knowledge;
(2) Technical courses, which include both theoretical and practical knowledge;
(3) Art courses, which emphasize the presentation and expression of design concepts;
(4) Design studio courses, which integrate knowledge from the previous three categories.

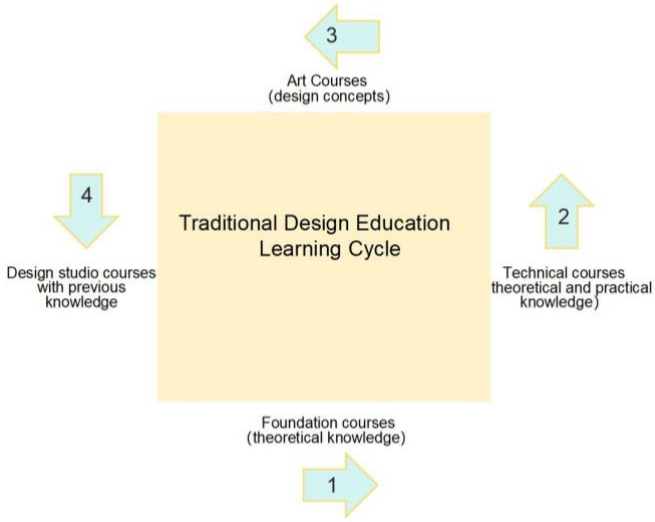

Figure 1: Traditional Learning Mode in Design Education

Flipped Classroom Learning Model of Design Education

Design education is distinct from other disciplines as it emphasizes "learning by doing," with studio-based courses playing a central role. In design projects, students engage in continuous dialogue with peers and instructors, receiving feedback through critiques and iterative design processes (Demirbas & Demirkan, 2007). Flipped classrooms enable students to use class time for more interactive and collaborative activities by shifting part of the knowledge transfer to online learning before class. Blended learning combines online and offline teaching to create a more flexible teaching environment. Thus, blended learning in flipped classrooms (BLF) aligns well with the "learning by doing" approach, making it highly suitable for design education. Compared to traditional design education, BLF follows a three-step cycle:

(1) Before class, students watch video lectures on basic design knowledge.
(2) In class, the teacher delivers short lectures or presentations on design software and tools.
(3) In class, students have increased practice time for projects or assignments to enhance their design skills, with the teacher acting as a facilitator.

Students typically acquire different types of knowledge through these methods, with theoretical knowledge often obtained online, while practical technical and artistic expression

courses are completed offline. However, the impact of the flipped classroom format on the learning motivation of design students requires further research and analysis based on actual circumstances.

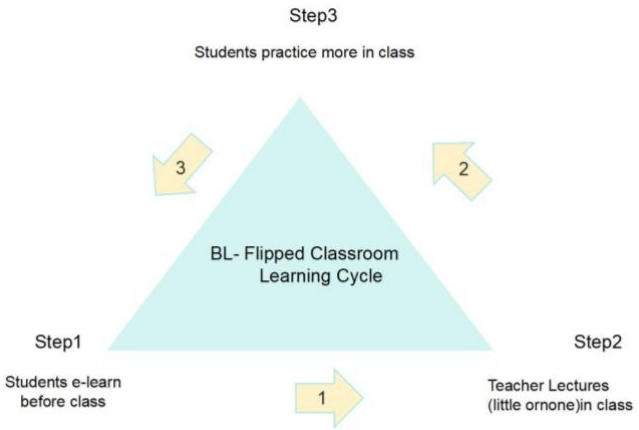

Figure 2: BL-Flipped Classroom Learning Mode in Design Education

Research Objectives

In design education, the integration of new educational environments and technology presents additional challenges to learning delivery modes, making students' learning motivation a crucial concern in the flipped classroom. To date, no research has examined the impact of flipped classroom teaching methods on the learning motivation of design students within a blended learning context. This study aims to explore the factors influencing the learning motivation of design students in flipped classrooms and to develop a reliable scale for measuring this motivation in the post-pandemic era.

Theoretical Framework

In this study, Self-Determination Theory (SDT), Expectancy Theory and Situational Motivation Theory (SMT) serve as the theoretical foundation for examining student motivation in various teaching and learning modes. According to SDT, student motivation is shaped by how well their environment meets their needs for competence, autonomy, and relatedness (Deci & Ryan, 2015). Conversely, Expectancy Theory posits that student motivation is determined by their expectations of success and the value they assign to achieving specific outcomes (Vroom, 1964).

Self-Determination Theory in Design Education

Self-Determination Theory (SDT), proposed by Deci and Ryan (1985), is a motivation theory that has significantly influenced over 200 empirical studies in educational research (Guay et al., 2008). It offers a valuable framework for understanding the flipped classroom approach. SDT emphasizes that students' motivation levels are shaped by their learning environments, which can either facilitate or hinder the fulfillment of their basic psychological needs (Deci & Ryan, 2008). Motivation plays a crucial role in the effectiveness of any educational method. According to SDT, motivation can be intrinsic—driven by interest in the learning activity—or extrinsic—driven by external rewards or pressures (Ryan & Deci, 2000). The theory posits that fulfilling three basic psychological needs—competence, autonomy, and relatedness—is essential for fostering intrinsic motivation.

In flipped classrooms, students' motivation is influenced by their ability to manage the online self-study component and engage in the interactive, face-to-face sessions. Research indicates that motivation is often higher in flipped classrooms compared to traditional methods, as students have more control over their learning (Chou et al., 2021; Lin et al., 2018). However, challenges such as lack of motivation for online self-study and insufficient in-class engagement remain significant obstacles (Gedera et al., 2015).

Consequently, students are expected to assume greater responsibility for their learning, especially in the online self-study component. This autonomy can enhance intrinsic motivation if students feel competent and supported. Conversely, if students struggle with self-study, their motivation may decline, leading to disengagement.

Expectancy Theory in Design Education

Expectancy Theory (Vroom, 1964) is frequently employed to elucidate individual motivation and is extensively applied in education to comprehend students' motivational processes in learning (Geiger & Cooper, 2024). The theory posits that individual behavior is contingent upon their expectations of the outcomes of a particular behavior and the attractiveness of these outcomes (valence). Through Expectancy Theory, we can examine how design students perceive the value of learning tasks and their anticipated success in educational settings, thereby informing instructional design and enhancing students' learning motivation (Min et al., 2020).

In education, Expectancy Theory is widely utilized to explicate students' learning behavior and motivation. Geiger and Cooper (2024) investigated accounting students' learning motivation through Vroom's Expectancy Theory, revealing a significant correlation between students' expectations for learning outcomes and their effort levels. For instance, design students frequently partake in project-based learning, where outcomes are unique and subjective. According to Expectancy Theory, students are more motivated if they believe their efforts will lead to success and that such success holds value. Research indicates that students' expectations for improved academic performance (e.g., higher GPA, better job performance, increased self-satisfaction) are primary motivational drivers. Similarly, Min et al. (2020) employed the Expectancy Theory model to analyze how students' expectations for learning outcomes influence their motivation. They found that students anticipating success are more likely to invest time and energy in their studies. This theory has been effectively applied to studying student motivation across various disciplines, providing a theoretical foundation for exploring flipped classrooms and blended learning models in design education.

Situational Motivation Theory in Design Education

Situational Motivation Theory (SMT), developed by Deci and Ryan, builds on Self-Determination Theory (SDT) by emphasizing that motivation is dynamic and influenced by specific situational factors. Unlike the traditional static concept of motivation, SMT examines how individuals mobilize and sustain learning motivation in particular contexts. In educational settings, SMT is especially useful for examining how to stimulate students' interest and participation by designing an engaging learning environment.

In design education, students' learning motivation is crucial because design courses typically require students to maintain high levels of initiative and commitment in solving complex

problems, engaging in creative thinking, and participating in interdisciplinary collaboration. Recently, with the rise of blended learning and flipped classroom models, researchers have focused on how these innovative teaching methods impact students' motivation through situational factors. Simultaneously, the post-pandemic design education environment has undergone significant changes. Zhan et al. (2022) found that motivation levels in a blended learning environment are closely linked to situational factors, especially in design courses. The combination of online and offline models enhances students' participation and autonomy.

Winarno (2020) noted that blended learning and flipped classroom models offer students greater flexibility, particularly in design courses, where students can present projects, receive feedback, and make revisions via online platforms. This flexibility greatly stimulates student motivation. However, Rotgans and Schmidt (2014) caution that situational motivation may diminish as task familiarity decreases. Therefore, in design education, instructors must continually update task content and challenge levels. For instance, they can enhance the learning experience by providing diverse resources and flexible learning schedules, thereby increasing student motivation.

Learning Motivation Scale for Design Students

Based on the theoretical framework (Fig.3), this paper presents a literature review on the motivation of students designed to learn in flipped classrooms and blended learning models, with a focus on the impact of these instructional modes on student learning motivation in the post-epidemic period.

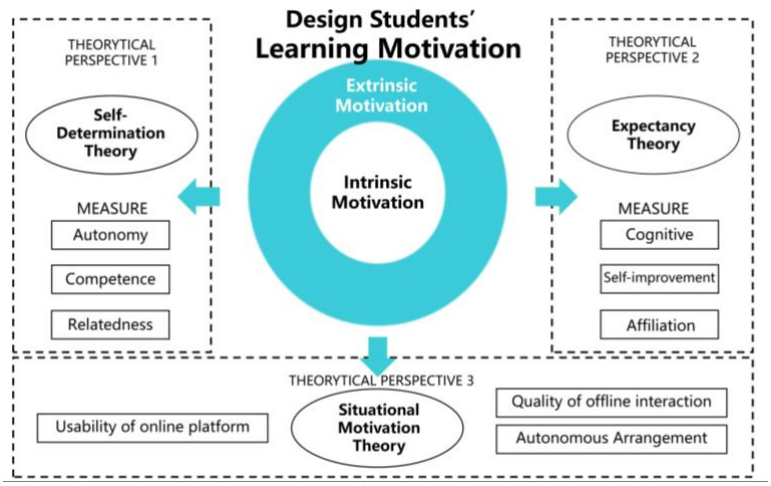

Figure 3: Theoretical Framework of Design Students' Learning Motivation

Existing research primarily focuses on general student populations, with limited in-depth studies on design students. Furthermore, the existing literature often exhibits methodological limitations, relying heavily on questionnaires without incorporating targeted student motivation scales. This study aims to develop a learning motivation scale tailored for design students in the post-epidemic era, incorporating insights from self-determination theory (SDT), expectancy theory, and situational motivation theory. The scale employs a five-point Likert rating method, with questions spanning four dimensions: basic information, self-determination motivation factors, expectancy theory motivation factors, and situational motivation factors.

The basic information dimension includes students' current year of study and primary design specialization, such as graphic design, interior design, industrial design, fashion design, and others.

Self-determination motivation factors are divided into three components: competence, autonomy, and relatedness.

Competence refers to students' confidence in their ability to complete design tasks in flipped classrooms and their belief in possessing the necessary skills to excel. This foundation enables students to effectively navigate challenges in both online and offline courses.

Autonomy allows students to learn at their own pace, aligning their actions with personal interests and values. This enhances intrinsic motivation, leading to greater engagement and persistence. In autonomy-supportive environments, such as offline courses, instructors encourage student choice, provide meaningful rationales for tasks, and acknowledge students' feelings and perspectives.

Relatedness involves a sense of belonging and connection with classmates, peers, and the school community. This connection fosters intrinsic motivation and engagement, making students feel valued and supported. In-person courses can enhance relatedness through a welcoming classroom environment, while online courses can promote collaboration and interaction by fostering a caring attitude towards students.

According to Expectancy Theory, a student's effort is influenced by their expectations regarding learning outcomes (expectancy value E) and their preference for these outcomes (goal valence V). This theory facilitates the measurement of students' expectations and goal valence, providing insights into their learning motivation.

Cognitive drive, exemplified by statements like "I am highly interested in the design content taught in the flipped classroom," indicates students' intrinsic interest and pursuit of learning, representing goal valence.

Self-improvement motivation, illustrated by statements such as "I believe that my efforts in the flipped classroom will lead to improved academic performance," reflects students' aspirations for future achievements. These aspirations, such as the desire to secure a good job, motivate students to exert effort in their studies. In design education, students may focus more on their design projects, as seen in sentiments like "The outcomes of design projects in the flipped classroom are important to me."

Affiliation drive, indicated by statements like "I am motivated to learn in the flipped classroom to achieve better grades and a sense of accomplishment," reflects students' desire for external rewards, such as recognition from parents and teachers, which can further motivate them to work diligently.

In a blended learning environment, the motivation of design students is influenced by various situational factors, including the presentation of online content, the interactivity of offline teaching activities, and the autonomous arrangement of tasks.

Usability of the online platform, such as technical support provided in the flipped classroom through instructional videos and online platforms, enhances learning. The stability and ease

of use of the online learning platform are crucial components of the blended learning model, directly impacting students' learning experience and motivation. Additionally, the richness and quality of online learning resources significantly influence students' motivation in online learning; rich and high-quality resources can stimulate students' interest and motivation.

Quality of offline interaction, including teacher-student and student-student interactions, positively affects motivation in the flipped classroom. Effective teacher guidance and student interaction in offline classes are essential for enhancing students' motivation and learning outcomes.

Autonomous arrangements, such as homework and assessment methods in the flipped classroom, are critical factors influencing students' motivation. Well-designed and scientific homework and assessment methods can stimulate students' motivation and enthusiasm for learning.

Table 1: Scale of Design Students' Learning Motivation

Theory	Aspects of the Theory	Sample Questions
Self-Determination Theory (SDT)	Competence	"I am confident in my ability to complete design tasks in the flipped classroom." "I believe I possess the necessary skills to excel in the flipped classroom."
	Autonomy	"The flipped classroom allows me to learn at my own pace." "In offline courses, teachers provide an autonomy-supportive environment that encourages my choices and perspectives."
	Relatedness	"I feel a sense of belonging and connection with my classmates in the flipped classroom." "The classroom environment makes me feel valued and supported."
Expectancy Theory	Cognitive	"I am highly interested in the design content taught in the flipped classroom." "I enjoy learning about design and find it intrinsically motivating."
	Self-Improvement	"I believe that my efforts in the flipped classroom will lead to improved academic performance." "I study hard in design because I want to achieve my future goals (e.g., finding a good job)."
	Affiliation	"I am motivated to learn in the flipped classroom to achieve better grades and a sense of accomplishment." "External rewards (e.g., class rewards, recognition from teachers) motivate me to work harder in design."
Situational Motivation Theory	Usability of Online Platform	"The technical support provided in the flipped classroom (instructional videos, online platforms) enhances my learning." "The online learning resources are rich and high-quality, which stimulates my interest in learning."
	Quality of Offline Interaction	"The quality of teacher-student and student-student interactions in the flipped classroom positively influences my motivation." "Good teacher guidance and student cooperation enhance my learning experience."
	Autonomous Arrangement	"I think the homework and assessment methods of the flipped classroom can stimulate my learning motivation." "Reasonable and scientific homework and assessment methods make me more engaged in learning."

Conclusion

This research contributes to the existing studies on flipped classrooms and blended learning by addressing the specific needs of design students. The study introduces a comprehensive scale to assess students' learning motivation and expectations in post-pandemic flipped classrooms with blended learning, presented in a Likert scale format. The scale includes basic information such as grade and major, alongside questions related to self-determination motivation factors, expectancy theory motivation factors, and situational motivation theory. It considers the learning scenarios of blended learning (both online and offline) and the flipped classroom learning mode.

By utilizing and analyzing this scale, educators can gain valuable insights to enhance instructional design and implementation strategies in flipped classrooms, ultimately improving students' learning outcomes and satisfaction. The study's findings offer practical implications for design educators aiming to effectively implement flipped classrooms.

Although this study provides valuable insights into the motivational factors affecting design students, its scope is limited to a specific student group. Future research should explore the generalizability of these factors across different disciplines, investigate the long-term impact of flipped classrooms on students' motivation and performance, and develop strategies for enhancing long-term learning motivation through optimized instructional design in design education, thereby improving the overall effectiveness of design education.

Acknowledgments

Firstly and foremost, I extend my deepest gratitude to my supervisor, Henry Ma, for his unwavering support, profound mentorship, and the wealth of knowledge he has imparted upon me. His kindness and illuminating instructions have not only deepened my understanding of translation theories but also sparked a genuine interest within me. Despite his demanding schedule, Henry took the time to meticulously review my paper, providing insightful feedback and encouragement that were instrumental in its completion. Special mention must go to my fellow collaborators, KaYan Chung, Yating Li, and Emily Chan, who have been invaluable in their support and encouragement. Their dedication, hard work, and constructive suggestions have been pivotal in pushing me to strive for excellence in both language studies and research. Without their collaborative efforts and unwavering support, this thesis would not have reached its full potential.

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Contact email: qianhui.shen@connect.polyu.hk

Generative AI Pedagogy Implementation in Design Class for Creativity Cultivation in Chinese Higher Education

Yaqi Zhang, The Hong Kong Polytechnic University, China
Yilin Wong, The Hong Kong Polytechnic University, China
Zaixing Liu, Guangzhou Academy of Fine Arts, China
Xiaojing Huang, Guangzhou Academy of Fine Arts, China
Henry Ma, The Hong Kong Polytechnic University, China

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
Gen AI can provide collective knowledge beyond individual knowledge to allow people to connect with content beyond personal creativity. The emergence of Gen AI is a good way to help students think outside the box for creativity cultivation in design education. However, there is still a lack of teaching methods for creative training in Chinese design education with Gen AI integration. According to theory, in traditional creativity training, the association thinking, and critical thinking approach could facilitate creativity. However, the impact of these two methods on creativity training integrated with Gen AI is still unknown. Therefore, we proposed critical thinking and association thinking as pedagogy to apply in real design classes. The purpose of this research is to understand the students' experience and interpretations of Gen AI integrated creative training with pedagogies. Therefore, we employed qualitative-based methods like focus groups and interviews which included around 68 student participants and 3 teacher participants. The teaching intervention lasted for two weeks. Our findings show that (1) Teaching methods make it easy for people to integrate their ideas in the cultivation of creativity. (2) Without teaching methods, it's not easy for students to synthesise ideas with Gen AI. (3) Teaching pedagogy tools guide reflection and cultivate critical thinking.

Keywords: Generative AI Design Education, Gen AI Creativity, AI Creativity Cultivation

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Introduction

The emergence of Artificial Intelligence Generated Content (AIGC) has had a profound impact on the industry and education of the design field (Huang et al., 2024; Lin & Liu, 2024; Wei et al., 2024; Wu et al., 2024). The purpose of Gen AI implementation in the design industry and design talent training should be different. The impact of AIGC on design work could be efficiency improvement, while the impact on design education should be considered in cultivating people's creativity (Wong & Siu, 2012). The emergence of Gen AI can greatly increase the efficiency of designers at work and quickly produce visual effects including graphic and video works (Wu et al., 2024). The benefits of using Gen AI in the design industry are to reduce repetitive work, production time, and labour costs to improve production efficiency. However, the purpose of Gen AI in design education should not be entirely to improve efficiency. The purpose of Gen AI teaching for design learning should be to help students improve their creative ability and help students generate more creative ideas.

The emergence of Generative Artificial Intelligence (Gen AI) has a significant impact on students studying in higher education. The utilization of Gen AI in learning is an unavoidable trend. It is better to encourage students to use it in a manner, rather than preventing students from using it. Especially in design disciplines, the emergence of Gen AI has caused a great shock. It has powerful visual output capabilities have caused academia and industry to discuss a series of challenges, including whether Gen AI will replace designers and, if not, how it can empower designers and establish good cooperative relationships and appropriate work models. When considering the relationship between Gen AI and designers, we began to think about how to establish a good cooperative relationship with Gen AI from the designer’s training stage so that designers can better leverage the assistance of Gen AI and enhance design outcomes. Some scholars have researched the application of Gen AI integrated design education. They discussed the impact of self-efficacy on the learning process of design students (Huang et al., 2024). However, there is still a lack of comprehensive understanding of Gen AI integrated design education, teaching methods, and learning processes. In particular, there is seldom a study to reveal the changes that Gen AI brings to creative cultivation.

Research Gap and Research Question

Gen AI technology can offer effective educational opportunities and it also be employed as a creative learning from memory assistance aspect(Maney, 2023). Additionally, AI technology can also bring improvement in teaching quality by providing teacher assistance with instructions (Alam, 2023). AI-driven chatbots can help teachers create effective, individualized lesson plans that will improve student’s academic performance (Niewint-Gori, 2023). It can also give teachers information for evaluation and development quickly (Bahroun et al., 2023). AI integration with pedagogy has been found the positive impacts on education both from teachers' and students' perspectives (Bahroun et al., 2023). However, according to existing literature, the teaching methods with AI intervention have not been fully discussed. Therefore, we proposed critical thinking and association thinking as pedagogy to apply in real design classes to understand the student's experience and interpretations of these two methods of creativity training. The research question is what are the impacts of these two methods on creativity training integrated with Gen AI? The purpose of this research is to understand the students' experience and interpretations of Gen AI integrated creative training with pedagogies.

Literature Review

Design Education and Creativity Relationship

The development of social technology means that many new things have emerged, and new things are always facing challenges and opportunities. It may be more crucial to mix and manipulate knowledge and information when faced with challenges, or to choose which information to combine and manipulate while addressing problems (Ma, 2017). This skill, commonly referred to as creativity, is the capacity to produce original ideas by drawing inspiration from existing ones (Boden, 2004). Therefore, the design discipline is to solve these problems creatively. The design discipline has always been required to improve the existing situation to achieve a better situation, which requires creative ideas (Boden, 2004). Creativity in design is reflected in the design process. In non-routine design processes, creativity is related to the process of developing useful and original solutions.

Gen AI is made up of a large amount of data. The amount of data and knowledge in Gen AI exceeds the amount of personal information. When individuals find themselves confined within their cognitive boundaries, the content generated by Gen AI can facilitate a departure from these limitations, connecting disparate ideas and helping individuals overcome personal stereotypes. As the theory of 'Synthetic'[1] techniques in creativity says, creativity often requires some abnormal content, which happens to be what artificial intelligence can provide. Therefore, we assume that artificial intelligence can stimulate creativity (Gordon, 1961).

When ideas are generated during brainstorming, indirectly relevant information could increase the originality of the ideas, as well as elaborations on ideas enhance the usefulness of the ideas (Montag-Smit & Maertz Jr, 2017). There is this kind of novel and irrelevant information in the answers given by generative AI. If it can be elaborated by students in the brainstorming, it could increase the creativity of their design ideas. Therefore, we suggested that while learning with AI, we should teach students to elaborate ideas based on AI-generated suggestions(outcomes) to increase the usefulness of final design ideas.

In the design thinking stage, when the idea is formed, a lot of divergent thinking is needed, and divergent thinking is related to creativity. Creation requires some cognitive activities, including association and critical thinking. These have been proven to affect creativity. With the intervention of AI in design, we still don't know what impact these methods will have on creativity after integrating AI. Therefore, we combined these two theories to design two teaching methods, which are called association and critical thinking.

Association Thinking

Thinking style refers to individuals using their abilities in the way they like. Thinking legislatively—that is, choosing to think in novel ways—is especially crucial for creativity when it comes to thinking styles (Sternberg, 1988). It was proposed that associative thinking methods may foster innovative ideas by enabling the fluent retrieval and combining of remote associations. Empirical research has shown that associative processes and divergent thinking are closely related. The validity of associative capacities concerning divergent thinking was discovered that associative skills account for around half of the variation in divergent

[1]Synectics is "a technique developed by Gordon (1961) for improving creative problem solving. The synectics means joining together different and apparently unconnected or irrelevant elements."

thinking capacity (Benedek et al., 2012). Association thinking was developed as a teaching tool.

Critical Thinking

Creative thinking is considered the ability to produce original ideas or answers (Duff et al., 2013) and to perceive new and unsuspected relationships or unrelated factors (Piawa, 2010). Nosich (1994) theorized that critical thinking requires more than higher-order thinking skills (Nosich, 1994). Critical thinking encompass various traits associated with higher-order thinking skills, particularly those related to logical decision-making, information acquisition and evaluation, and problem-solving (O'Hare & McGuinness, 2005; Schafersman, 1991). Critical thinking involves the evaluation of ideas and the assessment of fact validity prior to decision-making. It is characterized by a logical inquiry into the relevant facts of an issue, establishing rules and criteria within the thinking process. This skill includes the ability to ask questions and define problems, aiming to identify the most suitable solutions. Essential attributes of critical thinking include analytical assessment, decision-making, and logical problem-solving (Ülger, 2016). Furthermore, critical thinking was developed as a pedagogical tool.

Procedure

Before the Gem AI workshop started, the researcher assigned a design task with a specific theme to students and left students half a day to use Gen AI tools to generate creative ideas by themselves. Before our teaching method intervention began, the researcher distributed paper and pen to students and asked them to write down their creative ideas. Then the researcher introduced the association thinking and critical thinking teaching tools. Students were required to use two teaching methods for the generation of creative ideas separately. Students designed a project according to two teaching methods. The teaching intervention lasted for 4 hours. Then the researcher conducted a focus group with students to collect qualitative data and used maxqda to code and analyze the data to draw the following conclusions.

Conclusion

Teaching Methods Make It Easy for People to Integrate Their Ideas Into the Cultivation of Creativity

Teaching methods help students get rid of dependence and establish independent thinking. The tools of the intervention pedagogy are listed and easy to understand, so the students feel they can make connections quickly.

Student 21 said, "(Pedagogy tool) It can help me sort out some things, and people like me who have a confused mind will be very suitable for this."[2] Student 13, "(Pedagogy) tools can help us think more deeply and meticulously. My biggest feeling after using this tool is that I have been using AI to expand my thinking, but it may be scattered, and I can only extract some scattered information. I don't have any integration. But this (pedagogy) tool can give me an integration. Especially when AI plus my thinking, and then come up with a new

[2] "（教学方法）可以以帮我理清楚一些东西，然后像我这种头脑比较混乱的人就会很适合这种。"

solution, it is equivalent to integrating my ideas and rethinking it."[3]

Gen AI teaching shouldn't let students rely on Gen AI to give answers and use the answer directly. Otherwise, students' personal abilities and thinking abilities cannot be improved. In the process of AI participation, the student's thinking process needs to be considered. Teacher P11 asked, "How do we control the creativity performance of the students? I think this process is still a problem that needs pay to attention. In this case, the students may be able to come up with a lot of things, but in this process, did the students pass the requirements step by step through constantly divergent thinking to reach the final result or directly hand in an assignment to the teacher through other methods? Therefore, in this process, teachers are required to control."[4] Therefore, the design of our teaching method is also to hope that students can use their insights to interact with AI results. Student 19 feels that "it (pedagogy tools) can help to organize things, so if you think on your own, you have completely blue-sky thinking, but if you think according to its framework (pedagogy tool), you can have structure, and then continue to ask in-depth questions based on the points of inspiration it gives you."[5]

Without Teaching Methods, It's Not Easy for Students to Synthesise Ideas With Gen AI

When communicating with AI, students feel it is not easy to add an individual's thoughts or let students think. When students use ChatGPT by themselves, they will just ask Gen AI questions, take a look at the answers, ask a few more questions when they see something interesting, and then end the conversation. But when they don't have teaching tools, students find it difficult to integrate their own ideas and prefer to rely directly on the answers given by Gen AI.

Student 19 said "I just ask it (Gen AI), it answers me. If I only use AI, it will easily replace my thoughts."[6] Student 10 gave an example" I usually browse GPT by myself, I ask, then I look, and then I may find something interesting, so I ask him to say a few more words. Relying on AI to give answers."[7] Student 1 said, "The first thing I want to do is to rely on this AI. I just started using AI to generate pictures without thinking for myself."[8] Student 13 said, "If I only use AI, it will easily replace my thoughts." Lack of methods, the student said that if a beginner uses it, he feels that AI is not that easy to use because he does not know how to get inspiration from AI in depth."[9]

Teaching Pedagogy Tools Guide Reflection and Cultivate Creative Thinking

There is a difference between using and not using teaching intervention reflect by one teacher. From the perspective of the teaching, the experience process of our proposed pedagogy guidance is effective in influencing students' creative ideas, which is logical, easy to guide

[3] "工具能够帮我们更深入细化思考。使用了这个工具以后给我最大的感受是，因为我之前也一直有在用 AI 去就是 GPT 去扩散我的思维，但是可能是比较零散，只能去提取一些零散的信息，我自己没有 一个整合。但是这个(教学)工具就可以说给我一个整合。然后特别是 AI 加上我自己的思 考，然后得出一个新的方案的时候，就等于我自己又融入了我自己的想法去重新思 考了一下。"

[4] "我们怎么样来把控，这个是学生的一种创意(表现)，这个过程我觉得还是要注意的一个问题.这个过程当中他到底是不是他一一步一步通过我的课题的要求，然后不断的去思考发散，然后形成了你最终的结果，还是直接通过别的方法就给老师就交了个作业，所以在这个过程里面就要求老师可能在这一块要有一个把握。"

[5] "感觉他（教学法工具）能起到一种梳理的作用，你自己想的话就完全天马行空，但是你按照他（教学工具）的框架来想，是稍稍有一个统筹，然后再根据他给你灵感的那些点再继续深入问。"

[6] "我就是问,他怎么回答我就好了。如果只用 AI 会容易代替我的思想。"

[7] "我平常一般我自己刷 GPT 的时候，我问，然后看，然后可能觉得他哪个有意思，我就让他再说几句这样。依赖 AI 给答案。"

[8] "第一下就会想要依赖这个 AI 说我直接就开始用 AI 生成图的想法就是没有自己的思考。"

[9] "可能新手的话用起来，他觉得 AI 这个东西好像也没那么好用，因为他不知道如何深入从 AI 获得启发。"

thinking and saves effort. Students feel that the teaching pedagogy intervention can well organize the logic inside, which reduce students' effort. On the one hand, and on the other hand, it can provide some information, which allows students to think further.

Student 10 mentioned, "I think this tool is very useful. When I browse GPT by myself, I usually ask, then look, and then I may find something interesting, so I ask him to say a few more words. Then I use the tool to guide me to continue reflecting. I write more deeply than just looking at it (teaching tools). Then I will tell him my ideas, and then tell him his ideas, and then combine his ideas, let him combine the two ideas with what I am doing now, and then he will give me a plan. I prefer to find a direction. Keep asking him to go deeper to see if he can think of more ways that I can't think of, and see what I can't see."[10] Teacher P14 said that "there is a difference between using and not using teaching intervention. From the perspective of our teaching, the experience process of our proposed pedagogy guidance is effective in influencing students' creative ideas, which is logical, easy to guide thinking and saves effort." Students feel that the teaching pedagogy intervention can well organize the logic inside, which reduces students' effort.

With the help of teaching tools, students can think about the information obtained from the communication with AI and advance their ideas step by step.

[10] "我是觉得这个工具很有用，我平常一般我自己刷 GPT 的时候，我问，然后看，然后可能觉得他哪个有意思，我就让他再说几句这样。然后我用工具就是他可能会引导我再继续反思，我在往（教学工具）上写比我只是看，然后乍一想会想的更深 刻，然后我就会把我的想法再告诉他，然后再告诉他他那个想法，然后再结合他那个想法，让他结合两个想法和我现在要做的东西，他再给我一个方案，我就比较喜欢找一个方向。一直让他。深下去看一下他能不能想出更多我想不出来的一些方式，对看自己看不到的。"

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Analysis of Language Politeness on Deontic Modalities in Japanese and Javanese that Declares Permission

Electra Septarani, Indonesia University of Education, Indonesia
Dasim Budimansyah, Indonesia University of Education, Indonesia

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
This research aims to contrast the lingual form, meaning and politeness between the deontic modality of the Japanese language and the Javanese language that states permission. The contrast of lingual forms, meaning and politeness is based on the classification of deontic modalities obtained from a combination of deontic modality theories from several experts, namely Sutedi (2008a: 99), Hasegawa (2015), Palmer (2001), Sumukti (1971), Poedjosoedarmo (1979), Masuoka (1991), and Alwi (1992). This research is a type of qualitative research with a contrasting and descriptive approach, which serves to compare the differences and similarities between the lingual constructions of two different languages with data in the form of descriptions. Research data in the form of Japanese and Javanese sentences that contain deontic modalities that state permission where there is a value of language politeness. The data collection technique used is through documentation, read and record, analyze by way of reduction, categorization, synthesis, and work hypothesis. The results of the study obtained similarities and differences from the analysis of language politeness in deontic modalities in Japanese and Javanese in terms of meaning, purpose of speech, placement of words that accompany the expression, and social rules.

Keywords: Contrastive Analysis, Deontic Modalities, Language Politeness, Social Rules

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Introduction

Unlike the Indonesian language, which does not have a language politeness level and only has a variety of standard and non-standard languages, Japanese is a language that has a level of politeness. The variety of *keigo* languages, which means respectful languages consisting of *sonkeigo* (the language of respect for others), *kenjougo* (the language of humility), and *teineigo* (subtle language) are one of the proofs that the Japanese pay close attention to the subtlety and politeness in language. This is also found in the Javanese language which has a variety of subtle and respect such as the Javanese language *Krama Inggil* which is the highest variety of respect and is used to communicate with parents, and based on the level of politeness, *krama inggil* is divided into three levels, namely *krama lugu* (the lower level of politeness), *krama andhap* (still shows a sense of politeness to the other person, even so the way to lower the language to own self), *krama alus* (shows the highest and most difficult level of politeness). Thus, this research aims to find out the similarities and differences in lingual forms, meaning, and politeness between the deontic modality of the Japanese language and the Javanese language that states permission, helping Japanese language learners in Indonesia regarding the deontic modality in Japanese language that states permission, as well as preserving the value of local wisdom on language politeness in the Javanese culture.

Literature Review

Politeness in Japanese

According to Michael Haugh & Yasuko Obana (2011), the appropriate use of language in interacting with others has been the subject of study in Japan for hundreds of years. Most of the "proto-scientific" work on appropriate behaviour in Japan was focused on honorifics, which are termed 敬語 *keigo* (lit. 'respect language') in both popular and academic discourse, or less commonly 待遇表現 *taigū hyōgen* (lit. 'treatment expressions'), the latter term being largely restricted to academic cirlces. This rich body of work has had a vast influence on research about appropriate ways behaving and interacting in more recent times in Japan, with the study of honorifics continuing to dominate academic discourse, particularly in the 国語学 *kokugogaku* ('study of national language') tradition (Pizziconi, 2004; Wetzel, 2004). The focus in this tradition has been on classifying honorifics and their respective functions (or *taigū hyōgen* more broadly), including the questions of how these expressions should be interpreted , and whether the study of 'bad language' should be incorporated within such frameworks (Ide, 1990; Kabaya et al., 1998; Kikuchi, 1994; Minami, 1987; Ooishi, 1975) (see Pizzconi, Ch.3 for a more detailed discussion of such issues).

With the exception of work by Ide (1982, 1989, 2005, 2006) and Pizziconi (2003, 2004, this volume: Ch.3), however, there has been little consideration in this tradition of how honorifics relate to the study of politeness. Indeed, honorifics have been cited for the most part as evidence that ethic theories of politeness - generally with reference to Brown and Levinson's framework - are not suitable for studying expressions of respect and deference in Japan. One key debate in the study of honorifics, which echoes that in politeness research more broadly, however, is that between the traditional view of honorifics as expressions of deference which one is obligated to use in particular contexts according to pre-determined rules, on the one hand, and the indexical view of honorifics, where such expressions are said to index both the roles people occupy in the current talk, and the source and target of deference, on the other (see Pizziconi, Ch.3; Cook, 2006). While the latter view is arguably more consistent with the

approach to politeness advocated by discursive politeness theorists, it is worth noting that since the former view encompasses first-order views of politeness in Japanese (Haugh, 2010b), it nevertheless remains a legitimate object of study. However, such work on the metapragmatics of politeness more properly belongs at the social level of theorizing politeness rather than at the interactional level, as we will argue in the following section. It is also worth pointing out that numerous scholars have argued honorifics do not necessarily index respect for the social status of others (thereby giving rise to politeness), but may also be used to show empathy, locate something as background information, or to index the speaker's self-presentational stance among other things (Cook, 2006; Okamoto, 1997, 1999; Pizziconi, 2003; Yoshida & Sakurai, 2005). The relationship between politeness and honorifics is thus much more complex than is often assumed in the literature.

Richard Webb (2021) stated that politeness is an absolutely essential part of Japanese language and culture. It is always important to communicate with others using an appropriate level of politeness. This presents two main challenges when trying to learn Japanese:

1. Knowing when to use each politeness level
2. Learning how to actually use them

Both of these can be quite difficult, even sometimes for native Japanese speakers.

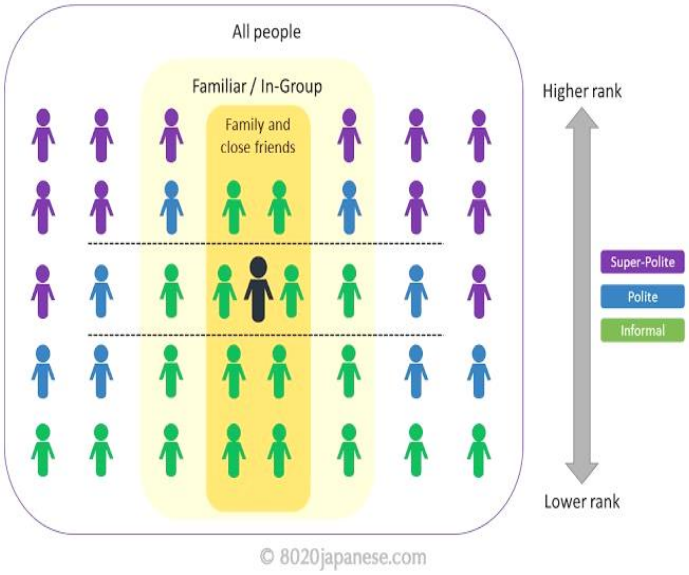


Figure 1: Politeness in Japanese - When to Use the Different "Levels"
Source: Richard Webb (2021)

Keigo

Keigo is a polite expression used by a speaker or writer with consider the listener, reader, or the person who is the subject of conversation (Ogawa, 1989). Basically *keigo* is used to smooth the language used by the first person (speaker or writer) to honor the second person (listener or reader) and the third person (the one being talked about). So what is considered when using *keigo* is the context of first person, and third person speech. Nakao Toshio (in Sudjianto, 1999) explained that *keigo* is determined by parameter as the following:

1. Age: old or young, senior or junior
2. Status: superior or subordinate, teacher or student
3. Gender: male or female (women use *keigo* more often)

4. Familiarity: insiders or outsiders (towards outsiders using *keigo*)
5. Language style: everyday language, lecture
6. Personal/general: meeting, ceremony, or in activities
7. Education: educated or not (who is more educated using *keigo*)

Sonkeigo

Sonkeigo is used for everything related to the boss as people who are older or have a higher position, who are related to guests, or those related to the other person (including activities and everything related to it). *Sonkeigo* is a way of speaking words that immediately express respect for the other person (Hirai, 1985).

Meanwhile Oishi Shotaro (1985) explained that *sonkeigo* is variety of respectful language to express respect for the person being talked about (including objects, circumstances, activities, or other related things with them) by raising the degree of the person being talked about. By the way mentioned 先生が旅行にいらっしゃる, "*Sensei ga ryokoo ni irassharu",* "Teacher will go traveling" is a way to express the speaker's respect for The person being talked about by raising his degree. Likewise because the interlocutor in the sentence *Anata mo irasshaimasu ka* "Are you also going" Become the person being talked about, then the use of the words *Anata* and *irassharu* in the sentence It is also used to respect the other person by raising his degree.

Using special verbs as sonkeigo, such as:

Nasaru = *suru* 'do'
Goran ni naru = *miru* "see"
Meshiagaru = *taberu* "eat, *nomu* "drink"
Irassharu = *iru* "there", *iku* "go", *kuru* "come"
Ossaharu = *iu* "say"
Kudasaru = *kureru* "give"

Kenjougo is also called *kensongo*. Hirai Masao mentioned *kensongo* as a way speak words that express respect for the other person in a humble way alone (Hirai, 1985). On the other hand Oishi Shotaro (1985) interprets *kensongo* as *Keigo* who expresses respect for the other person or to the friend of the person who talked about including objects, circumstances, activities, or other related things with them. The word *oaisuru* in the sentence 母が先生にお会いする, *"Haha ga sensei ni oaisuru"*, "My mother will meet the teacher" used to humiliate activities *haha* （母）as a person who talked to express respect for *sensei*（先生）as a friend of people who talked about. Then the word *moosu* （申す） on the sentence 弟の申すとおりです *"Otouto no mouso toori desu"*, "As my brother said" is used to belittle *Otouto*'s activities as The person being talked to to express respect for the other person. Using special verbs as *kenjougo*, such as:

Mairu = *kuru* "come"
Moosu = *iu* "say"
Itadaku = *kiku* "ask", *shitsumon suru* "ask"
Hoomon suru "visit" *Omeni kakeru* = *au* 'meet'
Ageru, sashiageru = *yaru* "give"
Oru = *iru* "there is"
Haiken suru = *miru* "seeing"

Politeness in Javanese

In Java, it is known about three style of language; *ngoko* (low), *madya* (middle), and *krama* (high). When we talk to older person, it will be different when we talk to younger or the same age. It is called *unggah–ungguhing basa*. Geertz says that *krama*, *madya*, and *ngoko* or high, middle, and low are the three main levels expressing status and/or familiarity. According to the statement above, there are three kinds of variation language in Javanese, *ngoko*, *madya*, and *krama* that shows us the social status of who is speaker and who is hearer. According to Geertz the three levels of Javanese language can be describe as follow:

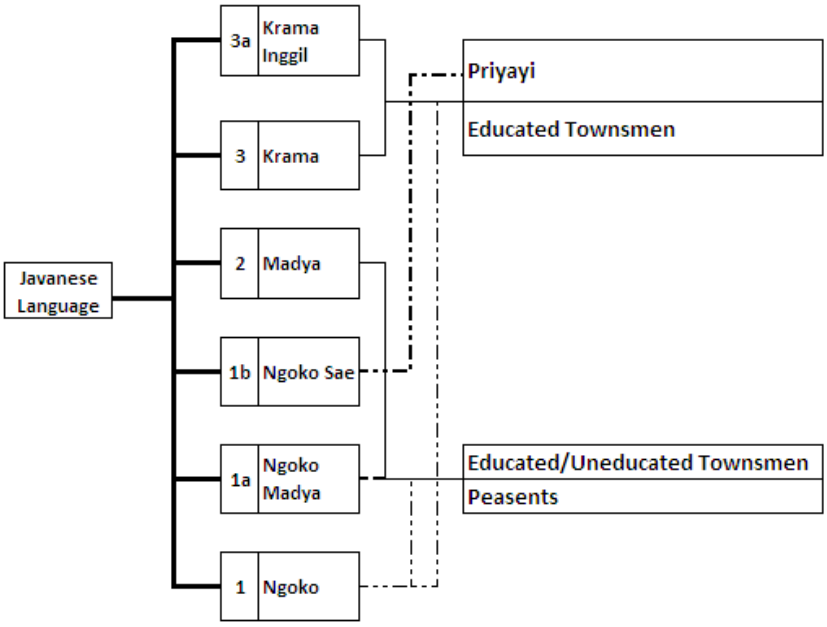


Figure 2: Levels of Javanese Language

It can be noted that *krama* and *krama inggil* are available to both *priyayi* (upper class people) and educated townsman; *madya* to both educated and uneducated townsmen and to peasants; *ngoko* and *ngoko madya* to all groups but tends to be omitted by *priyayi*; *ngoko sae* is characteristically used only by *priyayi.*

Ngoko

Ngoko is the lowest level of Javanese. *Ngoko* is well known as the low language. Kunjana (2001) said that *ngoko* is the basic of all lexicon of Javanese language. Therefore, there are lots of vocabulary of *ngoko* and its variation. *Ngoko* usually uses for friends, or older to younger for example; a teacher will use *ngoko* to the students, a boss to the servant, and close friends. According to Sasangka (2009: 102) *Ngoko* is formed by the lexicons of *ngoko* (the main lexicons). *Ngoko* is devided into two kinds; they are *ngoko lugu* (the main lexicons of this sentence are all *ngoko*) and *ngoko alus* (the main lexicons of this sentence are ngoko but there will be lexicons of *krama, krama andhap,* or *krama inggil*).

Madya

Madya is the middle level of Javanese Language. *Madya* is between *ngoko* and *krama*. This level shows politeness but the level is not too high and not too low. According to

Poedjosoedarmo in Kunjana (2001) states that this level actually comes from *krama*. In the process of the development has decreased of level. In this research *madya* is used to decide as lexicons not as a level of Javanese language.

Krama

Krama is the highest level of Javanese Language. It is contrary to *ngoko*. The vocabulary of *krama* is less than *ngoko*. The vocabulary of *krama* divided into two kinds, standard and not standard, *priyayi* (noble) usually uses standard *krama* and villagers use not standard *krama*. This level is the highest of politeness, for example; the student talks to his teacher, or a servant to his boss. There are two kinds of *krama*; they are *krama lugu* (the main lexicons of this sentence are *krama* but there will be lexicons o*f ngoko, madya, krama andhap,* or *krama inggil*) and *krama alus* (the main lexicons of this sentence are *krama* but there will be lexicons of *krama andhap,* or *krama inggil*). *Krama inggil* is used to show our respectful to the person whom we talk to (hearer), and the speaker usually uses lower level of *krama* that is called *krama andhap*.

Contrastive Analysis

Contrastive analysis according to Ishiwata and Takada (1998) is a way to compare different parts of two or more languages, such as sounds (phones), vocabulary, grammar, or other language systems that contain language actions, and as one of the areas of language research to state whether it is clear that parts of one language support each other or not. From this opinion, it can be seen that contrastive analysis includes all aspects of language, sound systems (phonemes) related to phonology and grammar systems at the syntactic level, ranging from morphemes, phrases, clauses (subs), even sentences.

Modality

One of the difficulties in learning Japanese for learners in Indonesia is modality. Modality is also referred to as a description of the manner or more specifically; are words that describe an event because of the speaker's response to the event. According to Sutedi (2008a) modality is a depiction of attitudes used in communicating such as informing, ordering, forbidding, asking, and others. Hasegawa (2015) states that modality is the grammatical part used by the speaker to express his attitude towards an event. If the modality in Japanese is usually marked by a change (conjugation) in one word itself (morphologically) or with the addition of another word (periphrastic), then the modality in Indonesia is generally more marked periphrastic (Irma Qurrota A'yun, et al., 2020).

Deontic Modalities

The mode as a grammatical phenomenon in Javanese has been put forward by Sumukti in his dissertation (1971). The grammatical phenomenon was also put forward by Poedjosoedarmo (1979), only Poedjosoedarmo used the term modality. According to Poedjosoedarmo (1979), modality is a change in the form of a verb to show the way of looking at or attitude to the action expressed by the verb: whether the action is considered a reality, something that must be done by the person who is spoken to, desire, presupposition, or hope.

Furthermore, Poedjosoedarmo stated that in the Javenese language there are three types of modalities, namely indicative, imperative, and subjunctive; subjunctive includes optative

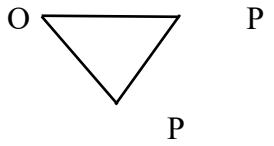
subjunctive, contradictory subjunctive, and desiderative subjunctive. The so-called modality is expressed with different affixations, which are all split into two on the basis of active and passive voice.

Palmer (2001) views modality differently from the aspect of time, which does not refer directly to some characteristics of events, but rather refers directly to the facticity of prepositions. Prepositon is a term used for question sentences that have a full and complete meaning. In addition, a proposition in linguistic terms can be interpreted as an expression that can be trusted, doubtful, pre-positioned, or proven true or not. So it can be said that a sentence can only consist of a proposition or a combination of propositions and modalities. So it can be said that the modality is different with time and aspect, but intersects in a sentence.

Palmer divides modalities into four types, namely epistemic, evidence, deontic, and dynamic. Epistemic modality is an expression of the speaker's assessment of the factual status of the proposition. The modality of evidence shows the evidence it has to show the factual status of the position. Deontic modality indicates the presence of conditional factors that come from within (internal) affecting the individual.

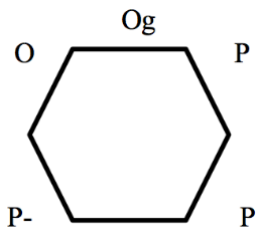
This research will focus on the deontic modality that states permission in Japanese and Javanese where there is a form of language politeness. According to Alwi (1992) the speaker's attitude towards events in deontic modalities are based on social rules. Social rules can be in the form of personal authority or official authority. Personal authority is caused by the difference in age, occupation, or social status between a person and another person, while the official authority comes from the provisions or regulations that have been mutually agreed to regulate the life of the community group concerned. Both types of authority are deontic sources that will encourage a person to become a perpetrator of the actuality of the event. In other words, a person or regulation that is a deontic source has a high level of limit (restriction) on the actuality of the event. The high level of limiting of the deontic source to the actualization of the event can reflect the permission or order to do something or not to do something.

Kalinovski in Alwi (1992), mentions the existence of three main meanings of deonticy, namely obligation, prohibition, and permission. In each chart it is placed at a point of a triangle.



O = obligation
P = prohibition
P = permission

Since permission includes permission to do something and permission not to do something, while obligations can be associated with orders or prohibitions, the deontic meaning by Kalinovski is further detailed to six points. Thus, the chart becomes as follows.



Og = obligation in general
P+ = permission to do something
P- = permission not to do something

In accordance with Kalinovski's view, there are two things that need to be stated about the meaning of the deontic modality. First, the deontic meaning placed in six points by Kalinovski is actually only four, namely permission which includes to do something and permission not to do something, the meaning of obligation includes the obligation to do something, and prohibition. Second, the meaning of the obligation to do something in terms of semantics shows the characteristic as an order (Ekowardono et al., 1999). In linguistics, (deontic modality) means "prohibition, obligation, permission", etc., and is said to represent a prohibition or freedom from prohibition imposed on the subject (person), and it defines the relationship between the actor and the narrative. In that sense, (Deontic) is said to be a "actor-oriented" modality (Harada, 1999).

In this research, it contrasts the politeness of language in the deontic modalities of Japanese and Javanese languages that state permission and there are social rules that must pay attention to the difference in age, occupation, or social status between a person and another person. In contrast to the research conducted by Electra Septarani (2017) in her thesis entitled: Epistemic Modalities of Japanese and Sundanese (*'Youda', 'Mitai Da'*, and *'Jigana;Jiga', 'Sigana;Siga', 'Kawasna;Kawas'*): A Contrastive Study which discusses the epistemic modality of Japanese and Sundanese which states conjectures, focuses on syntax (language construction), semantics (the original meaning of a word), pragmatics (language undestanding), and its implication on Japanese language education, especially in the West Java region where most of them are native Sundanese speakers. Then, the research conducted by Surianti and Rudi Abdullah (2022) entitled: Analysis of Language Politeness of Adolescents to Parents in Rahandouna Village of Kendari City which focuses on the politeness of the language used by adolescents to parents which in their research analyzes the politeness maxims: wisdom maxim, generosity maxim, praise maxim, modesty maxim, agreement maxim, and sympathy maxim.

Methodology

This research method will be carried out with the following steps, (1) research targets, (2) data forms, (3) data sources, (4) results and discussion.

Research Targets

The target of this research is the value of language politeness, the deontic modality system that states permission. Because the use of deontic modalities are based on social rules (Alwi, 1992).

Data Forms

The necessary data are sentences that contain the disclosure of the deontic modality of the Japanese and the Javanese language that states permission, both the expression in the form of words, phrases, and clauses.

Data Sources

Data sources include written sources, derived from texts taken from magazines, Japanese and Javanese film and electronic news, textbooks, storybooks, and general readings in Japanese and Javanese.

Results and Discussion

In this section, the results of the research are in the form of data and analysis on language politeness in deontic modalities in Japanese and Javanese which states permission. The discussion begins with the classification of language politeness in deontic modalities in Japanese and Javanese which states permission where there are social rules that must be considered and how the level of politeness/decency is used, then compares the differences and similarities that arise.

Table 1: Results of Analysis of Language Politeness on Deontic Modalities in Japanese and Javanese That Declares Permission

Social Rules	Analysis of Language Politeness on Deontic Modalities in Japanese and Javanese that Declares Permission
1. Age Difference	Data 1: 河合晶　：ね，いいでしょ？連れて行ってください、金田一先輩。 金田一 一　：い、いや、俺はかまわねーけど・・・。 （金田一少年の事件簿 「10 年目の招待状」, 2000) *Kawai Akira : Ne, iidesho? Tsurete itte kudasai, Kindaichi senpai.* *Kindaichi Hajime : I, iya, ore wa kamawanee kedo...* *(Kindaichi Shōnen no Jikenbo "Juu nen me no shōtaijō, 2000)* Kawai Akira : Hey, isn't it okay? Please take me, Kindaichi *senpai*. Kindaichi Hajime : No, no, i don't mind but... (Kindaichi Shōnen no Jikenbo "Juu nen me no shōtaijō, 2000) Data 2: *"Pak aku arep adus nang kali." "Oleh wae, nanging sing ngati-ati." (Ekowardono, et al, 1999: 79)* "Dad, I'm going to take a bath in the river." "It's okay, but be careful." (Ekowardono, et al., 1999: 79)
2. Status (Teacher and Student)	Data 3: 「わたしは忘れてしまいました。もう一度教えてくれませんか。」 「準備に三か月はかかりました。先生からいただいた純毛の靴下だの，つなぎの下着だのを着ないでとっておき，駅前の闇市(やみいち)で売り払いました。鶏舎(けいしゃ)から鶏を五，六羽持ち出して，焼鳥屋に売ったりもしました。」 （深まる学びへ 握手，2015: 25） *"Watashi wa wasurete shimaimashita. Mou ichido oshiete kuremasenka?"* *"Junbi ni mikka getsu wa kakarimashita. Sensei kara itadaita junmō kutsushita dano, tsunagi no shitagi dano o kinaide totte oki, ekimae no yamiichi de uriharaimashita. Keisha kawa tori o go, roku wa mo mochidashite, yakitoriya ni uttarimo shimashita." (Fukamaru Manabi e Akushu, 2015: 25)*

	"I forgot. Can you tell me again?" "It took three months to prepare. I didn't wear the pure hair socks and jung underwear that the teacher gave me, and sold them at black market in front of the station. I took five or six chickens out of the chicken coop and sold them to a yakitori restaurant." (Fukamaru Manabi e Akushu, 2015: 25) Data 4: *"Kula namung badhe nyuwun sangu kalih dasa kemawon."* *"Lah kok sethithik temen."* *Raden Bei nyambeti: "Becike sethithik-sethithike iya seket."* ... *"Boten, Ndara, gampil ing wingking menawi kirang, kula nyuwun sarana serat."* *"Malah yen perlu, becike telgram bae ngirimake iya sarana telgram."* *"Makaten inggih prayogi."* *Ngulandara*, hal. 95 (dalam Masyarakat Jawa & Budaya Barat, 2013: 154) … "Could I have some money just for twenty?" "Well, how come it's so little." Raden Bei connected it: "Preferably, well, at least fifty." ... "No, Your Majesty, *it's easy later, if it's not enough, I'll ask through a letter*." "In fact, if necessary, it is better to just send a telegram, also send it with a telegram." "I see, yes, good."
3. Gender	Data 5: あいちゃん：あい こんなにおいしいの初めて食べました。お鍋ってすばらしいですね。 みさえ. ：フフフフ ひろし. ：そうだろう、そうだろう。 しんちゃん：ほかにもカレー鍋とかキムチ鍋とか。いろんなお鍋があるんだゾ。 あいちゃん：まあ、では明日もまた来てもいいですか。 みさえ、ひろし、しんちゃん：えええええええええっ。 あいちゃん：黒磯、明日のおじい様との食事キャンセルしといてちょうだい。 黒磯 ：かしこまりました。 みさえ. ：いえ、その明日は あいちゃん：楽しみですわ。ウフフフフ しんちゃん：やれやれ （クレヨンしんちゃん「あいちゃんとお鍋だゾ」、2019） *Ai chan : Ai konnani oishii no wo hajimete tabemashita. Onabette subarashii desune.*

	Misae : Fufufufu. *Hiroshi : Soudarou. Soudarou.* *Shinchan : Hokani mo karee nabe toka kimuchi nabe toka. Ironna onabe ga arunda zo.* *Ai chan : Maa, dewa ashita mo mata kitemo iidesuka?* *Misae, Hiroshi, Shinchan : Eeeeeeeeeh* *Ai cha : Kuroiso, ashita no ojiisama tono shokuji kyanseru shitoite choudai.* *Kuroiso : Kashikomarimashita.* *Misae : Ie, sono ashita wa* *Ai chan : Tanoshimi desu wa. Ehehehehe* *Shinchan : Yareyare* *(Kureyon Shinchan "Aichan to onabe da zo", 2019)* Ai chan :Ai, it's the first time I've eaten something this delicious.The hot pot is wonderful! Misae : Hehehehe. Hiroshi : That's right. That's right. Shinchan : There are also curry hot pot and kimchi hot pot. There are various hot pots. Ai chan : Well, then can I come again tomorrow? Misae, Hiroshi, Shinchan : Eeeeeeeeeeeh Ai chan : Kuroiso, please cancel tomorrow's meal with grandpa. Kuroiso : Understood. Misae : No, tomorrow is… Ai chan : I'm looking forward to it, hehehehe. Shinchan : Oh, dear. (Kureyon Shinchan "Aichan to onabe da zo", 2019) Data 6: *Ingkang wedana ngandika dhateng upas Krama: "Krama gajege ing emper ngarep kono ana tilpune, jajal tilpuna menyang Kediri, dokter aturana mrene."* *"Kediri tilpun nomer pinten, Ndara?"* *"Pitulikur."* *Krama muter tilpun. Kring ring ring ring ring..... kring. Lajeng wicanten: "Halo, halo, o, nyuwun tulung, dokter dipunwungu, awit wonten perlu....."* *Ngulandara, hal. 38 (dalam Masyarakat Jawa & Budaya Barat, 2013:156)* Wedana said to his assistant named Krama: "Krama, it seems that there is a phone in front porch, try calling Kediri, the doctor will tell you to come here." "What number is Kediri, *ndara*?" "Twenty seven." Krama dialed the phone. Ring ring ring ring ring..... Ring. Then spoke: "Hello, hello, o, please help, the doctor woke up, because there is a need....." *Ngulandara,* hal. 38 (dalam Masyarakat Jawa & Budaya Barat, 2013:156)
4. Familiarity	Data 7: 弟：兄さん，お金貸して..

	兄：え，またお金。貸してもいいけど，1 万だけだよ。 （友松悦子，宮本淳，和栗雅子，2007: 202） *Otouto: Niisan, okane kashite..* *Ani : E, mata okane. Kashitemoiikedo, ichiman dake dayo.* *(Tomomatsu Etsuko, et al, 2007: 202)* Brother : Brother, lend me money.. Little brother : Eh, money again. I can lend it, but it's only 10.000 Yen, okay. (Tomomatsu Etsuko, et al, 2007: 202) Data 8: *Mbak Sri Endyah dhehem. Nyawang wong nggantheng kuwi banjur kawetu panggodhane:* *"Mulane ta, gek ndang krama. Ben enek sing masakne."* *"Durung ana sing gelem, Mbak. Tulung sampeyan golekne ya?"* *(Dhadhung Benang Sutra, Narko Sodrun Budiman : Penjebar Semangat, 2024: 16)* Ms. Sri Endyah clear her throat: looking at the handsome man, she was tempted: "I told you, get married soon. In order to someone will take care of you." "No one wants me yet, Sis. Can you help me find someone for me?" *(Dhadhung Benang Sutra, Narko Sodrun Budiman : Penjebar Semangat, 2024: 16)*
5. General	Data 9: A: 今日の食事はわたしに払わせてくださいませんか。この前，ごちそうになりましたから。 B: そうですか。じゃあ，よろしくお願いします。 （友松悦子，宮本淳，和栗雅子，2007: 96） *A: Kyou no shokuji wa watashi ni harawasete kudasaimasenka? Kono mae, gochisou ni narimashitakara.* *B: Soudesuka. Jaa, yoroshiku onegaishimasu.* (Tomomatsu Etsuko, et al., 2007: 96) A: Can you let me pay for today's meal? The other day, it was a feast. B: Is that so? Well, thank you very much. (Tomomatsu Etsuko, et al., 2007: 96) Data 10: *Gimin yen pareng, jare arep mangkat sesuk.* *(Ekowardono, et al, 1999: 79)* Gimin, if possible, he said, will leave tomorrow. (Ekowardono, et al, 1999: 79)

Data 1 is an expression of language politeness in deontic modalities that express permission in Japanese marked with ね，いいでしょ，*"Ne, iidesho",* "Hey, isn't it okay?", as an expression of asking for permission, 連れて行ってください，*"Tsurete itte kudasai",* "Please take me" (use of the verb ~てください) as a form of politeness, and the call 先輩, *"senpai"*, "senior" to seniors as a form of social rules of Japanese society that pay great

attention to age differences in speech. Data 2 is the language in the deontic modality that expresses permission in the Javanese language which is marked with the word *"Pak", "*Dad/Sir" as a child's call to the father, or can also be a call to older people. In the sentence *"Pak aku arep adus nang kali"*, "Dad, I'm going to take a bath in the river." is a variation of the Javanese *Ngoko* language, which is a conversation used in daily life between friends and family.

Data 3 is the language politeness in the deontic modality that expresses permission in Japanese based on social status. This is marked with the sentence "もう一度教えてくれませんか", *"Mou ichido oshiete kuremasenka", "*Can you tell me again?" as an expression asking for permission. After that there is the sentence "先生からいただいた純毛の靴下だの，つなぎの下着だのを着ないでとっておき，駅前の闇市(やみいち)で売り払いました", "*Sensei kara itadaita junmō kutsushita dano, tsunagi no shitagi dano o kinaide totte oki, ekimae no yamiichi de uriharaimashita", "*I didn't wear the pure hair socks and jung underwear that the teacher gave me, and sold them at black market in front of the station", is a *sonkeigo* which in practice is used to respect people whose social status is higher and respected by the society. Data 4 is a deontic modality that states permission in Javanese based on social status. Marked with the sentence *"Kula namung badhe nyuwun sangu kalih dasa kemawon",* "Could I have some money just for twenty?" as an expression asking for permission and the sentence *"Boten, Ndara, gampil ing wingking menawi kirang, kula nyuwun sarana serat.",* "No, Your Majesty, *it's easy later, if it's not enough, I'll ask through a letter*. where the word *"Ndara",* "Your Majesty" is a greeting to a noble person or employer who has a high social position and is respected in the Javanese culture.

Data 5 is the language politeness in the deontic modality that states the permission in Japanese based on gender. Marked with the sentence "まあ、では明日もまた来てもいいですか", "*Maa, dewa ashita mo mata kitemo iidesuka?"*, "Well, then can I come again tomorrow?" , where the speaker is a girl. As mentioned by Nakao Toshio (in Sudjianto, 1999) that women use *keigo* more often. Data 6 is the language politeness in the deontic modality that states the permission in Javanese based on gender. Marked with the sentence *Krama muter tilpun. Kring ring ring ring ring..... kring. Lajeng wicanten: "Halo, halo, o, nyuwun tulung, dokter dipunwungu, awit wonten perlu.....",* Krama dialed the phone. Ring ring ring ring ring..... Ring. Then spoke: "Hello, hello, o, please help, the doctor woke up, because there is a need....." where the speaker is a man named Krama. Using Javanese *Krama Andhap* because the situation is formal.

Data 7 is the language politeness in the deontic modality that expresses permission in Japanese based on familiarity. Marked with the sentences "兄さん，お金貸して..", "*Niisan, okane kashite", "*Brother, lend me money.." and *"*え，またお金。貸してもいいけど，１万だけだよ", "*E, mata okane. Kashitemoiikedo, ichiman dake dayo*", "Eh, money again. I can lend it, but it's only 10.000 Yen, okay" which uses informal language because it is a sibling relationship (insiders/ in-group). Data 8 is the language politeness in the deontic modality that states the permission in Javanese based on familiarity. Marked with sentence *"Durung ana sing gelem, Mbak. Tulung sampeyan golekne ya?",* "No one wants me yet, Sis. Can you help me find someone for me?" which has a kinship relationship seen in the use of the greeting word *"Mbak"*, "Sis" (insiders/ in-group).

Data 9 is the language politeness in the deontic modality that expresses permission in Japanese based on general (meeting, ceremony, or in activities). Marked with sentence "今日の食事はわたしに払わせてくださいませんか。この前，ごちそうになりましたから"，"*Kyou no shokuji wa watashi ni harawasete kudasaimasenka? Kono mae, gochisou ni narimashitakara", "*Can you let me pay for today's meal? The other day, it was a feast" is polite way to ask someone to permit the speaker to do an action (Tomomatsu Etsuko, et al., 2007: 96). Data 10 is the language politeness in the deontic modality that states the permission in Javanese based on general (meeting, ceremony, or in activities). Marked with sentence "*Gimin yen pareng, jare arep mangkat sesuk", "*Gimin, if possible, he said, will leave tomorrow" is a way of If giving permission with a higher status than the one given permission, what is used is the inggil manners such as *pareng*, *kepareng*, as found in Data 10. The status of the perpetrator in relation to the deontic source (giver permission) in Javanese language determines the selection of the variety of words that become modality revealer.

Conclusion

From the discussion, it can be said that the language politeness in the deontic modality that states permission in the Japanese language is more often found on social rules that refer to the age difference (old or young, senior or junior), social status/profession difference (superior or subordinate), gender (male or female), Women use *keigo* more often than men and pay close attention to the familiarity of whether it is an insider or an outsider. Because the more familiar the language used will be more informal. While the use of *keigo* is only for outsiders who do not have a close relationship or in formal situations such as being a speaker in a community forum, and so on. Meanwhile the language politeness in the deontic modality that states permission in the Javanese language looks more at the social caste (noble descent or not), position (superior or subordinate), age (using a variety of subtle language when talking to parents or respected people such as religious leaders, teachers, and so on), and the level of education of a person. Unlike Japanese, in Javanese the use of a variety of *krama inggil* languages regardless of gender. Both men and women both use a variety of subtle language and do not pay much attention to the relationship between outsiders and insiders.

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Contact email: electra.sept1990@gmail.com

A Place for "Us" to Be Weaved: A Case Study of Zainichi Korean Kindergarten in Japan

Shohei Uchida, Ohkagakuen University, Japan

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
The Convention on the Rights of the Child, established by the United Nations, explicitly prohibits discrimination and provides protection against violence. However, as a consequence of political considerations, *Zainichi*[1] Korean schools in Japan are the only foreign schools that are not recognized by the Japanese government as 'schools prescribed by law'. Furthermore, they do not receive any financial support from the state. Previous studies have revealed the financial situation of *Zainichi* Korean schools and the history of their establishment and ongoing struggle for recognition. This study aims to elucidate the genesis and evolution of ethnic education in *Zainichi* Korean schools, with a particular emphasis on kindergartens, which represent the inaugural stage of ethnic education. To this end, an ethnographic research approach was employed, utilizing the long-term observation method in *Zainichi* Korean schools. The findings indicate that a range of activities, including summer festivals and the preparation of *Zainichi* Korean cuisine, are regularly undertaken in kindergartens in collaboration with primary, junior high, and senior high schools, as well as with the *Zainichi* Korean community in Japan. This study has demonstrated that the concept of "*Zainichi* Korean schools" extends beyond the boundaries of traditional educational institutions. It has been proposed that these schools serve as a focal point for the *Zainichi* Korean community and a setting where children enrolled in the *Zainichi* Korean school and *Zainichi* Koreans engage in mutual care and support. Moreover, the advancement of children's social development could also be clarified.

Keywords: Japan, *Zainichi* Korean School, Ethnic Education, Community Formation, Ethnographic Approach

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Introduction

It is widely acknowledged that the Convention on the Rights of the Child (CRC) was adopted by the United Nations in 1990 and subsequently entered into force. It is currently the most widely accepted human rights treaty in the world, with 196 countries and territories having signed it. The Convention on the Rights of the Child explicitly prohibits discrimination (Article 2) and sets out the obligation to protect children from all forms of violence (Article 19). In accordance with the stipulations of the Convention on the Rights of the Child, children are designated as "rights holders," while the "duty bearers" responsible for safeguarding their interests are the state and its adult citizens. In other words, it is incumbent upon each country to implement the rights of children as set forth in the Convention through the enactment of legislation and the formulation of policies. The present study focuses on Japan, which ratified the Convention on the Rights of the Child in 1994. Three decades later, the United Nations Convention on the Rights of the Child has been incorporated into Japanese law through the Basic Act on the Rights of the Child. This legislation stipulates that all children in Japan are entitled to the rights set forth in the Convention. The legislation is intended to guarantee that children are treated as individuals and are not subjected to discriminatory practices (Children and Families Agency, 2023).

It is, however, regrettable that this is merely nominal. Indeed, in recent years, there has been a notable increase in the prevalence of chauvinistic sentiments and hate crimes directed towards *Zainichi* Koreans. Furthermore, *Zainichi* Korean schools[2] in Japan are the only foreign schools that are not legally recognized as such by the Japanese government, a status that is attributed for political reasons. Additionally, these schools do not receive any financial support from the state. This is a consequence of irresponsible and discriminatory statements and actions by the Japanese government and politicians that are devoid of any basis in reality. Examples of such statements include the assertion that "*Zainichi* Korean schools are suspected of being agents against Japan" and the characterisation of North Korea as "like a yakuza". It is evident that these public institutions and political stances of public figures have resulted in the promotion and legitimisation of hate speech and racism towards *Zainichi* Koreans and *Zainichi* Korean schools (Itagaki, 2016). For example, commentators who are regarded as 'experts in something' have repeatedly made the following statements on television and radio. For example, commentators who are regarded as experts have repeatedly made the following statements on television and radio: '*Zainichi* Korean schools are spy training institutions and should be monitored and inspected'; 'not supporting *Zainichi* Korean schools is not against the law'; '*Zainichi* Korean schools are poorly managed'; 'if you are dissatisfied with public support for *Zainichi* Korean schools, go to a public school'. Furthermore, these problematic statements have triggered serious hate crimes. *Zainichi* Korean schools are subjected to a daily barrage of threatening phone calls, and there have been numerous instances of children from these schools being physically assaulted on their way to school. Furthermore, one civil society group has even perpetrated an attack on a *Zainichi* Korean school in Kyoto. In response to these situations, the UN Committee on the Elimination of Racial Discrimination has repeatedly expressed concern about the unfair treatment of *Zainichi* Koreans and *Zainichi* Korean schools over the course of several years. Hate crimes, defined as criminal acts motivated by discriminatory attitudes towards individuals or groups based on attributes such as ethnicity or nationality, represent a significant social issue with global prevalence. These crimes not only inflict fear and suffering upon the victims but also perpetuate discriminatory attitudes and violence within society. However, as previously stated, the Japanese government has yet to implement a comprehensive system to combat hate crimes. Indeed, it could be argued that there is a lack

of political will to eradicate hate crimes and that the issues surrounding *Zainichi* Korean schools have not been adequately addressed (UN, 2018).

In this context, previous studies on *Zainichi* Korean schools exhibit considerable diversity. For example, there are studies that have provided a detailed account of the financial situation and curricula of *Zainichi* Korean schools based on fieldwork (Song, 2012), studies that have elucidated the history of the struggle and creation of *Zainichi* Korean schools (Oh, 2019), and so on. Other studies have examined the causes of anti-*Zainichi* Korean school sentiment (Wolfs, 2022), while others have sought to elucidate the meaning of the Learning at *Zainichi* Korean school (Yamamoto, 2014). However, previous studies have primarily focused on this topic from the perspectives of sociology and migration studies.

In light of the aforementioned studies, this study aims to elucidate the genesis and evolution of ethnic education in *Zainichi* Korean schools as a whole, with a particular focus on the initial stages of ethnic education, namely the *Zainichi* Korean kindergarten, which has not been the subject of previous research. The study then examines how kindergarten teachers and *Zainichi* Koreans attempt to comprehend the educational practices observed in kindergartens.

Methodology

To this end, the study employs an ethnographic approach, utilizing a longitudinal observational methodology to examine the participation of children in *Zainichi* Korean kindergartens over a period exceeding one year. In this study, the ethnographic approach is defined as a methodology for understanding the sites where people live. Consequently, in this study, the author, a Japanese national who is not a *Zainichi* Korean resident in Japan, gained access to the *Zainichi* Korean kindergarten with the intention of understanding it from the inside. This involved conducting observations while becoming a member of the kindergarten.

The study was conducted in accordance with the ethical standards set forth by the Ethical Review Committee of the university to which the researcher belongs. Furthermore, prior to the commencement of this study, a verbal explanation was provided and written consent was obtained in accordance with the principles of research ethics. Additionally, the data obtained in this study were anonymised and analysed in a manner that ensured the protection of the information.

Results and Discussion

The findings of this study are presented herein.

1. Campus and Cross-Age Education

The *Zainichi* Korean kindergarten included in this study are situated on the same campus as primary, middle, and high schools. The total number of children enrolled in the kindergarten is approximately 20, with four teachers providing instruction. Due to the relatively small number of children in each age group, education is typically provided at different ages.

Picture 1: View of the School Campus

2. Practice Playing Korean Instruments

Japan has a bank holiday, designated as Respect for the Aged Day, which is observed in order to honour the elderly. Photograph 2 depicts a child engaged in the practice of the *janggu* (also known as a "hourglass drum"), a traditional Korean musical instrument, in preparation for a performance on Respect for the Aged Day. The children are instructed by their homeroom teacher in the 20 minutes or so preceding their departure. They listen attentively to the teacher's directives. As they have numerous occasions to handle Korean instruments on a regular basis, both the teacher and the children are well-acquainted with them as they practice.

Picture 2: Kindergarten Children Practice a Traditional Korean Musical Instrument

3. Experiencing the Food Culture of the Korean People

Photographs 3 and 4 illustrate the educational activities employed to introduce participants to the culinary traditions of the Korean people. This activity spanned approximately 60 minutes. The children collaborated in the preparation of dishes, primarily vegetables that are commonly utilized by the Korean ethnic group, while receiving guidance from the instructor. Subsequent to the completion of the dishes, the children engaged in musical activities associated with Korean cuisine.

Picture 3: Kindergarten Children Cooking Korean Food

Picture 4: Kindergarten Teachers Address Children on Cooking

4. Interaction With High School Students

The scene depicts a mini sports day, organised and conducted jointly by high school students and kindergarten children. Photograph 5 depicts the high school students engaged in conversation and interaction with the kindergarten children. The positive rapport evident between the two groups is likely attributable to the high school students' daily interactions with the kindergarten children. This observation will be further elucidated in Section 7.

Picture 5: High School Students Chatting With Kindergarten Children

Photograph 6 portrays a review meeting convened following the mini-sports day. In addition to high school students and high school teachers, the meeting also included representatives from the kindergarten teachers.

Picture 6: Kindergarten Teacher and High School Students Reflecting

Photographs 7 and 8 depict a collaborative endeavour between high school students and kindergarten children, engaged in the preparation of kimchi. Each group comprises two or three high school students and two or three kindergarten children. Kimchi is a customary food in the Korea. The participants appeared to derive pleasure from the process of making kimchi together. At the conclusion of the activity, the kindergarten children consumed the kimchi they had prepared, exclaiming "Delicious!" and "Spicy!" in the company of their peers. This activity has become an annual tradition.

Picture 7: High School Students Model Cooking to Kindergarten Children

Picture 8: Kindergarten Children Making Kimchi

5. Interaction With Primary School Children

Photographs 9 and 10 illustrate a joint initiative between primary school and kindergarten children, namely the organisation and management of a summer festival. During the period when the kindergarten children assume the role of shopkeepers, the primary schoolchildren act as customers. Conversely, when the primary schoolchildren are in charge of the shop, the kindergarten children visit the shop as customers.

Picture 9: Primary School Teacher Teaching Kindergarten Children How to Sell

Picture 10: Kindergarten and Primary School Children Playing at the Summer Festival

Photographs 11, 12 and 13 were taken subsequent to the summer festival. They depict primary school and kindergarten children consuming shaved ice prepared by kindergarten teachers within the kindergarten's school premises. As evidenced in Photograph 12, the primary school teacher was observed engaged in close collaboration with the kindergarten

children. In this instance, the primary school teacher is feeding shaved ice to the kindergarten children.

Picture 11: Kindergarten Teachers Serve Shaved Ice to Primary School Children

Picture 12: Primary School Teacher Giving Shaved Ice to a Kindergarten Child

Picture 13: Primary School Children Eating Shaved Ice on Kindergarten Grounds

6. Events by Zainichi Koreans

Regular exchange events are held by *Zainichi* Koreans at *Zainichi* Korean schools. The events are attended not only by *Zainichi* Koreans but also by Japanese individuals who express support for the *Zainichi* Korean school. At these events, fathers' and mothers' associations proactively establish stalls and serve a variety of Korean dishes. As can be observed in photographs 14 and 15, the event is characterised by a celebratory ambience. Children enrolled at the *Zainichi* Korean school, alumni, teaching staff, parents, local residents and a diverse array of individuals engage in conversation and dance together. This evinces a sense of collective belonging and shared identity.

Picture 14: Fathers' and Mothers' Associations Have Food Stalls

Picture 15: Students, Parents and *Zainichi* Koreans Began Holding Hands and Dancing

Photographs 16 and 17 illustrate this notion, depicting the spontaneous formation of a 'unity train' at the conclusion of the event, traversing the school grounds.

Picture 16: Most Event Participants Making the Unity Train

Picture 17: Primary and High School Students Are Also Making a Unity Train

7. Everyday Scene

Photographs 18 and 19 illustrate the intergenerational interaction between primary school students and kindergarten children during both the lunch break and in the evening. Photograph 20 depicts three junior high school students engaging in play with kindergarten children during the lunch break. All children in kindergarten, primary and secondary school settings interact with each other in a friendly manner. Additionally, students in elementary

and junior high school do not disparage the play of kindergarten children. Rather, they demonstrate respect for the play of their younger counterparts and engage with them in a manner that aligns with their developmental stage.

Picture 18: Primary School and Kindergarten Children Playing Together

Picture 19: Primary School and Kindergarten Children Playing Together (Outdoors)

Picture 20: Junior High School Students Voluntarily Come to Play in Kindergarten

Conclusions and Recommendations

The objective of this study was to elucidate the processes through which ethnic education is initiated and formed within the context of *Zainichi* Korean schools, employing an ethnographic approach. The study commenced with an investigation of ethnic education in *Zainichi* Korean kindergartens. The findings of this study demonstrate that kindergartens frequently engage in a range of activities in collaboration with primary, middle, and high schools, as well as with the *Zainichi* Korean community in Japan. These activities include summer festivals and the preparation of traditional Korean cuisine. Additionally, the study

revealed that kindergarten children have numerous opportunities to interact with individuals from elementary, junior high, and high schools, as well as with *Zainichi* Koreans on a daily basis. Based on these observations, we propose two key points for consideration in this study.

Firstly, it can be argued that *Zainichi* Korean schools are not merely educational establishments. It can be argued that *Zainichi* Korean schools serve a dual function, acting not only as educational institutions but also as a focal point for the entire *Zainichi* Korean community. In other words, it was proposed that the children attending *Zainichi* Korean schools and *Zainichi* Koreans serve as a conduit through which they can provide care for one another. In this context, the children at the kindergarten appeared to feel at ease within the *Zainichi* Korean community in a multitude of situations. This sense of comfort and belonging can be linked to the fostering of pride in being *Zainichi* Korean in Japan. Among *Zainichi* Koreans, *Zainichi* Korean schools are not referred to as 'schools'. Instead, they are always called 'our school'. For children in kindergarten, the very foundations of the concept of 'we' are beginning to form, a concept that will be developed and maintained as they progress through school.

Secondly, there is a notable degree of socialisation. The daily interaction of kindergarten children with a diverse range of individuals facilitates the development of social skills. This encompasses greeting individuals, respecting others, and behaving appropriately in group settings. Consequently, there are fewer issues when children transition to primary or even secondary school. This is because kindergarten children are continuously exposed to a diverse range of individuals, which makes what initially seems like a novel environment feel familiar. The capacity of kindergarten children to assimilate knowledge in such an environment is another notable benefit of *Zainichi* Korean schools.

Notes

1. The term *Zainichi* is used to describe foreign nationals residing in Japan.
2. There are *Zainichi* Korean schools in Japan: 41 kindergartens, 51 primary schools, 32 junior high schools, 10 high schools and 1 university.

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Contact email: uchidas@ohkagakuen-u.ac.jp

Final Year Students' Perceptions of Global Citizenship and Responsible Behaviour: Implications for the Curriculum

Beatrice Ngulube, Tshwane University of Technology, South Africa

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
Graduates should become culturally sensitive and gain an awareness of global issues to create a better world. This research article seeks to understand the perceptions of final year students towards global and responsible behaviour. It is imperative for final year students to understand the effects of globalization since globalisation affects citizens worldwide. Higher education institutions and workplaces are gradually becoming multiculturally diverse; therefore, identifying ways to implement global citizenship effectively into the curriculum is vital. Quantitative research was used to collect data from 250 final year students. The analysis of results revealed that graduates are not fully aware of the importance of global citizenship and responsible behaviour. Combining the perceptions of the students and what emerged from literature, the recommendation is that higher education institutions should strive to produce graduates with good global and moral behaviour so that they will be able to function well in every sphere of life they find themselves in. If these principles are taught intentionally, they are capable of changing students' worldviews and promoting global cohesion.

Keywords: Global Citizenship, Perceptions, Responsible Behaviour, Curriculum

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Introduction

There is no education or work environment which is prone to globalisation because the world is now interconnected. More importantly globalisation seems to be the panacea for several economic challenges faced by people worldwide (Abdelal & Tedlow 2003; Papanikos, 2024). This interconnectedness necessitates voluntary collaboration among nation-states to achieve socio-economic outcomes (Fischer, 2003; Papanikos, 2024). Higher education institutions are gradually becoming multiculturally diverse because of this global interconnectedness. As a result, global citizenship has the attention of many stakeholders across the globe (Andrews & Aydin, 2020). Therefore, identifying ways to implement global citizenship effectively into the curriculum is vital (Andrews & Aydin, 2020). This research paper delves into the final year students' perceptions of global citizenship and responsible behaviour at a university of technology in South Africa. Graduates should become culturally sensitive and gain an awareness of global issues to create a better world. Research on globalisation and issues on internalisation are research areas which can play a significant role in places where xenophobia is a challenge as well as culture shaming.

Global citizenship is an illustration of someone that plays an active role in a diverse environment and enables the easy collaboration of citizens to ensure sustainability (Bates, 2012). Education, both formal and otherwise, is thus an enabler for these dynamics in the learning environment or workplace environment (Hromcová & Agnese, 2019). Understanding the perceptions of final year students in the globalised world is a crucial matter especially these days where globalization is not unavoidable both in the learning space and workplace. Higher education curricula should prepare graduates to be global players in their chosen careers because education is a catalyst for these crescendos. In support Wingenbach, Graham, & Gomez (2023) argue that the curriculum should equip graduates with global competencies approach, which include self-awareness in intercultural encounters, communications, and general knowledge about world issues. This research article seeks to understand the perceptions of final year students towards global citizenship and responsible behaviour. Graduates should display responsible behaviour in this world where diversity should be embraced with respect and harmony in the learning environment and workplaces. Higher education curricula should strive to produce graduates with good global and moral behaviour. If these principles are taught intentionally, they are capable of changing students' worldviews and enhance global cohesion.

Furthermore, making students aware of global issues such as social justice, diversity, and equality can make young people embrace cultural diversity easily. This notion was also pointed out in the research conducted by Myers (2006) years ago when he argued that integrating the concept of global citizenship into the curriculum would assist students to develop democratic citizenship that is responsive to cultural diversity. Students should be multicultural conscious at the same time maintain their cultural heritage, and contribute productively to the world (Yusoff, 2019). To be a responsible global citizen one needs to be aware of global human rights and social justice, these are fundamental to global citizenship.

Literature Review

The world is becoming more and more technologically advanced, and students are becoming active partakers in a worldwide web on social media (Mutekwe, 2015). This then necessitates a serious need for students to deepen their knowledge of global citizenship awareness. The South African higher education environment as well as higher education globally has been

invaded by students and academics from all the walks of life, so the knowledge of global citizenship should be central to academic conversations. Students should understand global citizenship and appreciate and respect people from all over the globe. To develop these global citizenship attributes demands a curriculum which addresses global citizenship aspects to be taught in higher education institutions. Education programs must focus on and address the practical aspects, the ideals, and the problems of global citizenship education to prepare university graduates to meet the needs of workplace diversity. Fostering global citizenship mentality in the higher education environment is vital to today's graduates because we live in a diverse and global world (Andrews & Aydin, 2020).

Culture awareness can be explained as enthusiastically learning about, interacting with, or immersing in different cultures to gain knowledge and respect for individuals of different cultures around the world. Recent years South Africa has witnessed a worrisome surge in conflicts and discord between immigrant and non-immigrant groups, manifesting in instances of xenophobia, racism, anti-immigrant sentiments, hate crimes, segregation, and nationalist ideologies. Students therefore need relevant educational experience to navigate an increasingly diverse and multicultural world (Andrews & Aydin, 2020). All students should acquire the knowledge, competencies, and attitudes requisite for valuing cultural diversity and championing human rights transcending national boundaries. The following sections discuss the two constructs central to this study that is global and moral citizen (GMC) and ethical and responsible behaviour (ERB).

Global and Moral Citizenship (GMC)

Global citizenship education has been professed as a means by which graduates can obtain a greater understanding of citizenship, politics, democracy, and globalisation development, and thus be able to detect how the political, economic, cultural, social, and environmental constructs influence the universe (Bruce et al., 2019; Lafer, 2014; O'Meara et al., 2018). Self-awareness in intercultural encounters, communications, and general knowledge about world issues should also be part of global citizenship education (Wingenbach, et al 2023). International issues need to be taught in postsecondary education to prepare students for the global market (Zuniga et al., 2015). Francis et al. (2019) pointed out that university students cannot understand diverse economies or foreign production practices without studying issues affecting global food systems for instance.

Global and moral citizenship epitomises how the graduates feel and think about the world around them. Graduates with global and moral citizens attributes should seek to play their roles in a moral and ethical manner, in whichever society they find themselves (Barrie, 2004, 2012; Janmaimool & Khajohnmanee, 2020) and should be concerned with moral development responsibilities towards society. Steur et al. (2016) explained that moral citizenship is about "both students' ethical and moral development and their development towards global citizenship". A world of citizens with global characteristics will ensure the sustainable development of nations and promote universal equality, peace, and human rights (Wei, 2022). Peterson (2020) and Wei (2022) go a step further saying such citizens will create an environment where the co-existence of diversity can help develop solutions for global challenges. Appreciating cultural differences and collaboration are core skills for global citizens to live together in a harmonized world (Akkari & Maleq, 2020; Appiah, 2008; Jooste & Heleta, 2017; Peterson, 2020; UNESCO, 2020).

Ethical and Responsible Behaviour (ERB)

According to Coetzee (2012); Shiri, & Jafari-Sadeghi, (2023), global citizenship suggests that one does not shy away from his or her actions and the results of their choices and behaviour, while safeguarding the integrity and beliefs of one's profession, community and/or workplace. Coetzee (2012) further explains that exhibiting ethical and responsible behaviour shows that one is ready to lead others with encouragement and empowering them to behave morally towards society and community, and that one is fully accountable for the consequences of one's choices and actions.

Methodology

The article relied mainly on a quantitative research approach. The questionnaire was used as a data collection instrument. Participants were final year students from a university of technology in South Africa. About 250 questionnaires were sent to final year students. Quantitative data analysis was complemented by a thorough literature review search. The constructions that the researchers identified fall into the framework of global citizenship of (Coetzee, 2014) who contributed immensely to some of these issues. The questionnaire was given to experts at the institution to ensure that the questions were clear and not ambiguous. Data was collected from the questionnaire consisting of open-ended questions on global citizenship education ethical and responsible behaviour.

Data Analysis

Below are the questionnaire items which students responded to:

ERB 1: I accept accountability for the results of my decisions and actions.
ERB 2: I uphold the ethics and values of my profession, community, or workplace in all I do.
ERB 3: I encourage responsible behaviour towards the community and the environment.
ERB 4: I find it easy to provide direction to others and motivate and empower them.

Table 1: Global and Moral Citizenship: Ethical and Responsible Behaviour

	N	Mean	Std. Deviation
ERB 1	135	4.40	0.866
ERB 2	136	4.31	0.882
ERB 3	138	4.30	0.915
ERB 4	136	4.18	1.017
Summary	138	4.30	0.9202

The study underlines the importance of Global and moral citizenship ethical and responsible behaviour in preparing final year students for employment, beyond the traditional focus on hard skills and other academic credentials. This agrees with Holmes (2013) who asserts that a student will become a graduate not simply by formally achieving a degree award but by acting 'in ways that lead others to ascribe to them the identity of being a person worthy of being employed. It is important for final year students to understand the critical importance of global and moral citizenship, ethical and responsible behaviour.

Results and Discussions

Out of 250 questionnaires sent to the final year students only 138 were completed. It was found out that participants agreed with statements regarding ERB 1 (4.40; 0.866), ERB 2 (4.31,0.882), ERB 3 (4.30,0.915), and ERB 4 (4.18,1.017). Most of the students agree and strongly agree that they accept responsibility for the results of their decisions and actions and uphold the ethics and values of their community as well as the workplace.

Global and moral citizenship and responsible behavior should be on the agenda of education, especially curriculum designers bearing in mind the integration of the global communities. Students must be taught to be global players and responsible citizens. The paradigms that push responsible citizens should be given center stage in the education space. Curriculum should play a fundamental role in promoting Global and moral citizenship and responsible behaviour. Globalised system characterised by high levels of interconnectedness and challenging global problems needs a curriculum which equips students with the knowledge of global and moral citizenship and responsible behaviour (Franch, 2020). Hence Pashby, (2011) argued that schooling is one of the spaces where the concept of global citizenship is most utterly used, mainly in the narrative that theorises the need for a new citizenship education with a global orientation through an emphasis on global citizenship, has the power to shape a sustainable future and a better world (United Nations, 2012). This is also emphasized in sustainable development goal 17 (SDG17). SDG 17 incorporates the need to build a better world, support, empathy inventive, and cooperation which can be achieved through the teaching of global citizenship education (GCE). Higher education institutions should take GCE as a pedagogical framework for schooling in the 21st century. The UN Sustainable Development Goals (SDGs) have been considered as the transformative pathways that will lead to a more equitable global society and sustainable planet (Agusdinata, 2022).

Conclusion

It can be concluded that most of the students agree and strongly agree that they accept responsibility for the results of their decisions and actions and uphold the ethics and values of their community as well as workplace values. However, they seem not to be aware of “ubuntu” (I am because we are). Students should be taught how to be responsible citizens so that they accept each other with respect and dignity. This agrees with Holmes (2013) who asserts that a student will become a graduate not simply by formally achieving a degree award but by acting ‘in ways that lead others to ascribe to them the identity of being a person worthy of being employed.

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Contact email: ngulubeb@tut.ac.za

Digital Literacy Training Efficacy for Improving Educators and Educational Workforces' Digital Skill

Safuri Musa, University of Singaperbangsa Karawang, Indonesia
Sri Nurhayati, IKIP Siliwangi, Indonesia
Iim Wasliman, Nusantara Islamic University, Indonesia

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
This study investigates the effectiveness of an advocacy and mentoring program designed to enhance digital literacy among educators and educational personnel in Bandung, Indonesia. The research focuses on the program's impact on participants' ability to utilize the Merdeka Mengajar Platform (PMM) for improving literacy, numeracy, and character education. Employing a qualitative case study approach, the study analyzed data from 20 participants across Bandung City and Bandung Regency, including education officials, school supervisors, principals, and teachers from various educational levels. Data collection methods included observations, document analysis, semi-structured interviews, and open-ended surveys. The results indicate high levels of participant satisfaction and significant improvements in digital literacy skills and PMM utilization. The findings revealed enhanced confidence in using digital resources and the emergence of localized strategies for digital literacy enhancement. However, the study also identified challenges related to infrastructure limitations, the need for ongoing support, and concerns about long-term sustainability and scalability. The research highlights the potential of targeted advocacy and mentoring programs in improving educators' digital competencies while emphasizing the importance of context-sensitive approaches and integration with broader educational reforms. These findings offer valuable insights for policymakers and practitioners seeking to enhance digital literacy in developing educational contexts, suggesting the need for holistic, systemic approaches that address both skill development and infrastructural needs.

Keywords: Digital Literacy, Teacher Professional Development, Educational Technology

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Introduction

Indonesia, a developing nation with a large and diverse educational system, faces significant challenges in improving its educational outcomes. The Programme for International Student Assessment (PISA) 2018 findings highlighted considerable disparities in literacy levels, with Indonesia ranking in the bottom decile out of 79 participating countries (Bilad et al., 2024). Analysis of the PISA data revealed three critical variables influencing students' basic literacy skills: students' enjoyment of reading, metacognitive reading strategies, and classroom disciplinary climate (Firat & Koyuncu, 2023). These variables contribute positively and significantly to the development of students' basic literacy skills. Students who enjoy reading, receive appropriate metacognitive reading instruction, and learn in a well-managed classroom environment tend to score better on PISA assessments. However, in the digital era, basic literacy skills alone are insufficient. Both students and the educational environment must develop digital literacy competencies to navigate the complexities of modern information landscapes and to enhance academic performance (Iskandar et al., 2023; Musa et al., 2024; Musa & Nurhayati, 2024; Nurhayati & Novianti, 2024). Consequently, addressing these multifaceted challenges requires a comprehensive approach that integrates traditional literacy instruction with digital literacy skills development, potentially leading to improved academic writing quality and overall educational outcomes in Indonesia.

The concept of digital literacy in education has been extensively studied in recent years, with researchers emphasizing its critical role in 21st-century learning. Nurhayati (2024) define digital literacy as the ability to understand and use information in multiple formats from a wide range of sources when presented via computers. This definition has been further expanded by scholars who proposes a holistic framework for digital literacy that encompasses technical, cognitive, and social-emotional dimensions (Milyane et al., 2023; Nurhayati, Friscilla Wulan Tersta, et al., 2024; Nurhayati & Lahagu, 2024; Nuryanti et al., 2024; Setiadi et al., 2023; Susanti & Nurhayati, 2024). In the context of education, the importance of digital literacy for educators has been widely recognized (Marsegi et al., 2023; Nurhayati, Kurnianta, et al., 2024; Park & Yoon, 2023; Sulkipani et al., 2024; Winarti et al., 2022). Technological Pedagogical Content Knowledge (TPACK) framework emphasizes the need for teachers to integrate technological knowledge with pedagogical and content knowledge for effective teaching in digital environments(Redmond & Lock, 2019). This framework has been influential in shaping approaches to teacher professional development in the digital age.

Several studies have examined the impact of digital literacy training on educators' competencies and teaching practices. Galindo and Bezanilla (2021) found that pre-service teachers' digital competence was significantly influenced by the integration of digital literacy in teacher education programs. Similarly, Nuryanti et.al. (2024) and Musa et.al. (2024) demonstrated the positive effects of a digital literacy intervention on in-service teachers' ability to integrate technology in their teaching practices. In the context of developing countries, studies have highlighted the challenges and opportunities in promoting digital literacy among educators. Susanti and Nurhayati (2024) investigated the factors influencing teachers' adoption of ICT in Indonesian rural schools, emphasizing the need for contextualized approaches to digital literacy training. In Southeast Asia, Intaratat (2022) examined the digital literacy landscape across ASEAN countries, highlighting disparities and proposing policy recommendations for improving digital skills among educators. The COVID-19 pandemic has further underscored the importance of digital literacy in education. Winarti et.al. (2022) and Suharyat et. al. (2022) explored how the sudden shift to online

learning during the pandemic highlighted existing disparities in digital literacy among educators and emphasized the need for targeted interventions. Musa et.al. (2024) discussed the global implications of the pandemic on education systems, stressing the critical role of digital literacy in ensuring educational continuity and quality. In response to these challenges in digital literacy, the Indonesian government has initiated several programs to enhance the quality of education, with a particular focus on improving digital literacy among educators. One such initiative is the Merdeka Mengajar Platform (PMM), a comprehensive digital resource designed to support educators in improving literacy, numeracy, and character education (Aisah et al., 2024; Nuryanti et al., 2024). However, the effectiveness of this platform depends heavily on the digital literacy proficiency of its users. Recognizing the need for targeted interventions, the Balai Besar Penjaminan Mutu Pendidikan (BBPMP) Jawa Barat, as a technical implementation unit of the Ministry of Education, Culture, Research, and Technology, has been mandated to conduct advocacy and mentoring for local governments to enhance the competencies of educators and educational personnel. As part of this mandate, BBPMP Jawa Barat implemented an "Advocacy and Mentoring Program for Local Governments to Improve PTK Digital Literacy" in Bandung City and Bandung Regency in June 2023.

This study focuses on evaluating the effectiveness of this advocacy and mentoring program in enhancing digital literacy among educators and educational personnel in Bandung. The program aimed to provide accurate information about optimizing the PMM and related educational resources, explore the PMM to improve educators' abilities in implementing literacy and numeracy learning, and identify other mentoring patterns to enhance educator competencies. The research is guided by two primary questions: How effective is the advocacy and mentoring program in improving the digital literacy of educators and educational personnel in Bandung? To what extent does the program enhance educators' ability to utilize the Merdeka Mengajar Platform (PMM) for improving literacy, numeracy, and character education? These questions are particularly pertinent given the context of Indonesia's educational challenges and the government's efforts to leverage digital platforms for educational improvement. By examining the effectiveness of this targeted intervention, this study aims to contribute to the development of evidence-based strategies for enhancing digital literacy among educators in developing countries, with potential implications for educational policy and practice beyond the Indonesian context. The significance of this research lies in its potential to inform policy and practice in educational technology integration and professional development for educators in developing countries. As nations worldwide grapple with the challenges of integrating technology into education systems, understanding effective strategies for enhancing educators' digital literacy becomes increasingly crucial. The findings of this study may offer valuable insights for international educational policymakers and practitioners seeking to implement similar initiatives in their own contexts.

Method

This study employed a qualitative case study approach to investigate the effectiveness of the advocacy and mentoring program for improving digital literacy among educators and educational personnel in Bandung. The case study methodology was selected for its capacity to provide an in-depth, contextual understanding of complex phenomena within their real-world settings (Iswahyudi et al., 2023; Nurhayati et al., 2024; Sugiyono, 2019). This approach allowed for a rich exploration of participants' experiences and perceptions within the specific context of the Bandung education system, aligning with the study's aim to

examine the nuanced impacts of the digital literacy program. The case selected for this study was the "Advocacy and Mentoring Program for Local Governments to Improve PTK Digital Literacy" implemented in Bandung City and Bandung Regency in June 2023. This program was chosen due to its significance as part of the broader national initiative to enhance digital literacy among educators in Indonesia, offering a microcosm through which to examine the larger phenomenon of digital literacy training in developing educational contexts. Participants in the study were purposively selected to ensure a diverse representation of perspectives on digital literacy implementation. The sample comprised twenty participants, equally divided between Bandung City and Bandung Regency. In each location, the participants included representatives from the Education Office, school supervisors, principals, and teachers from various educational levels (PAUD, elementary, and junior high schools). This purposive sampling strategy aligns with qualitative research principles, aiming for information-rich cases that can provide insight into the phenomenon under study (Creswell, 2017).

Data collection employed multiple qualitative methods to ensure a comprehensive understanding of the case. Direct observations were conducted during the two-day training sessions held in June 2023, focusing on participant engagement, training content delivery, and interactions among participants. These observations provided valuable insights into the real-time implementation of the program and participants' immediate responses to the training content. Document analysis formed another crucial component of the data collection process. Researchers examined a range of relevant documents, including training materials, participant worksheets, program guidelines, and policy documents related to digital literacy initiatives. This analysis provided context for the program's objectives and content, as well as insights into its alignment with broader educational policies. Semi-structured interviews were conducted with participants at the conclusion of the training sessions. These interviews explored participants' perceptions of the program, its perceived effectiveness, and potential areas for improvement. The semi-structured format allowed for consistency across interviews while providing flexibility to explore unique insights offered by individual participants. Additionally, participants completed qualitative surveys with open-ended questions at the end of the training program. These surveys elicited participants' reflections on the program's strengths, weaknesses, and potential impact on their professional practice, providing a complementary data source to the interviews and observations.

The data analysis process followed a thematic analysis approach, as outlined by Braun and Clarke (2006). This process began with data familiarization, where researchers immersed themselves in the collected materials through multiple readings. Initial codes were then generated based on recurring ideas and concepts in the data. These codes were subsequently grouped into potential themes that addressed the research questions. The themes underwent a review and refinement process to ensure they accurately represented the data and provided meaningful insights. Clear definitions and names were established for each theme, and the final analysis was synthesized into a coherent narrative, incorporating illustrative quotes and examples from the data. To ensure the trustworthiness of the study, several strategies were employed. Data triangulation was used to compare and cross-reference information from multiple sources, enhancing the validity of findings. Peer debriefing sessions were conducted regularly among the researchers to challenge assumptions and explore alternative interpretations of the data. Member checking was employed, where preliminary findings were shared with select participants to ensure accurate representation of their perspectives. Additionally, thick description was used in reporting the findings, providing detailed accounts of the context and participants' experiences to enhance the transferability of the

results. It is important to acknowledge the limitations of this study. The focus on a single case and the short-term nature of the data collection may limit the generalizability of the findings. However, the purpose of case study research is not to produce generalizations but to facilitate a deeper understanding of the specific case, which can inform similar contexts. The researchers recognize that while the findings may not be directly applicable to all contexts, they provide valuable insights into the specific case of digital literacy training in Bandung and can contribute to the broader understanding of such initiatives in developing educational systems.

Results and Discussions

Program Effectiveness and Participant Satisfaction

Quantitative data from participant evaluations revealed a high level of program effectiveness and satisfaction. In Bandung City, the mean satisfaction score across all evaluation criteria was 3.63 out of 4, while Bandung Regency reported an even higher mean score of 3.72. These scores were derived from evaluations of five key aspects: clarity of information, relevance of materials, quality of presentation, time management, and overall satisfaction. A granular analysis of the evaluation data from Bandung City shows:

- Clarity of information: 3.75/4
- Relevance of materials: 3.50/4
- Quality of presentation: 3.75/4
- Time management: 3.63/4
- Overall satisfaction: 3.50/4

Similarly, Bandung Regency reported:

- Clarity of information: 3.50/4
- Relevance of materials: 3.80/4
- Quality of presentation: 3.80/4
- Time management: 3.70/4
- Overall satisfaction: 3.80/4

These high scores across all criteria suggest that the program successfully met its objectives in both locations. The particularly high scores for relevance of materials and quality of presentation in Bandung Regency (both 3.80/4) indicate that the content was well-tailored to participants' needs and effectively delivered. Qualitative data from participant interviews corroborated these quantitative findings. A school supervisor from Bandung Regency remarked, "The training provided not just theoretical knowledge, but practical skills that we can immediately apply in our work. The relevance of the material to our daily challenges was particularly impressive." This comment underscores the program's success in bridging the gap between theory and practice, a crucial aspect of effective professional development as noted by Musa et.al. (2024) in their review of effective teacher professional development.

Enhanced Understanding and Utilization of PMM

A key objective of the program was to improve participants' ability to utilize the Merdeka Mengajar Platform (PMM) for enhancing literacy, numeracy, and character education. The empirical data suggests significant progress in this area. In Bandung City, 9 out of 10 participants reported increased confidence in navigating and using PMM resources after the training. One participant, a primary school teacher, stated, "Before the training, I found PMM

overwhelming. Now, I can easily find and adapt resources for my lessons. It's transforming how I approach literacy and numeracy instruction." Similarly, in Bandung Regency, all 10 participants indicated improved ability to integrate PMM resources into their educational practices. A junior high school principal noted, "The hands-on exploration of PMM during the training was invaluable. I now see its potential not just for individual classrooms, but for school-wide literacy initiatives." These findings align with research by Mahriyani et. al. (2023) and Masri & Nurhayati (2024) who found that targeted professional development can significantly enhance teachers' ability to integrate digital resources into their pedagogy. The success in improving PMM utilization is particularly noteworthy given the platform's central role in Indonesia's educational technology strategy.

Identified Challenges and Areas for Improvement

Despite the overall positive outcomes, the study revealed several challenges that warrant attention. In Bandung City, 7 out of 10 participants expressed concerns about the sustainability of their newly acquired skills without ongoing support. A participant from the Education Office remarked, "While the training was excellent, we need a mechanism for continuous learning and troubleshooting as we implement these digital literacy strategies." Infrastructure limitations emerged as a significant concern in both locations. In Bandung Regency, 6 out of 10 participants cited inadequate internet connectivity in their schools as a potential barrier to full PMM implementation. This finding echoes the challenges identified by Susanti and Nurhayati (2024) in their study of technology integration in Indonesian schools, highlighting the need for a holistic approach that addresses both skills development and infrastructure improvement.

Emerging Strategies for Digital Literacy Enhancement

The study identified several promising strategies for enhancing digital literacy among educators, grounded in the local context of Bandung. In Bandung City, 8 out of 10 participants emphasized the potential of peer learning communities. A concrete proposal emerged for establishing a "Digital Literacy Champion" program, where trained educators would serve as mentors for their colleagues. In Bandung Regency, the integration of digital literacy across the curriculum emerged as a key strategy. Nine participants strongly supported the idea of developing subject-specific digital literacy modules. A science teacher explained, "We brainstormed ways to incorporate PMM resources into our existing curriculum. For instance, using digital simulations in physics classes or data visualization tools in biology." These locally-developed strategies align with the principle of contextual adaptation in educational technology integration, as advocated by Lyon et al. (2016).

Implications for Policy and Practice

The empirical findings from this study have significant implications for educational policy and practice in Indonesia. Firstly, the high satisfaction scores and reported improvements in PMM utilization suggest that the advocacy and mentoring program model could be effectively scaled to other regions. However, the identified challenges, particularly regarding infrastructure and ongoing support, indicate that such scaling should be accompanied by investments in technological infrastructure and the establishment of long-term support mechanisms (Musa et al., 2022; Nurhayati, 2021; Nurhayati, Fitri, et al., 2024). Secondly, the emergence of localized strategies for digital literacy enhancement underscores the importance of flexibility in national education technology policies. While PMM provides a standardized

platform, its effective implementation requires adaptation to local contexts and needs. Lastly, the study highlights the need for a multi-stakeholder approach to digital literacy development. The involvement of participants from various levels of the education system – from classroom teachers to education office officials – proved valuable in creating a comprehensive understanding of the challenges and opportunities in digital literacy enhancement.

Differential Impact Across Educational Levels

Further analysis of the empirical data revealed interesting differences in the program's impact across various educational levels. In Bandung City, participants from primary schools teachers reported the highest increase in confidence using PMM, with an average self-reported improvement of 85% compared to their pre-training levels. Secondary school educators showed a 72% improvement, while early childhood educators reported a 68% increase. This differential impact may be attributed to the varying complexity of digital resources required at different educational levels. A primary school teacher noted, "The PMM resources align perfectly with our curriculum needs, especially for literacy and numeracy instruction." In contrast, a high school physics teacher remarked, "While PMM offers valuable resources, we often need more specialized tools for advanced topics." These findings suggest that future iterations of the program might benefit from level-specific training modules, tailoring the content more precisely to the needs of educators at different stages of the educational system. This aligns with the concept of differentiated professional development, as advocated by Musa et al. (2024) in their review of effective teacher professional development practices.

Conclusion

This study examined the effectiveness of an advocacy and mentoring program aimed at improving digital literacy among educators and educational personnel in Bandung, Indonesia. The findings reveal that the program was highly successful in enhancing participants' digital literacy skills and their ability to utilize the Merdeka Mengajar Platform (PMM) for improving literacy, numeracy, and character education. The high satisfaction scores and reported improvements in PMM utilization across both Bandung City and Bandung Regency demonstrate the program's efficacy in meeting its primary objectives. Participants showed increased confidence in navigating digital resources and integrating them into their educational practices. The study also uncovered valuable insights into the differential impact across educational levels and the emergence of localized strategies for digital literacy enhancement. However, challenges remain, particularly in terms of infrastructure limitations, the need for ongoing support, and concerns about long-term sustainability and scalability. These findings underscore the importance of adopting a holistic, systemic approach to digital literacy development that addresses both skill-building and infrastructural needs. The study's implications extend beyond the immediate context of Bandung, offering valuable lessons for digital literacy initiatives in other developing educational systems. It highlights the need for flexible, context-sensitive approaches that can be integrated with broader educational reforms. Future research should focus on longitudinal studies to assess the long-term impact of such programs on teaching practices and student outcomes. Additionally, investigations into effective models for scaling up these initiatives while maintaining their quality and effectiveness would be beneficial.

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Contact email: safuri@unsika.ac.id

The Preliminary Analysis of the Entrance Examination Repeaters in East Asia

Kimikazu Nishiyama, Kyoto University, Japan

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
In East Asia, where the competition for the university entrance examination is intense, there is an option to repeat the preparation for the next year's examination. This option, to be the examination repeaters (ER) has not been academically focused on. Now that the capacity of universities has been expanded and these countries are facing a low birth rate, the issue of ER doesn't seem to be a serious problem. However, in some countries, the rate of ER is increasing. This study aims to explore the factors that affect the rise and fall of the number of the ER. Through literature research, it examines the history and recent situation of the ER in East Asia: Japan, China, South Korea, and Taiwan. These regions show different trends of the shift in the number of ER. From a comparative perspective, the factors that affect the number of the ER are derived and categorized into educational, social, and personal. Educational factors include the situations of high school, university admission, higher education, private education, and lifelong education. Social factors include the state of the labor market, national consciousness and the societal images created by the media. Personal factors vary, but they can be raised in terms of personal experience, desire, and parents' aspirations. In conclusion, although the educational system has changed to prevent repetition and the low birth rate affects the state of the labor market, the college wage premium still exists, and personal aspirations are increased by the media and decreasing competition.

Keywords: Entrance Examination Repeaters, East Asia, University Admission

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Introduction

In East Asia, if students want to study at universities, they generally have to take entrance examinations and win the competition. It is widely recognized that East Asia is characterized by intense competition in university entrance examinations. For students who don't succeed in their first attempt, there is an option to spend an additional year preparing for the next exam cycle. These students are called the 'examination repeaters (hereafter, ER).'

Traditionally, ER have had a somewhat negative image, as they are seen as those who failed to meet the standard university admission requirements. The existence of ER is often viewed negatively, particularly in Japan, where it is tied to the so-called '*examination hell*.' This refers to the grueling process of cramming for exams, often at preparatory schools. As early as the 1960s, Japanese scholars like Gotoh (1961) called the phenomenon of repeating exams as a very serious problem:

> Since the majority of ER are students who failed university entrance examinations, it is natural that ER is closely related to university entrance examinations. … This simple scheme, in which passing an academic achievement test is all that is required, has created *a very serious problem.* (Gotoh, 1961, p. 90; translation from Japanese; emphasis added)

Ono (2007) also expressed the ER (*ronin*) as an extreme manifestation of examination hell:

> "In Japan, the high value placed on college prestige leads to intense competition among high-school students to enter top colleges. These students undergo a phase termed *examination hell* in which they cram to prepare for the annual college entrance examinations. *An extreme manifestation of examination hell is the ronin phenomenon.*" (Ono, 2007, p. 271; emphasis added)

Despite the negative perception, being an ER is not always seen as entirely detrimental. Especially in Japan, Many ER are viewed as the person who spend their time preparing for a second chance as a period of self-improvement. They attend preparatory schools, which often offer more flexibility and focus on entrance exam preparation than traditional high schools. According to Fukaya (2002), preparatory schools can help ER students develop a deeper understanding of their goals and foster important attitudes toward learning. In this sense, the life of ER is not merely a period of failure, but it can be a time of growth and reflection:

> In particular, since preparatory schools are designed for entrance examinations and are not restricted in the same way as high school, many ER *acquire an attitude toward learning and deepen their way of life through preparatory schools*. In this sense, the life of ER is not only a negative period, but it is also a time in which many things can be acquired through life at preparatory schools. (Fukaya, 2002, p. 452; translation from Japanese; emphasis added)

Between many countries, there is confusion about the term examination repeaters. In this paper, examination repeaters refer to students who take the option to repeat the preparation for the next year's examination. In addition, there are various types of ER. In terms of their goal, some ER failed all their attempts in the previous year, while others aim for prestigious universities despite having received admission by other universities. In the terms of place where they prepare, some ER attend preparatory schools, but others study independently.

At least, the ER is seen in at least these 4 regions. This paper focuses on these 4 regions. Each region in East Asia has its own term for ER. In Japan, these students are known as *ronin* (浪人), a term originally used to describe masterless *samurai*, symbolizing their unstable status. In South Korea, they are called *chaesusaeng* (재수생; 再修生), while in China they are referred to as *fù dú sheng* (复读生), and in Taiwan as *chóng kǎo sheng* (重考生). While the names differ, the phenomenon of students repeating exams is seen across the region.

ER has been regarded as the symbol of the entrance exam competition. It also has contemporary significance for comparing ERs in East Asian countries. In current East Asia, the capacity of universities has been expanded, and each country is facing a low birth rate, so the competition rate is decreasing. However, the rate of the ER is increasing in some countries. This cannot be simply explained by the perspective of competition.

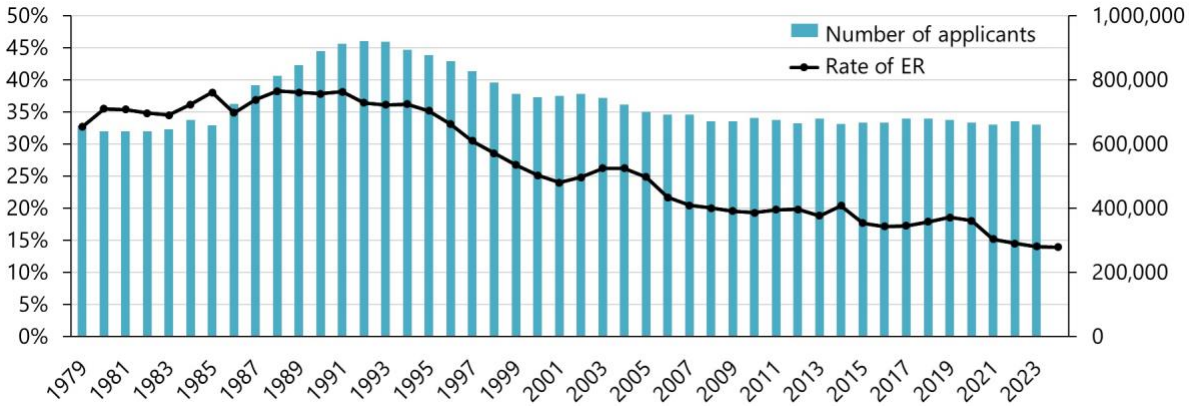
Several studies have examined the ER phenomenon. In Japan, Tsukada (1999) conducted ethnographic research, highlighting how ER students experience a period of self-reflection and reassessment. In South Korea, studies like Choi et al. (1989) and Lee (1980) examine the ER issue from a policy perspective, showing how societal and policy changes influence the number of ER. Regarding ER in China, Yang (2014) pointed out that the factor that creates ER is not only the entrance exam policy but also the dual social structure between urban and rural areas. Although studies have been conducted in these countries, it is necessary to present a framework that combines these findings in order to make comparisons.

This study aims to explore the factors that affect the rise and fall of the number of the ER. The research method is literature research. It examines the history and recent situation of the ER in East Asia, mainly in Japan and South Korea. Data of ER used in this study is based on national entrance examination applicants because of the limits of statistics. This is specifically because some countries don't offer the data of university aspirants and entrants, distinguishing the ER and high school students.

1. ER in Japan

In Japan, the examination repeaters are called *ronin*, and it have been a notable part of the educational landscape for over a century. The ER phenomenon has existed since the 1890s (Sekiguchi, 1956). Students who failed to gain admission would spend an additional year or more preparing for the next round of entrance examinations. In Japan, there are specialized preparatory schools known as *yobiko* that cater specifically to ER. These schools have a long history, with some of the largest and most well-known institutions, continuing to operate today. These schools offer a specialized curriculum designed to help students succeed in their university entrance exams. The development of preparatory schools was brought about by the discrepancy between the capacity of universities and the preferences of students, and the introduction of the Common First-stage Examination (Tsukada, 1999).

As mentioned above, the cause of the ER phenomenon has been regarded as the intensification of the competition in Japan. As Figure 1 shows, the number of applicants is decreasing because of the low birth rate. Along with this trend, the moderating competition rate leads to a decrease in the rate of the ER.



Note. The graph was created from MEXT. (1979-2022). School Basic Survey and National Center for University Entrance Examinations. (1981-2023). *National Center for University Entrance Examinations Directory*.

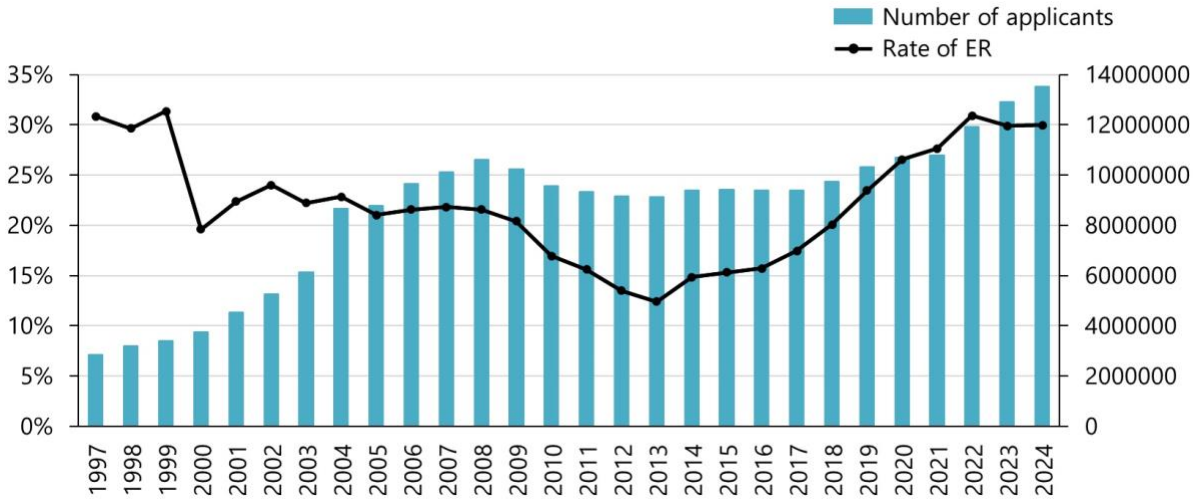
Figure 1: The Rate of Graduates in Applicants of the Center/Common Test

2. ER in China

Next, in China, Examination Repeaters is called *fù dú shēng*. The Gaokao, China's national university entrance examination, is known for being one of the most challenging exams in the world. For many students, failing to achieve a high enough score to enter their desired university leads them to become ER, retaking the exam the following year.

The issue of ER has been unevenly distributed across regions, with rural areas seeing a higher rate of repeaters compared to urban centers. Policy measures have been introduced to address the ER phenomenon (Yang, 2014). In 1999, some local governments in China began banning ER from studying at public high schools. By 2002, the national government also implemented similar measures, encouraging students who had failed to either enter vocational education or pursue employment. However, despite these policy efforts, the number of ER remains high. As Figure 2 shows, the rate of ER is usually changing along with the change in the number of applicants. In 2024, the rate of the ER is estimated to be beyond 30%.

Yang (2014) identified several key factors contributing to this trend. These include the demand for higher education far exceeding the supply, the low acceptance rates at top-tier universities, and the societal emphasis on attending prestigious institutions. Moreover, the job market's increasing competitiveness, along with the growing popularity of private preparatory schools, has perpetuated the need for students to improve their scores and secure a better future.



Note. The numbers of ER for the years 2000 and 2011–2024 represent estimated values based on the numbers of regular senior secondary school (普通高級中学) graduates. The graph was created from the Department of Development & planning, Ministry of Education, the People's Republic of China. (1997-2010). *Educational Statistics Yearbook of China* and Ministry of Education (http://www.moe.gov.cn/jyb_sjzl/moe_560/2022/).

Figure 2: The Rate of Graduates in the Previous Year in Applicants of Gaokao

3. ER in South Korea

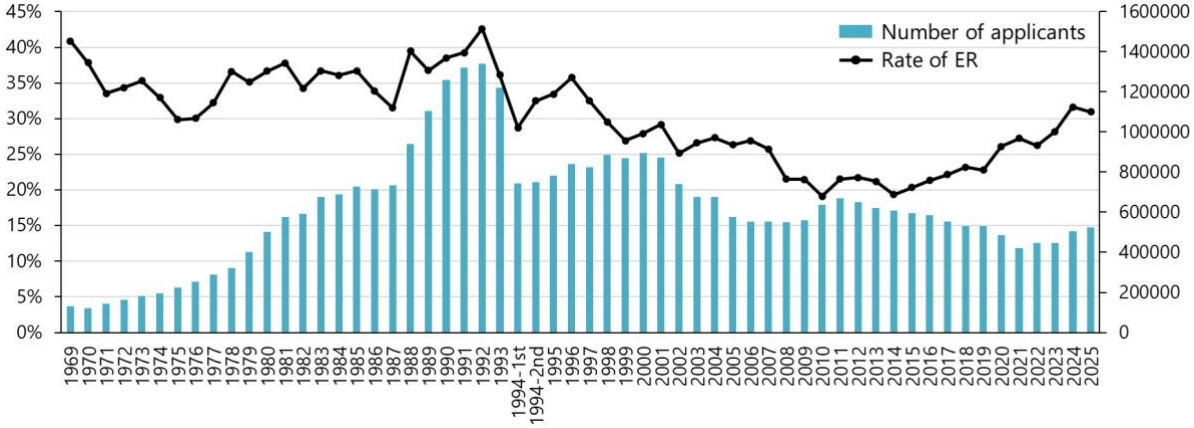
The Examination Repeaters (ER) in South Korea, where they are referred to as *chaesusaeng*, have been repeatedly focused on. This section outlines the policies and significant events that have shaped the phenomenon of ER in South Korea.

In 1974, the high school equalization policy was introduced to reduce competition for high school entrance exams. However, while this policy helped to balance the competition for high school admissions, it had the unintended consequence of intensifying the competition for university entrance. In 1980, the July 30 Education Reform Measures brought significant changes. One of the key reforms was the prohibition of private tutoring for students and students who repeated their entrance exams more than twice faced penalties, such as point deductions on their test scores.

Despite these efforts to curb the phenomenon of ER, the number of repeaters remained high. By 1994, the College Scholastic Ability Test (CSAT) was introduced. This new exam required students to demonstrate higher-order thinking skills. As a result, parents became increasingly anxious, leading to a rise in private tutoring. Consequently, the number of ER continued to grow as students sought additional help to improve their test scores. Finally, in 1997, the Asian Financial Crisis had a significant impact on South Korea's education system and labor market. Following the crisis, qualifications in specific fields such as medicine and law became more important than the prestige of the university itself. This led to an increased demand for repeaters in these highly competitive areas.

In the 2000s, screening mainly using the Comprehensive High School Records, not written tests, became popular. This institutional change means examination repetition is less effective because it mainly focuses on written test preparation. However, in the past 10 years, the rate of ER has been increasing.

As Figure 3 shows, the rate of ER decreased in the 1990s and 2000s, and it decreased in the year near the CSAT introduction and financial crisis. Also, it decreased in 2008, when the admission officer screening was introduced. However, the rate of ER has been increasing since the 2010s, despite the number of applicants gradually decreasing.



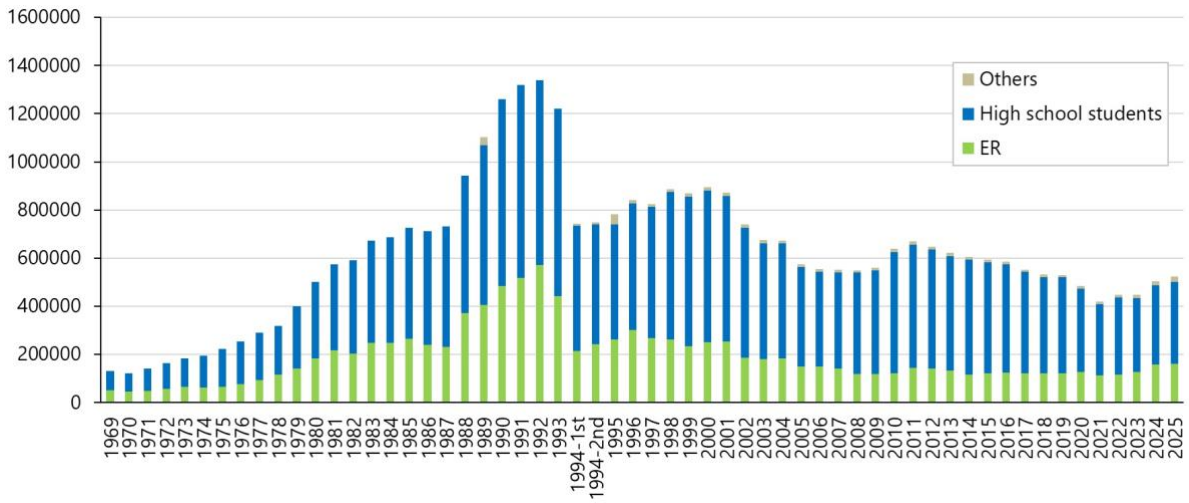
Note. The data is based on the number of takers for the National Entrance Examination, except for 1988-1993 whose data is based on applicants for junior college, teachers' college, and university. The data for 2024 and 2025 is based on the number of applicants, including applicants who don't actually take the CSAT. In 1994, the CSAT was implemented twice. The graph was created from the Ministry of Education, Republic of Korea. (1971-). *Statistical yearbook of education*, and Korea Institute of Curriculum and Evaluation (KICE). (2013). *A 20-Year History of College Scholastic Ability Test*, KICE. (2014-2023). Press release on analysis of the College Scholastic Ability Test performance, and KICE. (2023, 2024). Press release on application results for the College Scholastic Ability Test.

Figure 3: The Rate of Graduates in Test Takers of the Entrance Examination in South Korea

Not only the rate of ER is increasing, but the number of ER is also increasing (see Figure 4). The number of ER in 2025 is reported 161,784, accounting for 31% of all applicants (KICE, 2024). This number is the highest in the last 20 years, and the rate of ER exceeded 30% for the first time since 1999.

In South Korea, previous studies pointed out the factors of ER. Lee (1980) categorized the factors of ER into inner factors and outer factors. The inner factors are the education population, the screening system for university entrance, curriculum; while the outer factors are employment structure, personnel system, structure of national consciousness. Sim (2009) focuses on the inner factors, especially the characteristics of the screening system. Sim also raises the influence of career education in high school as one of the inner factors.

Sim (2011) categorized the factor of ER into social structural, educational, and personal consciousness factors, so it can be seen as adding the personal factors into Lee's study. Social structural factors are academic meritocracy and university hierarchy. Educational factors are the capacity of higher education, studying abroad and graduate school system. Personal consciousness factors are the desire for fulfillment of personal goals and parents' education fever.



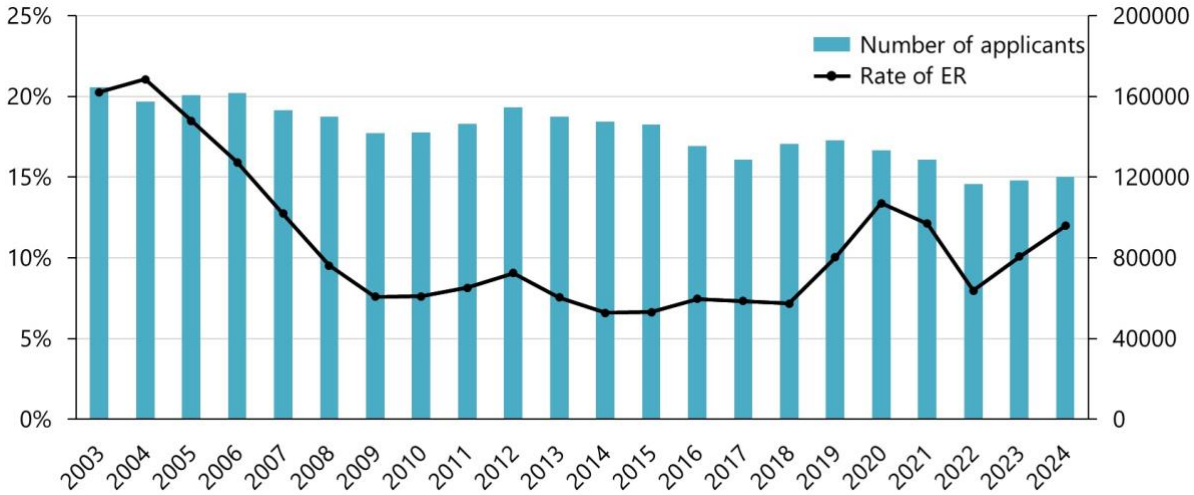
Note. The graph was created from the same resources as Figure 3.

Figure 4: The Number of Graduates in Test Takers of the Entrance Examination in South Korea

4. ER in Taiwan

The ER phenomenon is popular also in Taiwan. At least in the 1970s, the existence of the ER was reported (Hwang, 2008). Compared with the early 1990s, when the rate of ER in all applicants was over 40%, the rate in the recent 20 years is lower.

However, as Figure 5 shows, a similar tendency of change can be seen in the rate of ER in South Korea. In addition, the rate of the ER significantly decreased in 2022, when the reform of the university admission system was carried out. To sum up, similar to South Korea, the number of ER is increasing, while the rate of ER is increasing.



Note. The graph was created from the College Entrance Examination Center. (2003-2024). Statistical Chart of the General Scholastic Ability Test.
https://www.ceec.edu.tw/xmdoc?xsmsid=0J018604485538810196

Figure 5: The Rate of Graduates in the Previous Year at the General Scholastic Ability Test

5. Consideration From a Comparative Perspective

In this section compares the situations of the ER between four regions and summarizes the factors that influence the rise and fall of ER in East Asia.

When categorizing the four regions mentioned, distinct trends can be identified (see Table 1): China exhibits an increase in both the number of ER and the total number of applicants. South Korea and Taiwan show an increasing number of ER despite a decline in the total number of applicants. Japan demonstrates a decrease in both the number of ER and the total number of applicants.

Table 1: Current Status of ER in Four Regions

		The number of ER	
		Increasing	Decreasing
The number of applicants	Increasing	China	
	Decreasing	South Korea, Taiwan	Japan

This section presents a framework summarizing the factors that influence the rise and fall of ER in East Asia, based on insights from previous studies (Table 2). These can be broadly categorized into three types: educational, social and personal factors. Educational factors can be categorized in terms of high school, university admission, higher education, private education and lifelong education. Social factors can be categorized in terms of the state of the labor market, national consciousness and the societal images created by the media. Personal factors vary, but they can be raised in terms of personal experience, desire and parents' aspirations.

While this framework is derived from prior research, it is refined to align with the realities of contemporary society. The influence of social media, for instance, cannot be ignored. Social media shapes personal aspirations and perceptions of university rankings, significantly impacting the motivations and decisions of ER students in the 2020s. Furthermore, the expansion of the concept of lifelong education can be another factor that influences the decision to become an ER. This shift reflects a growing emphasis on continuous learning and its impact on individuals' educational pathways.

Table 2: The Factors of ER in East Asia

Factors	Details
Educational Factors	• High school system, curriculum, career education • University admission system • Capacity of higher education, overseas study, graduate school system • Private education • Lifelong education
Social Factors	• Employment structure, personnel system • Structure of national consciousness • Societal images created by the media
Personal Factors	• Personal learning experience, information that students have • Desire for fulfillment of personal goals • Parents' education fever

Conclusion

To conclude, in East Asia, the factors that affect the rise and fall of the number of ER can be categorized into educational, social, and personal factors. Although the educational system has changed to prevent repetition, and the low birth rate affects the state of the labor market, the college wage premium still exists, and personal aspirations are increased by a decreased competition rate. In addition, the effect of social media and lifelong education, which were not so popular when previous studies were conducted, cannot be ignored.

Comparing the ER phenomenon in different countries offers an understanding of the characteristics of each screening system, social structure, and educational culture concerning university admission. Future research will aim to incorporate data from additional countries to expand the scope of this analysis.

Acknowledgments

This work was supported by JST SPRING, Grant Number JPMJSP2110.

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Contact email: nishiyama.kimikazu.66s@kyoto-u.jp

Using Learning Portfolios to Investigate Students' Understanding of Positive Leadership and Their Experience With Teamwork

Janine Bittner, Ruhr University Bochum, Germany

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
This paper examines students' understanding of good leadership and successful teamwork. I used learning portfolios as a reflection tool for bachelor students in geography who participated in a community-based research course, which was combined with elements of service-learning. The learning portfolios consisted of seven reflection-stimulating key questions, which were answered in writing by the 15 participants after completion of the course. These key questions were raised on the students' perceptions of good leadership, successful project work and individual teamwork components, such as the organisation of decision-making processes and dealing with risks. The focus of the paper will be on the first mentioned points. Here, the students had the opportunity to reflect on their own experiences about the role(s) taken on, tasks performed and collaboration with team members of the course, to place the results on a meta-level. This reflection enabled a sustainable learning process. I chose qualitative content analysis as a widely used qualitative data analysis technique to code the text material from the learning portfolios. The data analysis approach was inductive. About the idea of good leadership, the most frequent categories are "taking responsibility for others", "organisational skills, having an overview of the process", "high degree of expertise", "friendly appearance", "adequate handling of team dynamics" and "the need for consistent behaviour". About the question of which key factors contribute to the success of work in project teams, the most frequent categories are "good communication", "equitable division of tasks" and "respectful interaction with each other".

Keywords: Students' Conceptions, Leadership, Teamwork, Learning Portfolio, Written Reflection, Qualitative Content Analysis

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Introduction

The teaching of soft skills and interdisciplinary skills to students is becoming increasingly important at universities and universities of applied sciences with the introduction of the tiered structure of the bachelor's and master's degree programmes, which are more strongly aligned with the needs of the labour market. Important core qualifications for the labour market include skills in the areas of collaboration in working groups and teams, as well as skills necessary to later take on a managerial role or leadership tasks in a company or organisation. Various approaches and teaching formats for imparting or guided and reflected step-by-step acquisition of such knowledge and skills, which are in high demand by future employers, are conceivable and are also applied.

In the study presented here, I refer to the two project-related, experience-based forms of teaching, service-learning and research-based learning or community-based research, both of which I believe are ideally suited to teaching relevant teamwork and leadership skills to students.

According to the definition given by Furco (1996), I understand service-learning as an approach that can be "… distinguished from other approaches to experiential education by … [its] intention to equally benefit the provider and the recipient of the service as well as to ensure equal focus on both the service being provided and the learning that is occurring" (p. 5). The positive effects that service-learning experiences have on students, in general, are manifold, well documented in the literature and were the reason for choosing this approach for the redesign of the study project course, funded by a teaching grant from the Ruhr University Bochum.

These include social outcomes, the extension of citizenship skills, changing of attitudes and values, mitigation of prejudices, the development of teamwork and leadership skills, as well as acquisition and application of academic knowledge and are described in detail, proven many times over by empirical studies (see as overview e.g. Celio et al., 2011; Conway et al., 2009; Eyler et al., 2001; Gordon et al., 2022; Novak et al., 2007; Yorio et al., 2012).

Of the various forms described in the literature for establishing a research connection in higher education teaching and bringing students into contact with research, which differ in particular in the degree of students' activity and the focus of the project (on the content or the process, the problem) (in particular see Healey & Jenkins, 2009; but also Deicke, 2016; Huber & Reinmann, 2019) I have oriented myself to the narrow definition of Huber (2009). Going through the entire research cycle (Huber, 2009, 2014), the problem orientation (Huber & Reinmann, 2019), the active role that students should play (Deicke, 2016; Huber, 2014), the support of the course instructor and the intention to gain knowledge that is also of interest to third parties (Huber, 2009) outside the context of a university course seemed particularly important to me. Several authors have reported on the effects of research-based learning on students (as an overview, see Camacho et al., 2017).

In the context of a one-year study project course for bachelor students of geography at the Ruhr University Bochum, both approaches were combined. The students worked in three project teams, with a strong research focus on project topics developed in consultation with community partners and the lecturer. The overarching topic of the course was "social inequality, poverty and homelessness" in the Ruhr area, a region in the state of North Rhine-Westfalia in Germany with formerly mining and steal industry which is confronted with a

multitude of challenges in the process of structural change since the 1960s but is increasingly on the way to an attractive, green, liveable region with new economic pillars in the tertiary sector (Bogumil & Heinze, 2021; Kiese, 2019) and an overall more diversified economic structure. Nevertheless, Rommelspacher (1998) comment still applies today: the comprehensive efforts and diverse measures in the structural change process have had a positive impact, but the Ruhr area is not able to keep pace with the high-growth regions in Western and Northern Europe. The region still has to deal with some problems until today, and this fact also determined the thematic focus of the study project, for which the accompanying research was carried out regarding the teaching of teamwork and leadership skills to students. For example, the at-risk-of-poverty rate in the Ruhr metropolitan region is above the national average (21.6 % in 2022, Ruhr Regional Association, 2024), as the unemployment rate (9.9 % in April 2024, Ruhr Regional Association, 2024), the region has experienced a significant population decrease since the 1960s (Butzin et al., 2006) and an increasing socio-spatial polarisation.

The following is a brief description of how teaching of teamwork and leadership skills was incorporated into the study project course. It should be noted that the course was split into two parts by the outbreak of the COVID-19 pandemic. When the university completely ceased its on-site operations with the onset of the pandemic, the course format had to be converted to an online-only format in a very short time, so that virtual collaboration between the students in the project teams became increasingly important as the course and the year progressed. At the beginning, before the pandemic, the students worked together in the three project groups especially in the classroom during course time in designated group work phases and reflection sessions, during visits to the partner organisations, social organisations in the city of Bochum and Essen, accompanied by me as the lecturer, and on the student's own initiative. Often in self-organised face-to-face meetings or through different arrangements (e.g. by email). In the first phase, one session was also used to approach the question of teamwork and leadership theoretically, to briefly address and discuss various approaches and talk about challenges of implementation. The second phase, with an exclusively virtual collaboration, using email, an online-learning platform, virtual team meetings and the WhatsApp Messenger, presented all course participants with major challenges. Each project group was led by a team leader and a deputy, whom the students themselves selected. With regard to the tasks of a team leader and existing challenges, the selected students were accompanied throughout the course, guided and advised by the experienced lecturer.

The goal of the research study is twofold. One of the aims was to explore different conceptions and views of good leadership among the participants of a community-based research service-learning course. The second aim was to identify important factors contributing to the success of teamwork. This can be specified in the following research questions:

- What are conceptions of a good leader among participants in a community-based research service-learning course? (RQ 1)
- What are critical (key) factors that contribute to the success of teamwork? (RQ 2)

Method

Research Design and Setting

I designed a qualitative study using learning portfolios as written reflections. The study population consisted of 15 students in the geography bachelor degree programme at the Ruhr University Bochum. All students took part in the study project course "social inequality, poverty and homelessness" in the academic years 2019 and 2020. The course took place during the COVID-19 pandemic. So after about half of its duration, the course format had to be changed to a purely online format in accordance with the requirements of the university. Collaboration in the project teams then took place via various forms of virtual collaboration.

Participants

A total of 16 bachelor students were initially enrolled on the course for which the accompanying research was conducted. However, one student decided not to continue the course at the start of the COVID-19 pandemic. The remaining students took part in the course until the end and all of them were successful. At the end of the course, they were asked to take part in the accompanying qualitative research study. All 15 students completed the prepared learning portfolios, which were set up as written reflections, completely, answering all guiding questions. Of the participants, seven were male students (47 %) and eight were female students (53 %); the vast majority were born and grew up in the state of North Rhine-Westphalia and were between 21 and 22 years old. The oldest participant was 27 years old.

Data Collection

I developed a learning portfolio as a written reflection tool that consisted of seven reflection-stimulation questions. The portfolio had no assessment function and was not linked to any university examination. It therefore differed from the portfolios usually used, particularly in the school context, even if very different forms of portfolios have to be distinguished, which are often designed as a kind of folder in which various documents, materials and objects that document the individual learning process are collected (c.f. Häcker, 2004 for an overview of the use of portfolios in project-related courses). However, the developed and used written reflection tool did address the central function of a portfolio, which is to reflect on the learning process, one' s own learning, and what has been learned (Häcker, 2004).

The importance of reflection for the learning process has been described in the literature many times, particularly in the context of experiential learning approaches. Kolb's experiential learning theory emphasises in the cycle of learning the interplay between two forms of capturing experiences: concrete experience and abstract conceptualization. And two forms of transforming experiences: reflective observation and active experimentation (Kolb, 2015). Experiences and reflection are linked in learning. Guthrie & Jones (2012) emphasised the potential that arises for learning from the combination of leadership experiences with reflective learning. Hatcher & Bringle (1997) provided some helpful guidelines for creating reflection activities for educators. For me, especially the principle of seeing reflection as a link between experiences made and the learning objectives, as well as the helpfulness of the instructor's guidance in this process, was of particular importance (Hatcher & Bringle, 1997).

The guiding questions covered various aspects that were intended to encourage the students to reflect on their experiences during the one-year course and were also interesting for me as

the course instructor. In the sense of receiving feedback on the students' thoughts, ideas and experiences, and therefore also on the learning outcomes achieved. The portfolio therefore also fulfilled an evaluative function (Häcker, 2004). The students answered the questions in written form at the end of the course. At home or at a place where they wanted to, undisturbed, without having me as the course instructor around. All questions were answered by the participants, there were no exceptions. Two of the seven reflection questions in the portfolio are relevant to this study.

These are the following two questions:

1. If you think about people with leadership responsibility with whom you have already worked in the context of a study-related activity, for example at school, at university, in sports, you can certainly think of a person who has a role model character for you. On what, i.e. on which characteristics would you define this role model character? Please describe this in more detail.

2. In your opinion, what are the relevant key factors that contribute to the success of working in project teams? Could you please name and explain the *three* most important points from your point of view!

Each of the two relevant guiding questions was answered by the students with a length of between ¼ and ¾ of a page. With one exception, the students filled out the portfolio templates with the computer.

Data Analysis

The qualitative data analysis of the written reflections was software-supported. MAXQDA Analystics Pro software, version Release 22.8.0 was used (Kuckartz, 2010; Rädiker & Kuckartz, 2019). A computer-written copy of the handwritten portfolio was made so that all documents could be imported into the software. I conducted a qualitative content analysis following the approach of Mayring (2010a, 2010b, 2022; Mayring & Frenzl, 2019) with the answers to the two guiding questions. The coding of the text material as part of the qualitative content analysis was carried out manually; the use of the AI assistant offered by the software was deliberately avoided. Initially, the method of inductive category formation, as described and illustrated in a corresponding process model by Mayring (2010a, 2010b, 2022), was used with the aim of approaching the available text material with as much openness as possible and developing the categories or main themes step by step from the text material. As a coding unit, the minimum size of a text element assigned to a category, the clear meaning component was defined. At the end of the inductive line-by-line processing of the available text material, in which new categories are repeatedly formed or text segments are assigned to existing categories and a partly subsumption of the categories developed from the text material under superordinate categories, there is a developed category system for each of the two research questions or the respective selection criterion defined for this. With regard to research question 1, the deductive category application procedure was also used and combined with the inductive category assignment procedure. I defined the categories at the highest hierarchy level as structuring units taken from a model described in the literature by Beineke & Spencer (2007). Five areas of leadership competencies are described in this report, which are based on the evaluation of scientific and grey literature on leadership theory, as well as on the evaluation of training programmes and courses on mental health, health and leadership

(Beineke & Spencer, 2007). These formed the structure for the top level of the category system in relation to research question 1.

With regard to this research question, the question of what characterises a good leader, a quantitative content analysis was also carried out in advance using the available text material. This was primarily done to gain an initial impression of the available answers and to compile the character traits and working methods of a good leader that were mentioned particularly frequently by the study participants. The quantitative content analysis took the form of a pure frequency distribution of words in the sense of a quantitative computer-aided, dictionary-based text analysis for text exploration (cf. Züll & Landmann, 2002 for an overview of different approaches).

Results

This section summarises the main results of the research study in the corresponding order of the research questions examined.

Characteristics of a Good Leader

The most important result of analysing the word frequencies of the answers given in the portfolios to the guiding question 1 is, that the following characteristics of a leader are frequently mentioned: role model character, responsibility, experience, motivation / motivate, trust / confidence, friendliness.

Based on the responses given in the written reflections, the qualitative content analysis showed the following results in terms of the main categories at the highest hierarchical level, which were taken from the model by Beinecke & Spencer (2007). The responses most frequently given by the students could be categorised under the main heading of 'interpersonal skills' (93 %, 13 out of 15 study participants). The next category with the second-highest number of mentions is 'personal skills/knowledge/(general life experience)' (86 %, 12 out of 15 study participants). Followed by the category 'transactional (execution, management skills)' (79 %, 11 out of 15 study participants) and finally, with the lowest frequency the category 'transformational skills' (57 %, 8 out of 15 study participants). The area of 'policy/programme knowledge' included in the 'leadership and management skill set' model described by Beinecke & Spencer (2007) does not appear in the portfolios (see Table 1 for details, unit of analysis: cases).

Table 1: Frequencies of Main Categories (Documents With Codes) – Characteristics of a Good Leader

	Documents	Percentage	Percentage (valid)
Personal Skills/Knowledge/ Level of Experience)	12	80,00	85,71
Interpersonal (People) Skills	13	86,67	92,86
Transactional (Execution, Management Skills)	11	73,33	78,57
Transformational Skills	8	53,33	57,14
Policy/Programme Knowledge	0	0,00	0,00
DOCUMENTS with code(s)	14	93,33	100,00
DOCUMENTS without code(s)	1	6,67	-
ANALYSED DOCUMENTS	15	100,00	-

Table 2: Frequencies of Main Categories (Segments With Codes) – Characteristics of a Good Leader

	Segments	Percentage
Personal Skills/Knowledge/(Level of Experience)	32	31,37
Interpersonal (People) Skills	28	27,45
Transactional (Execution, Management Skills)	27	26,47
Transformational Skills	15	14,71
Policy/Programme Knowledge	0	0,00
TOTAL	102	100,00

Table 2 provides the supplementary results if we use the coded segments as the unit of analysis. From this perspective, it can be seen that most of the character traits of a good leader mentioned by the students in the written reflections fall into the main category of personal skills / knowledge/(level of experience).

For the main category 'policy/programme knowledge', derived from the model by Beineke & Spencer (2007), there are no text segments in the given answers to research question 1 in the portfolios that can be assigned to this main category.

In the following, the results will be presented in more detail, with a focus on the most frequently occurring sub-categories for the evaluation focus or selection criteria, i.e. the research question. The numbers given in brackets indicate the number of documents (portfolios/written reflections) in which the sub-categories are represented. The categories most frequently found in the portfolios in terms of the idea of good leadership or characteristics of a good leader which can be assigned to the main category 'personal skills / knowledge / (level of experience)' are a) taking responsibility for others (5), b) high degree of expertise (4) and c) the need for consistent behaviour (4). With regard to the main category 'interpersonal skills' the following often occurring sub-categories are to be named here: a) adequate handling of dynamics in the team (4), b) guiding and supporting staff (3), c) responsiveness in case of ambiguities and questions (3) and d) trusting and respectful interactions with others (3). For the main category 'transactional (execution, management skills)', the following sub-categories are to be emphasised: a) organisational skills, overview of the process (5), b) scheduling and monitoring compliance with deadlines (3), c) fair distribution of tasks and control of execution (3) and d) setting the direction and leading the group (3). Finally, the most frequently occurring sub-categories for the main category 'transformational skills' are listed: a) motivate and convince employees (3), b) must have and maintain the overall view c) being a role model in terms of values (3).

Critical Factors That Contribute to the Success of Teamwork

The following are the results of the qualitative content analysis conducted in relation to research question 2. The main category 'organisation of work processes' appears most frequently in the documents, followed by the main category 'communication'. These are followed by the main categories 'dealing with each other' and 'work of the individual'. Other 'main categories' that do not occur so frequently are 'personality of the individual', 'team composition', 'team hierarchy' and 'team cohesion'.

Table 3: Frequencies of Main Categories (Documents With Codes)
– Critical Factors That Contribute to the Success of Teamwork

	Documents	Percentage	Percentage (valid)
Organisation of Work Processes	12	80,00	80,00
Communication	10	66,67	66,67
Dealing with Each Other	6	40,00	40,00
Work of the Individual	6	40,00	40,00
Personality of the Individual	2	13,33	13,33
Team Composition	2	13,33	13,33
Team Hierarchy	2	13,33	13,33
Team Cohesion	2	13,33	13,33
DOCUMENTS with code(s)	15	100,00	100,00
DOCUMENTS without code(s)	0	0,00	-
ANALYSED DOCUMENTS	15	100,00	-

The findings for research question 2 will also be presented in more detail. The sub-categories that occurred most frequently in the documents (portfolios/written reflections) after conducting the qualitative content analysis are given.

The categories most frequently found in the portfolios in terms of critical factors that contribute to the success of teamwork which can be assigned to the main category 'organisation of work processes' are a) distribution of labour (9) and b) operational organisation (4).

With regard to the main category 'communication' the following often occurring sub-categories are to be named here: a) in general key factor for team collaboration (6), b) helps to solve problems (3) and c) is used for the exchange of information (3).

For the main category 'dealing with each other', the following sub-categories are to be emphasised: a) respectful interaction with each other (4), b) having an understanding of the needs of others (2) and c) sympathy / harmony between team members.

Finally, the most frequently occurring sub-categories for the main category 'work of the individual' are listed: a) reliable working method/reliability in collaboration (4) and b) personal ambition of the individual (2). The other main categories listed in Table 3 are not explained here with their respective sub-categories, as these occur overall with less frequency than the other main categories.

Discussion

This research study offers interesting insights into two areas of research that are particularly relevant for accompanying research activities about the learning outcome of service-learning and community-based research courses or the learning outcomes of other project-related course formats in higher education: views on good leadership and successful teamwork. Through practical experiences with teamwork and the possibility to try out a leadership role, the two-semester study project course gave the students the opportunity to develop the necessary skills and knowledge to work in teams or later act as a leader in professional life. Brookes (2017) showed in his study for Australia, that the importance of teaching teamwork skills to undergraduates is highly valued by university staff surveyed. Working in teams or working groups, in the traditional sense or virtually and across multiple locations, possibly

distributed worldwide, is increasingly important in the modern business and working world, in organisations (Applebaum & Blatt, 1994 as cited in Guzzo et al., 1996) in research (Fiore, 2008) and since the 1920s and 1930s, teamwork has also been increasingly researched by scientists in terms of its efficiency (Mathieu et al., 2018). The fact that the aim of imparting relevant knowledge through practical work in the community-based research service-learning project course and reflecting on the experiences made was achieved is shown by the differentiated and detailed answers to the two reflection questions posed.

About the concept of a good leader, the research study showed that the model described by Beineke & Spencer (2007) is well suited to categorise the characteristics of a good leader as named by the students in the written reflections. Particular emphasis was given by the students to factors inherent in the person of the leader, the personal appearance and his or her expertise. As well as proven interpersonal skills such as a general willingness and ability to lead and support employees, to treat them and other people with respect and to give them trust and a wide range of knowledge and skills in teamwork. This knowledge that the students gained will be of great use to them when they themselves take up a leadership position after completing their university studies. The area of 'policy/programme knowledge' presented in the model by Beineke & Spencer (2007) was not touched upon by the students in their given answers. This can certainly be attributed to the fact that the students derived their views, on the one hand, from experiences they had while participating in the community-based research service-learning course and, on the other hand, from previous knowledge and other experiences they had in the university or school environment, at home, during their first professional experiences, or in their free time. In the study project course itself, in the three project teams, the selected team leaders were guided by the course instructor. Policy and programme knowledge thus played a less important role.

Regarding critical factors that contribute to successful teamwork, the results show that students emphasise the importance of aspects related to the organisation of workflows and work processes. And also the significance of good communication for teamwork collaboration, problem solving, and keeping the same level of information. The other recurring topics that were less mentioned relate to interpersonal aspects, the working methods of each team member, the team composition, the cohesion between the team members, and existing team hierarchies.

The two most important factors according to the frequencies with which the students mentioned them, organisation of workflows and good communication, are also emphasised in the review study by Salas et al. (2000) as emerging principles of teamwork and thus also to be considered as significant key factors for the team performance. There are also similarities to the teamwork dimensions listed in the study by Morgan et al. (1986, as cited in Baker et al., 1992), which are closely related to the performance of the team and its success or failure. Morgan's seven teamwork dimensions also include communication and coordination, furthermore cooperation, team spirit, adaptability, and giving and receiving feedback (Morgan et al, 1986, as cited in Baker et al., 1992).

Limitations

This research has some limitations that also should be mentioned. The sample size of this work is small which results from the number of course participants. The course was newly developed and offered for the first time in terms of the content focus and the teaching concept. There was no parallel course with a comparable focus. The number of study

participants is therefore limited to 15. In future studies, a larger number of cases should be the aim, if possible.

The answers given to the key questions in the portfolios or written reflections are generally shorter than in qualitative interviews, and the researcher does not have the opportunity to obtain more detailed information through follow-up questions. Ambiguities cannot be eliminated. However, the effort is limited not only for the researcher but also for the study participants resulting in a high level of acceptance and willingness to participate, so that the use for accompanying research appears suitable.

Conclusion

Teamwork skills, as well as skills that are important for taking on a leadership role, can be taught to students as soft skills in project-based course formats. Salas et al. (2000) conclude from a review of the existing literature, as a principle of teamwork, that "teamwork requires leadership that enables the direction, planning, and co-ordination of activities" (p. 11, cites the work of Ginnett, 1993; Hackman & Walton, 1986; McIntyre & Salas, 1995; Cannon-Bowers & Salas, 1998). It therefore seems to make sense to think of teamwork and leadership skills together when teaching soft skills in the context of project-based university courses.

Experiential learning teaching formats, which include the approaches of service-learning and research-based learning or community-based research, are suitable for this purpose. This was shown by the result of my accompanying research on a community-based research service-learning course. In principle, it could also be shown that written reflections in the form described and used are a helpful tool for the students to internalise and critically question the experiences they had in interacting and working with others during the project. In my opinion, a more in-depth learning process is initiated by the guided writing and renewed conscious intellectual engagement with relevant key questions of leadership and teamwork. Students should do this at their own pace, undisturbed, and in my opinion, if possible, ungraded.

Acknowledgements

I would like to thank all students who took part in this research study. This research study was made possible by a teaching grant from the Ruhr University Bochum, funding line research-based teaching and learning. I am very grateful for receiving a fellowship from the FRU Sponsoring Group of Spatial and Environmental Research Association of Friends of the ARL e.V. for international conference participation. Janina Kempchen, former student research assistant, provided valuable support in conducting the community-based research service-learning course. I would also like to thank Prof. Dr. Reinhold Kloos for the support and the Michigan Mixed Method Working Group for the possibility to present and discuss this research study at an early stage.

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Contact email: Janine.Bittner@rub.de

Enhancing Engineering Education: Efficacy of a Virtual Classroom on Learning Basic Indoor Thermal Environment Engineering Concept

Cynthia Hou, The Hong Kong Polytechnic University, Hong Kong SAR

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
This study evaluates the effectiveness of a virtual classroom designed for building service engineering students, focusing particularly on Fanger's thermal comfort model. Traditional teaching methods often fail to fully engage students in complex engineering concepts; thus, this virtual platform aims to provide a more immersive learning experience by seamlessly integrating theoretical knowledge with practical applications. The virtual classroom introduces foundational concepts through engaging animated content, followed by interactive simulations. In these simulations, students actively manipulate variables such as air temperature, humidity, and air velocity, enabling them to directly observe the impact of these factors on thermal comfort. This approach not only reinforces theoretical knowledge but also enhances practical skills through simulation-based activities where students apply what they have learned to real-world scenarios. An experimental study involving 66 students was conducted to measure the effectiveness of this educational approach. A pre-test and post-test, each consisting of 6 questions, were administered to assess the students' initial understanding and subsequent knowledge acquisition after using the virtual classroom. The results showed a significant improvement, with a 25% average increase in post-test scores, indicating enhanced understanding and application skills. Additionally, student feedback collected through a survey expressed high satisfaction with the virtual classroom, highlighting its value as an engaging and effective educational tool. Overall, the study confirms that the virtual classroom significantly improves learning outcomes and student engagement in building service engineering education.

Keywords: Engineering Education, Virtual Reality (VR) Technology, Virtual Classroom, Education Experiment

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Introduction

In recent years, the advent of Virtual Reality (VR) technology has revolutionized numerous fields, with education being one of the most significantly impacted areas. VR's ability to simulate complex environments and immersive scenarios offers a novel approach to learning and teaching, particularly in technical and scientific disciplines. This research focuses on the application of VR in the field of building service engineering, specifically to enhance understanding of Fanger's thermal comfort model -- a fundamental concept that defines the criteria for maintaining optimal human comfort in built environments.

The increasing reliance on digital technologies in educational settings presents a unique opportunity to leverage VR not only to improve the comprehension of theoretical models but also to facilitate a hands-on approach to learning that traditional methodologies often lack. This study aims to systematically evaluate the effectiveness of a VR platform tailored for education in building service engineering, assessing its impact on learners' knowledge, engagement, and emotional responses.

By investigating these areas, the research will address critical gaps in the literature concerning the effectiveness of VR in enhancing technical education, particularly how it affects different learner demographics such as engineering and non-engineering students. The study's outcomes are expected to contribute valuable insights into the pedagogical potentials and limitations of VR technologies, offering guidance for future implementations in similar technical fields. Through this exploration, the research will help delineate the role of VR in modern education, potentially setting a benchmark for its application in technically oriented academic curricula.

Literature Review

The experiential learning model, as outlined by Kolb in 1984 (Morris, 2020), emphasizes that learners gain practical experience through active participation, which enhances their comprehension of abstract concepts (Morris, 2020). Following these experiences, reflective observation allows learners to further deepen their understanding. A pivotal factor in experiential learning is the creation of a conducive learning environment, which supports learners in actively constructing knowledge and meaning (Jiang et al., 2022; He & Wu, 2006; Hou & Wu, 2020). In such an environment, learners engage with their surroundings, enhancing perception and comprehension. This engagement triggers various cognitive activities including memory retention and imagination, crucial for the acquisition and development of knowledge. An attractive and stimulating learning environment can naturally motivate learners by triggering curiosity and interest, prompting them to actively explore and engage with educational content. In these environments, learners acquire not just knowledge, but also practical skills and attitudes through a combination of hands-on practice and thoughtful reflection.

By the early 2000s, virtual environments began to gain prominence in education, recognized for their potential to significantly enhance learning (Chang et al., 2023). The utility of virtual environments extends beyond their ability to replicate reality; they can also create tailored virtual scenarios that align with specific learning objectives (Meyrowitz, 2002; Chang & Hwang, 2021). The effectiveness of scenario-based teaching does not depend on whether it occurs in a physical "real scenario" or a digital "virtual scenario." Rather, it is determined by the nature and quality of interactions between teachers and students, and the extent of these

interactions (Jiang et al., 2022). Effective facilitation of teacher-student engagement in "virtual scenarios" can yield educational outcomes that are on par with those achieved in real-world settings. Ultimately, it is the pedagogical approach and the level of interaction that determine the effectiveness of scenario-based teaching, regardless of the scenario's physical or virtual nature.

A Virtual Classroom Concept for Teaching Indoor Thermal Comfort

Indoor thermal comfort education aims to enhance understanding of the factors affecting occupants' satisfaction with their indoor environment, including ventilation, temperature, and humidity. The subjective nature of comfort and the complexity of these factors make standardization challenging. Virtual Reality (VR) offers an innovative way to merge theoretical principles with practical applications, particularly in fields like building service engineering. This research introduces students to a VR platform featuring a multi-interactive interface, which facilitates learning through hands-on interaction with Fanger's Predicted Mean Vote (PMV) model. This model, essential for assessing indoor thermal comfort, calculates comfort levels based on variables such as air temperature, humidity, and clothing insulation, and is represented on a scale from -3 (cold) to +3 (warm). Educating students on this model can be challenging due to its complex calculations and the dynamic real-world conditions it attempts to represent. To overcome these educational hurdles, the use of practical exercises, simulations, and case studies within the VR environment is recommended to enhance comprehension and application of the model in real-world scenarios.

Research Gaps

Despite the growing integration of Virtual Reality (VR) technologies in educational settings, there remains a significant gap in empirical evidence regarding the specific impacts of VR platforms on learning outcomes in technical disciplines. Previous studies have extensively explored VR's role in general education and training scenarios, but fewer have addressed its application in technical fields like building service engineering, where the integration of theoretical knowledge and practical application is essential. Moreover, while there is some understanding of how VR can enhance learning experiences through immersion and interactivity, less is known about the effects of VR on learners' understanding of complex theoretical models such as Fanger's thermal comfort model. This model, critical in building service engineering, involves intricate concepts that may benefit substantially from the immersive learning environments provided by VR. However, the effectiveness of such platforms in truly enhancing comprehension of these concepts has not been adequately quantified.

Additionally, the impact of VR on different demographic groups, particularly the distinction between engineering and non-engineering students, has not been thoroughly investigated. Understanding how students from various academic backgrounds perceive and benefit from VR could provide insights into the adaptability and inclusivity of VR technologies in diverse educational contexts. Finally, while some research has considered the cognitive and educational benefits of VR, there is a scarcity of studies examining the emotional or affective outcomes associated with VR learning environments. Investigating how these platforms influence learners' mood states is crucial, as emotional engagement is known to enhance retention and deepen learning experiences. Addressing these gaps can provide a more comprehensive understanding of VR's potential as a transformative educational tool,

particularly in fields that require a strong linkage between theoretical knowledge and practical application.

Research Questions

The primary objectives of this research are to evaluate the effectiveness of the VR platform in enhancing learners' understanding of Fanger's thermal comfort model, assess learners' overall experiences with the platform, including content quality, sensational experience, integrative experience, engagement and personalisation, and investigate learners' mood states after using the VR platform for educational purposes. By quantifying knowledge gains, exploring user experience, and analyzing emotional impacts, this study aims to provide a comprehensive understanding of the potential of VR as a transformative educational tool in technical fields like building service engineering, where integration of theoretical and practical learning is crucial.

RQ1: How do students perceived the experience of using the VR learning platform?

RQ2: What is the impact of the VR learning platform in enhancing students' knowledge related to Fanger's model?

RQ3: How does students' academic background (engineering vs. non-engineering students) influence the effectiveness of VR platforms in enhancing learning outcomes and perception of virtual environments?

Methodology

Development of the VR Platform

The development framework for the VR platform, as illustrated in Figure 1, is methodically divided into two principal sections: development inputs and user interface components. The development phase is intricately focused on the integration of specialized subject knowledge, specifically Fanger's thermal comfort model, which serves as the educational foundation for the VR content. This integration is coupled with logical interaction mechanisms that are essential for crafting a VR experience that not only mimics real-world scenarios but also engages users deeply. During this phase, sophisticated virtual rendering techniques are employed to construct a visually immersive environment, while advanced algorithms are developed to automate processes and enhance the interactions within the platform. These algorithms are tailored to adjust dynamically to user inputs, providing a responsive and adaptive learning environment that maintains functional viability.

On the user interface front, the platform is engineered to ensure an intuitive and seamless interaction for users. This part of the framework emphasizes creating a fluid user interface that can adapt effectively across different devices and platforms, ensuring a consistent user experience whether accessed via a desktop, tablet, or VR headset. The interface includes user-friendly controls and design elements that not only reflect real-world interactions but also simplify complex concepts, making them easier to grasp. Interactive elements such as draggable components, clickable areas, and immersive animated tutorials are integrated to facilitate active learning and engagement. These interactive components are designed to provide hands-on experience and real-time feedback, crucial for educational effectiveness. The synergistic operation of these components ensures that the VR platform is not just

technologically sophisticated but also highly accessible, making it a powerful tool in educational settings where understanding complex models like Fanger's thermal comfort theory is essential.

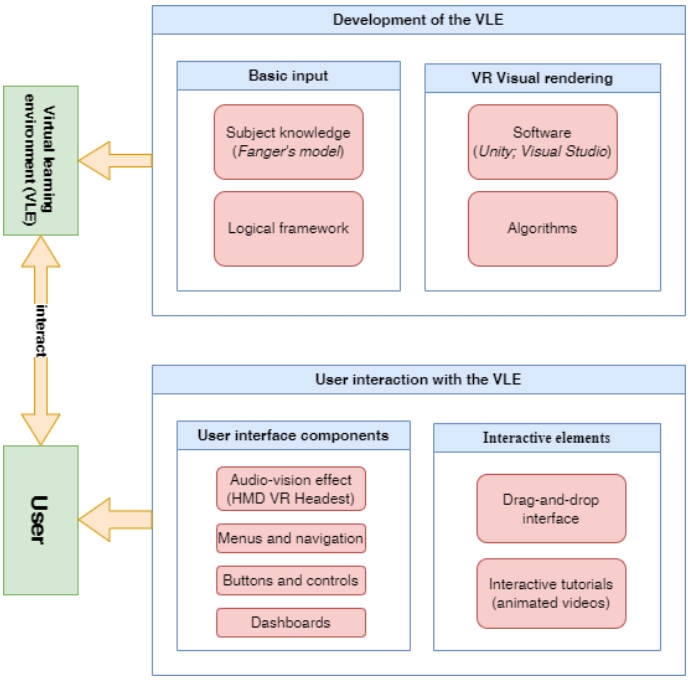


Figure 1: Development Framework of the VR Platform

In this project, the development of a VR platform using OCULUS RIFT and the Unity3D game engine has enabled the creation of a highly immersive educational platform, modelled on an actual university classroom in Hong Kong. This virtual classroom, complete with essential furnishings such as a blackboard and workstations, introduces students to the main contents of the platform (Figure 2a) and the Fanger's thermal comfort model through animated videos (Figure 2b). This video serves as the cornerstone of the learning experience, explaining the educational functions of the environment and guiding students in using the virtual space effectively. The classroom can toggle between "winter" and "summer" modes, reflecting changes in "clothing insulation" - a key variable in Fanger's thermal comfort model (Figure 2c). This feature allows students to understand how different environmental conditions affect thermal comfort, with specific clothing insulation values integrated into the virtual interactions to enhance the educational depth of the experience.

a. Video introduction of the VR platform

b. Introduction of the fundamental theory of the Fanger's thermal comfort model

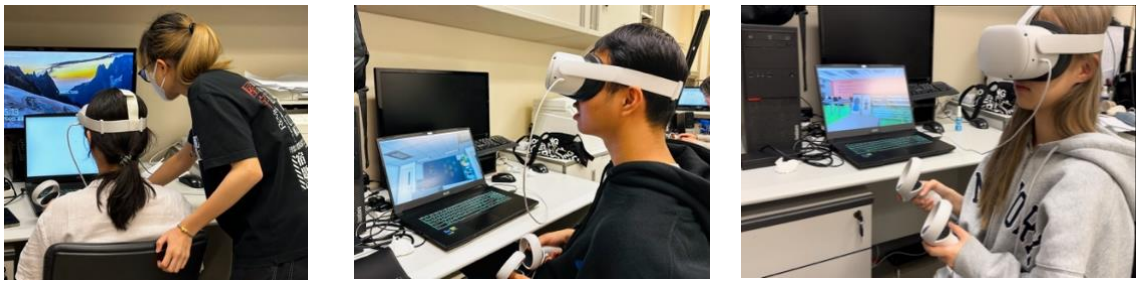
c. Interactive control and feedback mechanism on mathematic calculation

Figure 2: Three Layers of Interactive Mechanism in the VR Platform

Experiment Design and Implementation.

Based on the research objectives, the methodology is designed on a comparison conducted 1) between students' knowledge level of indoor thermal comfort (Fanger's model) before and after using the VR platform, and 2) between the engineering and non-engineering students who participated regarding their learning performance in an experiment of using the VR platform. Also, participants' experience and perception of using the VR platform, as well as their mood state after the learning activity were assessed through questionnaire survey.

Specifically, a total number of 66 undergraduate students, consisting 32 students majoring in building service engineering and 34 from other academic disciplines, from a university of Hong Kong were recruited to participate in the experiment. The experiment mainly includes three stages: pre-learning activities, learning using the VR platform, and post-learning activities. As the VR platform can only be used by single user, each participant experienced the learning activity on an individual basis. In the pre-learning phase, each student was required to complete a 6-question pre-test, in which he/she also indicated his/her gender and their academic major. After the pre-test, each student was guided to use the VR platform with the help of a research assistant (Figure 3). The learning activity last between 15-20 minutes. In the last stage, participants were required to complete a post-test, which is composed with 6 different questions with the difficulty level escalated above the pre-test. In addition, a survey was delivered to the participants to assess their evaluation of the VR platform and mood states.



a. Experiment supported by an assistant b. Experiment participant A c. Experiment participant B

Figure 3: Experiment Participants Using the VR Platform

Table 1: Profile of the Participants

Item	Sub-group	Number
Gender	Female	45
	Male	19
	Prefer not to say	2
Age	16-20	17
	20-25	33
	26-30	10
Academic background	Building service engineering student	32
	Non-engineering students	34

A number of 10 questions were designed to assess quality of the VR platform from three perspectives: content quality, sensational experience, integrative experience, engagement, and personalisation. Table 2 illustrates the 10 evaluation attributes of the VR platform, including adaptability, quality of visual images, multi-model presentation, visual experience,

aural experience, user experience, control mechanism, immersion and presence, engagement, and personalisation.

Table 2: Instruments for Evaluating Students' Perception of the VR Platform

Content quality	
Adaptability	The VR learning system is designed to be flexible, accommodating different ways students prefer to learn and study.
Quality of visual images	The VR learning system presents information, like graphs, 3D models, and colors, in a way that makes it easy for students to grasp the concepts.
Multi-model presentation	The VR system uses engaging visuals, sounds, and interactive features to create a rich learning experience that helps you understand and remember information better.
Sensational experience	
Visual experience	The graphics, animations, and visuals in the VR learning system are clear and well-made, making your learning experience enjoyable and effective.
Aural experience	The sound and audio effects in the VR system are high-quality, enhancing your learning with clear and immersive audio.
Interactive experience	
User interface	The VR learning system's menus, buttons, and controls are designed to be user-friendly, making it simple for you to find what you need and interact with the content effortlessly.
Control mechanism	The tools you use to interact with the VR system, like hand controllers or voice commands, work smoothly and precisely, making you feel in charge as you move objects and explore the virtual space.
Immersion and presence	The VR system makes you feel like you're really inside the virtual world, with objects and settings that behave like they would in real life and respond to your actions in a believable way.
Engagement	
Engagement	The VR learning system is packed with fun activities like simulations, group work, and virtual experiments that invite you to take part and learn by doing, making the learning process interactive and engaging
Personalisation	
Personalisation	You can tailor the VR experience to your liking, choosing between text or video explanations to fit your learning style. You have the freedom to tweak settings and controls to match your personal preferences and make the system work just right for you.

Results

Rating of the User Experience Aspects

The evaluation of the VR platform across ten different attributes provides a comprehensive view of its effectiveness from multiple perspectives. Figures 4 illustrates participant feedback on various aspects of the VR system. The ratings generally suggest a favorable user experience across most aspects, except for the "aural experience", which is significantly

lower than the other metrics. This implies that while the visual and interactive components are well-received, the audio aspect of the experience may need improvement.

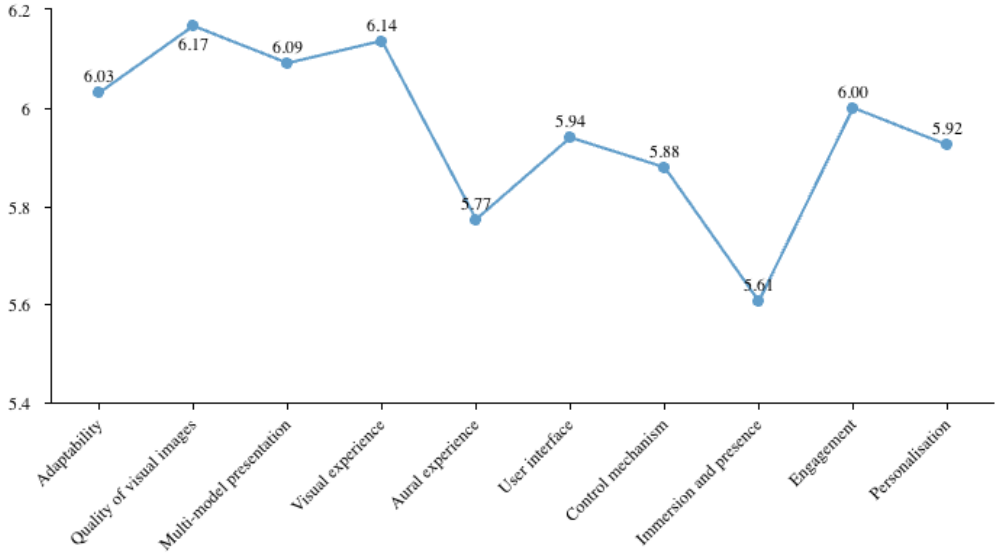


Figure 4: Mean Values of Each User Experience Aspect

Evaluation of the Effectiveness of the VR Platform in Increasing Learners' Knowledge.

Table 3: t-Test for the Pre-Test and Post-Test

Item	Sample size	Mean	S.D.	M.D.	t	p
Pre-test	66	2.68	1.14	-0.42	-2.697	0.009**
Post-test	66	3.11	0.96			

*p<0.05, **p<0.01

Table 3 presents the results of a paired t-test comparing pre-test and post-test scores for a sample of 66 participants. The mean score increased from 2.68 in the pre-test to 3.11 in the post-test, indicating an improvement. The standard deviation decreased from 1.14 in the pre-test to 0.96 in the post-test, suggesting less variability in scores at the post-test stage. The mean difference (M.D.) between the pre-test and post-test scores is -0.42, reflecting this improvement. The t-value for this test is -2.697, which is statistically significant with a p-value of 0.009, indicating that the difference in means is highly significant ($p < 0.01$). This suggests that the changes observed from pre-test to post-test are not likely due to chance, and there is a statistically significant improvement in the scores after the intervention or event being tested.

Table 4: Spearman Correlation Between Changes in Integrated Mood States, Gap Scores, and Quality of the VR Platform

		Gap score (Post-Pre)	Perceived quality of the VR platform
Integrated mood states	**Correlation coefficient**	0.104	0.296*
	p	0.405	0.016
	Sample size	66	66

*p<0.05, **p<0.01

Using correlation analysis to study the relationship between perception of quality and mood states, the Spearman correlation coefficient is used to represent the strength of the relationship. The analysis reveals that the correlation coefficient between Perception and mood state is 0.296, and it is significant at the 0.05 level, indicating a significant positive correlation between perception of quality of the VR platform and integrated mood states.

Table 5: Comparative Analysis of Pre-test, Post-test, and Quality of the VR Platform Between Control and Experimental Groups Using t-Tests

	Item	Sample size	Mean	S.D.	M.D.	CI (95%)	t	df	p
Pre-test	Control group	32	3.00	1.19	0.62	0.074 ~ 1.61	2.271	64.000	0.027*
	Experimental group	34	2.38	1.02					
	Total	66	2.68	1.14					
Post-test	Control group	32	3.19	1.06	0.16	-3.318 ~ 0.634	0.664	64.000	0.509
	Experimental group	34	3.03	0.87					
	Total	66	3.11	0.96					
Quality of the VR platform	Control group	32	5.94	0.87	-0.03	-0.433 ~ 0.367	-0.165	64.000	0.869
	Experimental group	34	5.97	0.76					
	Total	66	5.95	0.81					
Integrate mood state	Control group	32	2.04	1.87	-0.47	-1.227 ~ 0.282	-1.259	47.790	0.214
	Experimental group	34	2.52	1.04					
	Total	66	2.29	1.51					

*p<0.05, **p<0.01; Control group: Building service engineering student; Experimental group: Non-engineering students

Table 5 provides a detailed statistical analysis of the differences between control and experimental groups regarding their responses to pre-test, post-test, and assessments of VR platform quality. The control group, consisting of building service engineering students, initially scored higher on the pre-test with a mean of 3.00 compared to the experimental group of non-engineering students, who scored a mean of 2.38. This difference was statistically significant with a p-value of 0.027, indicating that the engineering students began with a higher baseline in terms of the tested variables. The standard deviations suggest variability within each group, with the control group displaying slightly more variance.

In the post-test scores, both groups showed improvements, with the control group reaching a mean score of 3.19 and the experimental group scoring 3.03, both having tighter standard deviations than in the pre-test. However, the minor mean difference in the post-test scores was not statistically significant (p = 0.509), suggesting that while both groups improved, the degree of improvement was not markedly different between them. Regarding the quality of the VR platform, both groups rated it similarly high with means of 5.94 and 5.97 respectively, and no significant difference in their perceptions (p = 0.869). The mood states

also showed changes, but the mean difference was not significant enough to suggest a strong divergence in mood responses between the groups post-intervention, as indicated by the p-value of 0.214. This analysis helps in understanding how different student groups perceive and are affected by VR technology, underlining the uniformity in quality perception despite varying academic backgrounds.

Discussion

Students' Perceptions of the VR Learning Platform

Based on the analysis of user experience aspects (Figure 4) and the ratings given for the quality of the VR platform (Table 5), students generally perceived the VR learning platform positively. Most aspects, such as adaptability, quality of visual images, and multi-modal presentation, received high ratings, suggesting that the platform was effective in delivering a visually and interactively engaging experience. However, the aural experience was rated significantly lower, indicating a potential area for improvement. Despite this, the overall favorable ratings suggest that students found the platform to be a valuable tool for learning, highlighting its potential to enhance educational experiences through immersive technologies.

Impact of the VR platform on Knowledge Enhancement

The results from Table 3, which presents a paired t-test between pre-test and post-test scores, show a statistically significant increase in knowledge after using the VR platform. The mean score improved from 2.68 to 3.11, and the decrease in standard deviation from 1.14 to 0.96 suggests that students' responses became more consistent after using the VR platform. This improvement is statistically significant ($p = 0.009$), indicating that the VR platform effectively enhanced students' understanding of Fanger's model. This result supports the potential of VR as an effective educational tool, particularly in complex subjects where visual and interactive learning can enhance comprehension.

Influence of Academic Background on VR Learning Effectiveness

Table 5 provides insights into how different academic backgrounds affect students' learning outcomes and perceptions when using the VR platform. Initially, engineering students (control group) scored higher on the pre-test compared to non-engineering students (experimental group), suggesting a possible advantage in baseline knowledge relevant to the VR content. However, both groups showed similar improvements and perceptions of the VR platform's quality in the post-test, with no significant differences in their overall ratings. This suggests that the VR platform is equally effective across different academic backgrounds in enhancing learning outcomes and providing a high-quality user experience. The similar perceptions also imply that the VR platform successfully bridges the gap between different academic disciplines, providing a universally engaging and beneficial educational experience.

Conclusion

The investigation into the use of a VR learning platform across different student demographics has yielded insightful results. The VR platform was found to be well-received among students, as evidenced by their positive perceptions especially in terms of adaptability and visual quality. This suggests that immersive technologies like VR can significantly

enhance the educational experience by making learning more engaging and interactive. Furthermore, the data demonstrates a clear benefit of the VR platform in improving students' understanding of complex theoretical concepts, specifically Fanger's model. The significant increase in post-test scores confirms that VR can be a powerful tool in educational settings, facilitating a deeper understanding of intricate material.

Additionally, the analysis regarding the influence of students' academic backgrounds -- engineering versus non-engineering -- indicates that the VR platform is versatile and effective across different disciplines. Both groups showed marked improvements in learning outcomes without significant differences in their perception of the platform's quality. This universality underscores the potential of VR as a transformative educational tool that can cater to diverse educational needs and backgrounds, thus democratizing access to high-quality educational technology. Overall, these findings advocate for the broader adoption of VR technologies in educational contexts to enhance learning outcomes and student engagement across various academic fields.

Acknowledgements

This study was supported by "Stage II of the Quality Incentive Scheme on Online Teaching – Departmental Fund" by the Hong Kong Polytechnic University.

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Contact email: cynthia.hou@polyu.edu.hk

Research and Development of the Virtual Academic Conference Room in the Metaverse for Promoting Digital Citizenship Under the Thailand Cyber University Initiative

Surapon Boonlue, King Mongkut's University of Technology Thonburi, Thailand
Anirut Satiman, Silpakorn University, Thailand
Jintawee Khlaisang, Chulalongkorn University, Thailand
Thapanee Thammetar, Silpakorn University, Thailand
Anuchai Theeraroungchaisri, Chulalongkorn University, Thailand

The Korean Conference on Education 2024
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Abstract
This research focuses on the design and development of the virtual academic conference room in the metaverse under the Thailand Cyber University Initiative, with the aim of promoting digital citizenship behaviors. The objectives of this study were: 1) to develop the virtual academic conference room in the metaverse for academic purposes, 2) to evaluate participants' digital skills and citizenship behaviors, and 3) to analyze the economic efficiency of the virtual conference room using a Social Return on Investment (SROI)method. The prototype integrates interactive and immersive features designed to foster digital citizenship through simulated environments and collaborative learning experiences. The study involved 360 participants engaged in both traditional and virtual academic conferences facilitated within the metaverse environment. Research tools included a digital citizenship assessment, the virtual academic conference room in the metaverse, participant evaluations of digital skills and citizenship behaviors, and an SROI analysis method. Key findings highlight that: 1) The virtual academic conference room in the metaverse effectively creates an interactive learning environment, enhancing engagement and fostering participants' ability to apply digital skills in real-world contexts. 2) Participants demonstrated significant improvements in their digital skills and behaviors, with the metaverse environment supporting the development of awareness and practical applications of digital citizenship. 3) The SROI analysis confirmed the cost-effectiveness of utilizing metaverse technology for educational purposes, demonstrating reduced expenses compared to traditional formats and increased productivity and learning outcomes. This research underscores the potential of metaverse technologies in advancing digital citizenship and education.

Keywords: Virtual Academic Conference Room, Metaverse, Digital Citizenship, Thailand Cyber University Initiative, Social Return on Investment (SROI)

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Introduction

The rapid advancement of digital technologies has profoundly transformed the educational landscape, introducing innovative approaches to teaching, learning, and academic collaboration. Among these, the metaverse—a shared virtual environment enabled by advanced technologies such as augmented reality (AR), virtual reality (VR), and blockchain—has emerged as a promising frontier for enhancing academic experiences (Nahi et al., 2023). Within this context, virtual academic conference rooms have gained prominence, offering immersive and interactive platforms for hosting academic discussions, knowledge exchange, and collaboration (Sá et al., 2019). These environments are particularly valuable in equipping participants with the digital skills and behaviors essential for navigating the complexities of the digital age (Jack & Glover, 2021).

Digital citizenship, which emphasizes the responsible and ethical use of digital technologies, has become a critical competency for learners and professionals (Frau-Meigs et al., 2017). As online platforms increasingly serve as hubs for education, communication, and collaboration, fostering digital citizenship behaviors has become a priority for educational institutions worldwide (Aithal & Maiya, 2023). In Thailand, the Thailand Cyber University (TCU) Initiative, established under the Ministry of Higher Education, Science, Research, and Innovation (MHESI), has long been a leader in promoting e-learning and digital education (Crocco & Pitiyanuwat, 2022). For over a decade, TCU has hosted the International e-Learning Conference as a key platform for academic exchange. Recently, TCU has envisioned transitioning this conference into the virtual metaverse format, leveraging cutting-edge technology to redefine the conference experience and expand its accessibility and impact.

This study explores the development of the virtual academic conference room within the metaverse as part of TCU's initiative to innovate its conference model. The primary aim is to provide an immersive platform that promotes digital citizenship by enabling participants to engage in interactive and collaborative learning experiences. By integrating advanced digital tools and simulated environments, the virtual conference room prototype seeks to create an inclusive and effective learning space where participants can apply and refine their digital skills in real-world scenarios. Additionally, the study evaluates the economic efficiency of this approach using a Social Return on Investment (SROI) method, offering practical insights into its sustainability and broader implications for the educational sector.

The findings contribute to the growing body of knowledge on the applications of metaverse technologies in education. By demonstrating the efficacy of the virtual academic conference room in fostering digital citizenship, this research provides actionable recommendations for integrating innovative technologies into educational frameworks. Furthermore, it underscores the strategic importance of transitioning traditional academic practices, such as conferences, into the metaverse, positioning Thailand Cyber University as a frontrunner in leveraging digital transformation to address the evolving challenges and opportunities of modern education.

Research Objectives

1. To develop the virtual academic conference room in the metaverse for academic purposes.
2. To evaluate participants' digital skills and citizenship behaviors.

3. To analyze the economic efficiency of the virtual conference room using a Social Return on Investment (SROI).

Methodology

This research employed a mixed-methods approach to design, develop, and evaluate the virtual academic conference room in the metaverse, aimed at promoting digital citizenship under the Thailand Cyber University (TCU) Initiative. The study followed the ADDIE instructional design framework, encompassing the phases of Analysis, Design, Development, Implementation, and Evaluation, ensuring a systematic and iterative process.

The study involved 360 participants, including educators and students from TCU's network, who engaged in both traditional and virtual conference formats. A metaverse-based prototype was developed, integrating VR and AR technologies to create an immersive and interactive environment. Features included virtual spaces for discussions, keynote sessions, and collaborative workshops, alongside gamified components to enhance engagement.

To measure outcomes, the research utilized a digital citizenship assessment, capturing key competencies such as ethical digital practices, collaboration, and security awareness. Participants completed pre-and post-tests to evaluate improvements in digital skills and behaviors. Qualitative feedback was gathered through evaluation forms, providing insights into user experiences and the platform's usability.

Economic efficiency was assessed using a Social Return on Investment (SROI) analysis, comparing costs and benefits of the virtual platform with traditional conference models. Statistical analysis, including paired t-tests, was conducted to determine the effectiveness of the platform, while qualitative feedback underwent thematic analysis to identify areas for refinement.

Results

1. Results of the Development of the Virtual Academic Conference Room in the Metaverse

The Virtual Academic Conference Room in the Metaverse for Promoting Digital Citizenship under the Thailand Cyber University Initiative integrates six interconnected components: Purpose, Planets, Platform, Participants, Paradigms, and Practices. These components, collectively known as the 6P framework, provide a structured foundation for designing and implementing the virtual environment that aligns with organizational strategies, promotes global engagement, and delivers measurable educational outcomes.

The first component, Purpose, serves as the cornerstone of the virtual conference. Clearly defined objectives provide a roadmap for the conference, ensuring that its scope, goals, and activities align with the overarching strategies of the organizing institution. For example, the thematic focus of a conference may address pressing global challenges, such as promoting sustainable development or fostering digital citizenship. By explicitly articulating these aims, organizers can create a cohesive and impactful experience for all stakeholders.

The second component, Planets, highlights the importance of aligning the conference with global priorities, particularly the 17 Sustainable Development Goals (SDGs) outlined by the

United Nations. These goals, encompassing dimensions such as social equity, economic prosperity, environmental sustainability, peace, and partnerships, provide a meaningful context for academic discussions. Virtual conferences designed with this component in mind transcend traditional academic boundaries, contributing to global efforts to address complex challenges.

The third component, Platform, represents the technological infrastructure necessary for a successful virtual conference. An effective platform must be scalable, secure, and customizable, accommodating diverse participants and ensuring seamless interactions. Key features include the ability to support large concurrent audiences, protect user data, and provide immersive elements such as virtual environments and realistic avatars. By leveraging these capabilities, the platform enhances the accessibility and interactivity of the conference, creating an engaging digital experience.

The fourth component, Participants, emphasizes the diverse roles and contributions of individuals involved in the conference. This includes keynote speakers, who offer expert insights; presenters, who share research findings; moderators, who facilitate discussions; attendees, who engage with the content; and sponsors, who provide financial and material support. By fostering collaboration and knowledge exchange among these groups, the conference becomes a dynamic ecosystem of ideas and innovation.

The fifth component, Paradigms, reflects the shared values, perspectives, and intellectual frameworks that guide the academic discourse within the virtual environment. By incorporating paradigms that align with the conference's goals, participants are inspired to challenge existing norms, explore new solutions, and advance knowledge in their respective fields. This component underscores the transformative potential of virtual academic conferences.

Finally, Practices focus on the real-world application of knowledge and insights gained during the conference. Whether through the adoption of new methodologies, the implementation of research findings, or the development of professional skills, this component ensures the long-term impact of the conference. By bridging the gap between theory and practice, participants can address real-world problems and contribute to societal progress.

To ensure the successful implementation of the virtual academic conference room, the development process was divided into three key phases: preparation phase, implementation phase, and evaluation phase, as illustrated in Figure 1.

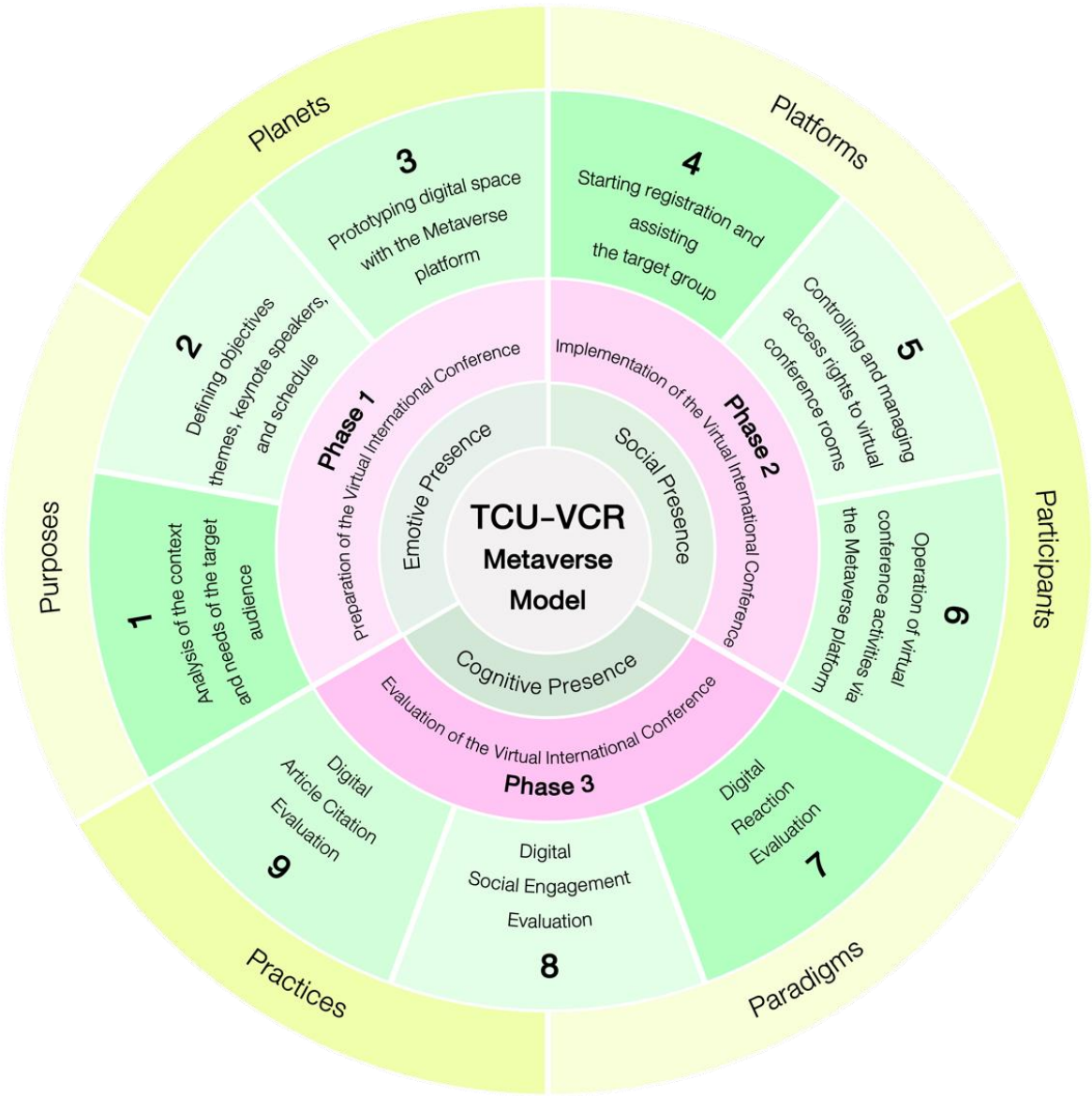

Figure 1: The Model of the Virtual Academic Conference Room in the Metaverse Under the Thailand Cyber University Initiative

As illustrated in Figure 1, the process consists of three key phases: 1) The preparation phase laid the foundation for the virtual conference by focusing on three critical steps. The first step involved a detailed context and needs analysis of the target audience to identify their expectations, technical readiness, and learning objectives. The second step was the setting of objectives, which included defining the conference's theme, selecting keynote speakers, and establishing a schedule tailored to the participants' needs and interests. Finally, the third step was the prototyping of the digital environment, where the metaverse platform was employed to create an interactive and visually engaging conference space. This included developing virtual rooms, customizable features, and interactive tools to support participant engagement; 2) The implementation phase translated the preparatory work into a fully functional virtual conference. It began with the opening of registration and the provision of technical and informational support to participants, ensuring seamless onboarding to the platform. The second step focused on managing and controlling access rights to the virtual conference rooms, ensuring secure and organized participation. The final step was the execution of virtual conference activities, where keynote sessions, workshops, and discussions were

conducted through the metaverse platform. This phase highlighted the use of interactive tools and immersive technologies to foster a collaborative and engaging environment; 3)The final phase focused on assessing the outcomes and effectiveness of the virtual conference. The first step involved evaluating participants' digital reactions, such as their engagement with the platform and responsiveness to various activities. The second step assessed digital social engagement, measuring the level of collaboration, interaction, and community building among participants. The last step focused on analyzing the citations of digital academic outputs generated during the conference, providing insights into the intellectual and practical impacts of the event.

2. Results of the Design and Development of the Prototype

The prototype for the virtual academic conference room included three main areas: 1) Digital Citizenship Exhibition: Designed to encourage participants to learn and practice digital citizenship behaviors, including respectful communication, appropriate technology use, responsible data sharing, ethical behavior, active engagement, digital safety, and privacy respect; 2) Pavilion Hall: Focused on fostering interaction with media, experts, and other participants, promoting meaningful engagement; 3) Conference Rooms: Aimed at facilitating deep learning and critical thinking among participants on topics of academic interest through discussions and workshops.

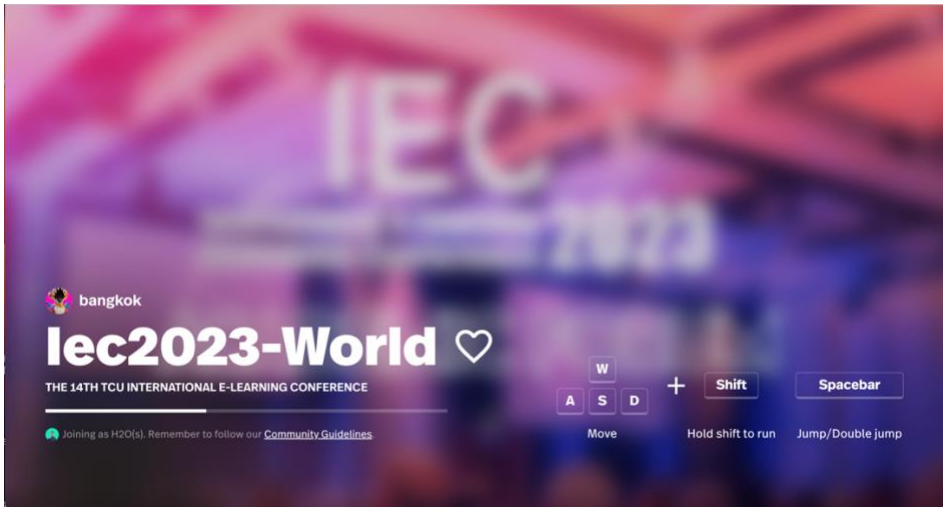

Figure 2: Home Page Spatial IEC2023-World

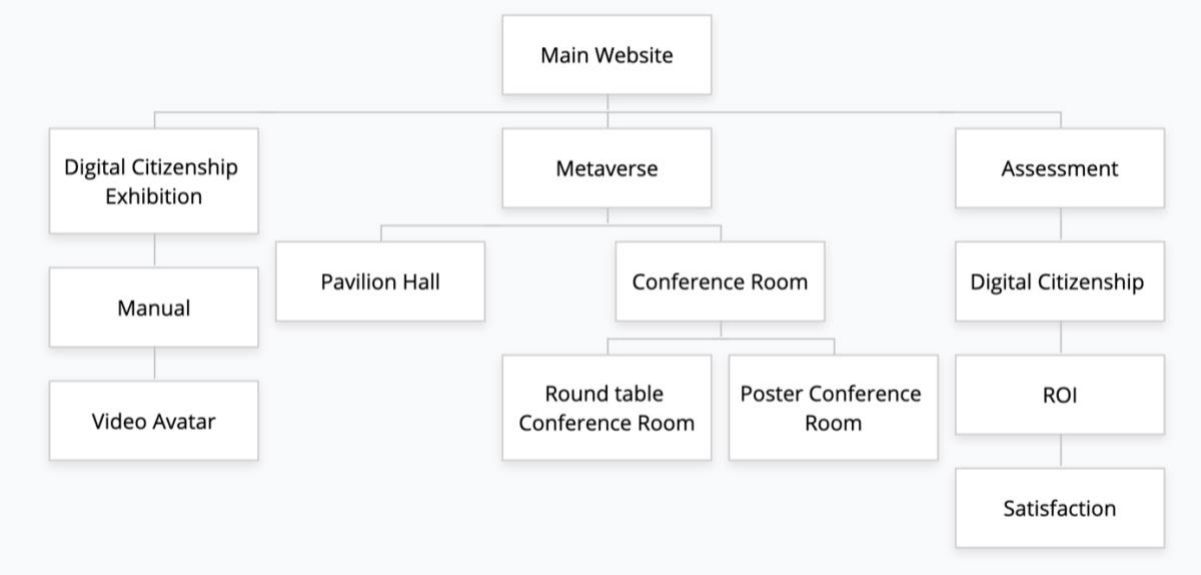

Figure 3: Site Map of the Virtual Academic Conference Room in the Metaverse

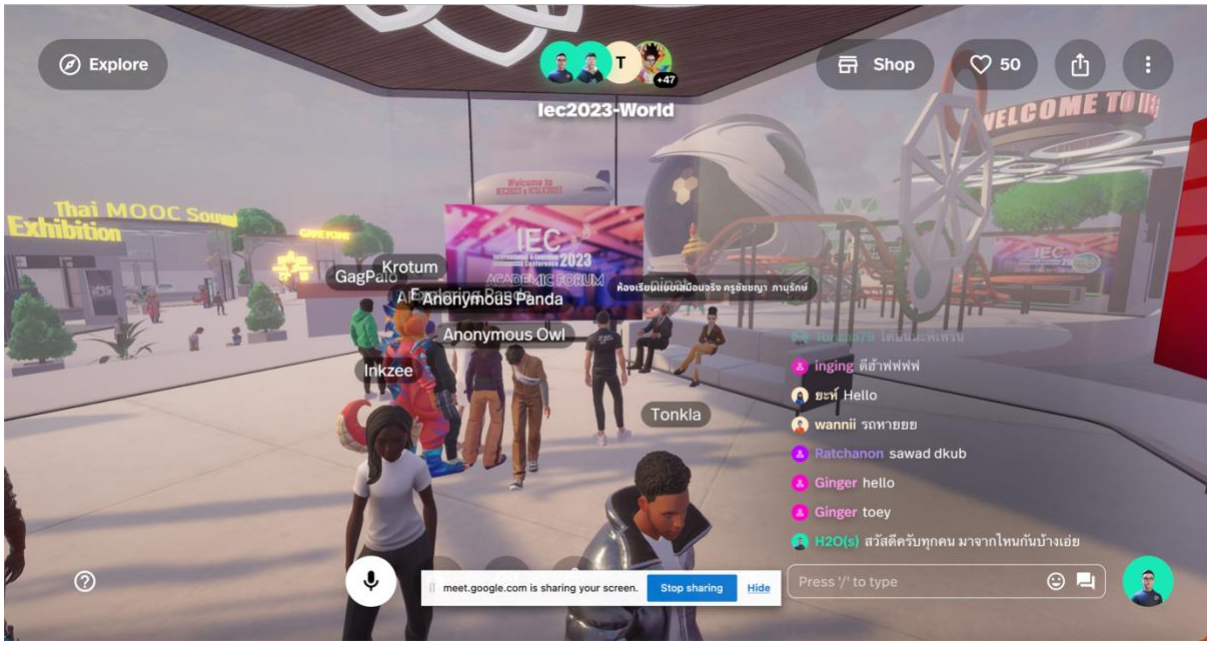

Figure 4: Entry Point to the Virtual Academic Conference Room in the Metaverse

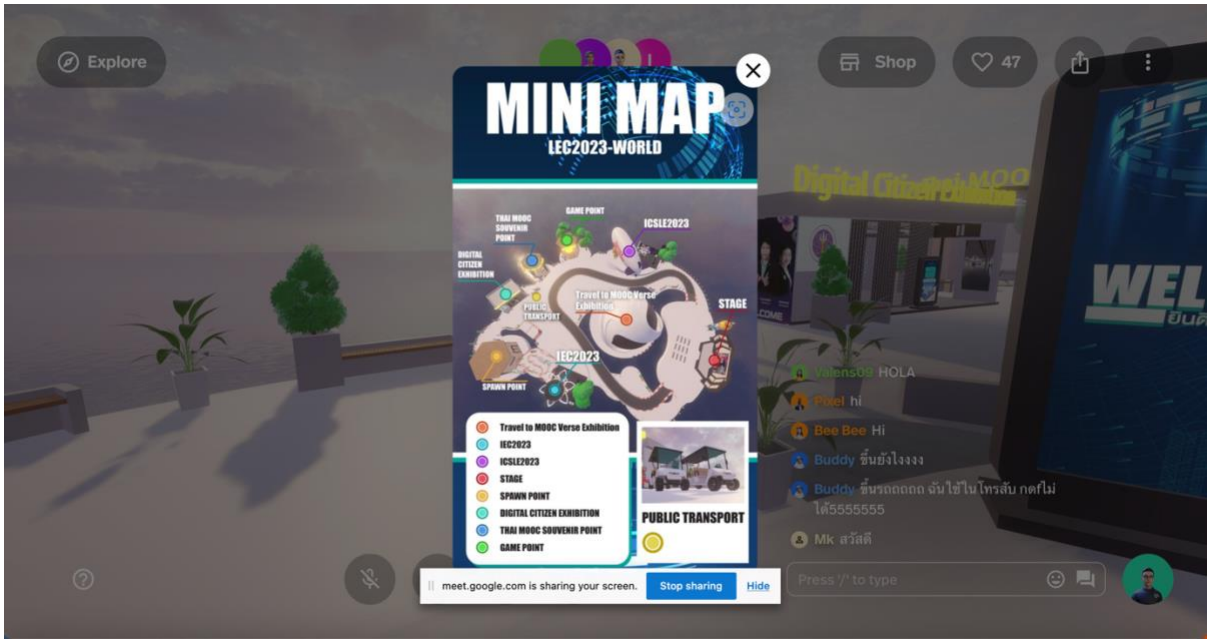

Figure 5: The Map of the Virtual Academic Conference Room in the Metaverse

Figure 6: Digital Citizenship Exhibition Room

Figure 7: Pavilion Hall

Figure 8: Conference Rooms

3. Results of the Evaluation of Participants' Digital Skills and Citizenship Behaviors

The results indicated significant improvements in participants' digital citizenship behaviors and skills after engaging with the virtual academic conference room. Post-test scores were statistically higher than pre-test scores at a significance level of 0.05, confirming the effectiveness of the metaverse environment in fostering these competencies.

4. Social Return on Investment (SROI) Analysis

The study assessed the cost-effectiveness of the Virtual Academic Conference Room in the Metaverse for Promoting Digital Citizenship under the Thailand Cyber University Initiative using a Social Return on Investment (SROI) method. The analysis considered social returns

derived from knowledge acquired (K), knowledge dissemination (P), and knowledge application (A), totaling 152,127.50 THB. With an investment cost of 105,000 THB, the SROI calculation revealed that every 1 THB invested yielded a return of 1.448 THB.

Participants accessed the virtual conference through multiple communication channels compatible with five categories of devices: desktop computers, laptops, smartphones, big screens, and wearable devices such as VR headsets and body sensors. Usability testing of the virtual conference room showed an overall rating of good (Mean = 4.18, S.D. = 0.74). However, future iterations should focus on enhancements to achieve an overall rating of very good and further improve the platform's efficiency and usability.

Conclusion

This study successfully developed and evaluated the Virtual Academic Conference Room in the Metaverse under the Thailand Cyber University Initiative, achieving all research objectives. The platform demonstrated its ability to transform traditional academic conferences into accessible and interactive virtual environments. By fostering ethical technology use, responsible data sharing, and collaborative competencies, participants showed significant improvements in digital citizenship behaviors, as evidenced by statistically higher post-test scores. The economic analysis confirmed the cost-effectiveness of the platform, with a Social Return on Investment (SROI) of 1.448 THB for every 1 THB invested. This result underscores its financial sustainability and potential to reduce logistical challenges while expanding participation. The usability testing results, rated at a good level (Mean = 4.18, S.D. = 0.74), indicate a strong foundation for future development. Further refinements are recommended to optimize usability and adaptability for diverse educational and professional applications.

In conclusion, this study contributes to the growing body of knowledge on integrating metaverse technologies into education, providing a practical and scalable model for fostering digital citizenship and advancing academic collaboration. These findings offer actionable insights for institutions seeking to innovate academic practices and bridge gaps in accessibility, affordability, and digital competency development. Future research should focus on scaling and adapting this model across various disciplines and global contexts to maximize its impact on education and collaboration.

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Contact email: surapon.boo@kmutt.ac.th

Development of Preferred Methods of Teaching Online English Questionnaire

Jeremy Reyes, Trinity University of Asia, Philippines
Karmela Castroverde, Trinity University of Asia, Philippines
Ferdinand Panuelos, Trinity University of Asia, Philippines
Serena Gomez, Trinity University of Asia, Philippines

The Korean Conference on Education 2024
Official Conference Proceedings

Abstract
COVID-19 opened new doors for educational institutions to adopt a hybrid system, combining face-to-face and online teaching. While strategies for face-to-face instruction have evolved, researchers are now focusing on developing online teaching methods. This research aimed to create an instrument to identify students' preferred methods for learning English online and to determine the factors influencing online English instruction. Using an Exploratory Sequential Mixed Method design, the study combined focus group discussions (FGD) and a survey. The FGD involved 12 tertiary students who took English online. Their responses revealed key factors influencing online English teaching: interactive activities, varied learning styles, flexible scheduling, modular course content, diverse technology, and effective feedback and assessment. These insights guided the development of an 18-item questionnaire to measure students' preferred online English teaching methods. The questionnaire was pilot tested on 140 tertiary students. Exploratory Factor Analysis showed 89.9% adequacy and a reliability score of 0.8 using Cronbach's alpha. The survey results supported the FGD findings, emphasizing students' preference for interactive activities and the need for teachers to accommodate diverse learning styles. The researchers recommend further validation of the instrument and exploring its applicability to other disciplines.

Keywords: Preferred Methods of Teaching, Instrument Development, Reliability, Validity, Factor Analysis, Online English

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Introduction

This research addresses the significant impact of the COVID-19 pandemic on global education, with a particular focus on the Philippines. The pandemic forced a swift transition to online learning, revealing various challenges and inequities in the education system. As highlighted by Lee (2021) and Santoveña-Casal and Bernal-Bravo (2019), this crisis emphasized the need for innovative educational approaches, especially in the context of the modern digital society.

Online learning, defined as the use of Information and Communication Technologies (ICTs), witnessed substantial growth, particularly in higher education. With the Philippines being one of the largest English-speaking countries globally (Turmudi, 2020), the impact on English education is particularly noteworthy. The sudden shift to online learning prompted adjustments in the structure of English programs, making them more flexible and accessible, as noted by Toquero (2020). Teachers were required to undergo training in online education to adapt to the new learning environment.

Research indicates a clear correlation between language learning strategies and various variables, such as motivation, attitude, and language proficiency (Habók & Magyar, 2018; Taheri et al., 2020). The study also delves into the strategies employed by university students, emphasizing the importance of metacognitive skills and cognitive strategies (Alhaysony, 2017; Rongdara et al., 2019).

As the transition to online teaching remains an ongoing process, this study aims to evaluate the experiences of faculty, students, and administrators to identify challenges and effective strategies. While some studies have explored educators' opinions and students' perceptions of online teaching during the COVID-19 lockdown, there is a notable gap in examining the preferences within the English Department.

The research objectives are outlined, focusing on the identification and development of an English online teaching preference questionnaire, as well as assessing its reliability and construct validity. The statement of the problem emphasizes the need for a validated questionnaire to understand the English online teaching preferences of tertiary students, specifically in General Education English subjects.

The significance of the study is underscored, addressing the potential impact on students, teachers, administrators, parents, future researchers, and other educational institutions. The scope and limitations are also defined, providing clarity on the target audience and the extent of the study's applicability.

The research objective aims to contribute valuable insights into the development of effective online teaching strategies in English education.

Phase 1: Item Generation

In the initial phase of the research methodology, a Focus Group Discussion (FGD) was conducted involving two groups, each comprising seven selected students, resulting in the participation of a total of fourteen students. The FGD served as a platform to delve into the perspectives and experiences of students regarding online English teaching. Through this qualitative method, nine key themes emerged from the discussions, namely Interactive,

Learning Styles, Flexibility in terms of Schedule, Pacing, Course Content, Use of Technology, Feedback and Assessment, Traditional Teaching, and Interactive Teaching. These themes provided a foundational understanding of the factors influencing students' preferences in the realm of online English instruction. Subsequently, the identified themes became the basis for the development of the research instrument. Using the transcribed recordings of the Focus Group Discussion, the researchers crafted a comprehensive set of fifty-two items. These items were designed to encapsulate the nuanced insights and preferences expressed by the participants during the FGD. The meticulous item generation process ensured that the questionnaire comprehensively covered the diverse aspects of online English teaching, as revealed by the students in the qualitative discussions.

Phase 2: Item Refinement and Selection

Content and Face Validity were utilized by the researchers on the Item Refinement and Selection phase.

Face Validation

The draft questionnaire underwent a crucial face validation process involving two groups, each comprising seven students selected based on specific inclusion criteria. These criteria included enrollment in the university during the current academic year, completion of basic English courses within the two semesters of online teaching modality, articulateness, and willingness to participate. The face validation was executed through a focused and structured approach, utilizing a framework adapted from Wong and colleagues (2014).

During the face validation, participants engaged in a structured interview framework designed to elicit their thoughts and perceptions about the items in the draft questionnaire. The interview questions were meticulously crafted to address individual items, focusing on aspects such as the wording of the questions, the perceived purpose of each question, the correlation between questions and listed options, and the identification of any missing response options. Additionally, participants provided general feedback on the questionnaire, highlighting its strengths and weaknesses, assessing the logical presentation of the survey, and identifying any potential barriers to completing the questionnaire. This face validation process was instrumental in ensuring the questionnaire's clarity, relevance, and appropriateness from the perspective of the target respondents. The structured interview framework provided a systematic approach to gather valuable insights from participants, contributing to the refinement and enhancement of the research instrument in preparation for subsequent phases of the study.

Content Validation

The draft questionnaire underwent the content validation process involving four experts with expertise in test and measurements, as well as teacher education. The primary objective of this phase was to ascertain the alignment of the questionnaire items with the intended constructs, ensuring that they accurately measured the desired aspects of online English teaching preferences. The experts were specifically instructed to evaluate various dimensions of the questionnaire, including its instructions, demographic information, clarity of each item, applicability, and overall readability.

In addition to the qualitative evaluation, the experts were tasked with providing a numerical rating for each item in the questionnaire, designating them as either relevant (rated 1) or not relevant (rated 2). This systematic approach allowed the researchers to quantify the experts' judgments and calculate the Content Validity Index (CVI) for each item. Following the guidelines established by Polit and Beck (2006), an accepted level of CVI ranging from 0.6 to 1.00 for four raters was considered indicative of satisfactory content validity.

The insights garnered from both the qualitative feedback and quantitative ratings were pivotal in refining the draft questionnaire. The collation of feedback from both experts and students facilitated a comprehensive revision process, addressing concerns related to clarity, relevance, and overall quality. This iterative refinement ensured that the final questionnaire was methodologically sound and effectively captured the nuances of preferred methods of teaching online English, laying the foundation for subsequent phases of the research (Polit & Beck, 2006).

Phase 3: Pilot Testing

A run test was conducted to assess the Preferred Methods of Teaching in Online English Questionnaire. A total of 140 students participated in this test during the Second Semester of the academic year 2022–2023, spanning the dates May 25–26, 2023. When the test run was completed, data was encoded, and all analyses were conducted using JAMOVI Version 2.3.26 software (2022).

Construct Validity – Factor Analysis

To test whether the items included in the questionnaire are suitable for a specific factor preference to Online English teaching, Exploratory Factor Analysis (EFA) was utilized. According to Hair and colleagues (2019) and Tabachnick and fellows (2019), “EFA helps identify the underlying factors or dimensions that explain the correlations among items.” It helps determine whether the items in the questionnaire are measuring the intended construct or factor.

The process of conducting an EFA involves three stages namely (1) factor loadings (2) communalities and (3) factor structure and interpretation. Factor loadings indicate the strength and direction of the relationship between each item and the underlying factors. Items with strong and significant factor loadings (e.g. above 0.5) are considered good indicators of the underlying factor and are retained. However, items with low or non-significant factor loadings (e.g., below 0.3) indicate poor measurement and are considered for removal or further revision.

Phase 4: Test of Reliability

Internal consistency was determined with Cronbach’s alpha for each of the factors identified in the factor analysis.

Conclusion

The Focus Group Discussion was able to bring up different themes that affects the preferences of students when it comes to online English teaching. The following are the variables that was able to extract by the researchers: interactivity, learning styles like visual,

auditory, reading and writing, and collaboration, flexibility in terms of schedule, pacing, course content, and use of technology, feedback, and assessment, and being traditional and interactive teachers.

Interactive

The findings revealed that most of the respondents prefer online teaching English to be interactive. This is in conformity with the narratives of participants in the focus group discussion indicating that the "professors make the lesson more interactive such using other applications to make the lesson more interesting." Which Participant B from Batch 1 also supported that "my professor also used again different modalities to make it interactive using different platforms such as Google Meet and Class In." Participant 2 from Group 2 as opposed to the positive sides of online learning, based on the participant's experience that "it also has negative sides to consider which are like the limited interaction." Through this, in order to make online learning work, it must be interactive.

According to Wart (2020), if teachers are able to introduce high quality interactive teaching, nearly the entire student population will be interested in more online classes. It's also important for teachers and institutions to put in the effort to adjust to the temporary online modality. This can include providing effective and engaging online lesson plans and incorporating interactive activities that promote student engagement and collaboration.

Learning Style

Another finding is based on the Learning Styles like the use of visual, auditory, reading and writing and collaborative learning.

According to our analysis of FGD, *visual learners* prefer to learn through the use of images, diagrams, and videos. This learning style can be particularly effective in the online modality, as teachers can use a variety of multimedia tools to help illustrate key concepts and ideas.

On the other hand, there are students who answered that they are Auditory learners. In the online modality, teachers can incorporate audio recordings, podcasts, and live discussions to help engage and support auditory learners.

Some of the researchers' participants are *reading and writing learners* that prefer to learn through reading and writing activities, such as note-taking, summarizing, and writing essays. In the online modality, teachers can provide students with reading materials, writing assignments, and online discussion forums to help support this learning style.

Finally, according to the results of the FGD, some of the participants are *collaborative learners* who prefer to learn through group work and discussions. In the online modality, teachers can use virtual breakout rooms and collaborative platforms to facilitate group work and peer-to-peer learning.

By considering these different learning styles and incorporating a variety of teaching methods and tools, the researchers believed that teachers could help ensure that all students have the opportunity to learn and succeed in the online modality.

As stated by Participant C from Group 1, "one of the things that I like in an online set up, is that is more of the visuals, that's why I do appreciate the PowerPoint presentation which have something colorful, something that's moving and wherein at the same time the teacher really explains how learning can be done with those." Participant 3 from Group 2 supported the use videos as the participant stated that, "usually professors used YouTube since there's a lot of free videos that could enhance your English skills it has a lot of free videos." And lastly, Participant 4 from Group 2 stated that "some helpful, appropriate, and relevant aspects of learning English in an online platform includes variety of multimedia resources like video recording, audio recording, and it also has online exercises that allows us to somehow engage in different manner and this makes the learning more enjoyable."

To support this, El-Sabagh (2021) stated that, in light of learning style, it represents an important issue in learning in the twenty-first century, with students expected to participate actively in developing self-understanding as well as their environment engagement. Students with their preferred learning styles are more likely to enjoy learning if they are provided with a variety of instructional materials such as references, interactive media, videos, podcasts, storytelling, simulation, animation, problem-solving, and games.

Flexibility in Terms of Schedule

Another finding revealed that most of the respondents prefer Flexibility in terms of Schedule. This is likely because online learning provides students with more flexibility in terms of when and where they can attend class. As a result, students may have other commitments, such as work or family responsibilities, that may require them to adjust their schedules. Being flexible in terms of scheduling can help teachers better meet the needs of their students in the online modality and create a more effective and engaging learning experience.

Participant F from Group 1 strongly stated that she preferred online classes as she stated that "learning basic English in an online setting is that it was a very convenient, accessible, and flexible option for a face-to-face learning." Participant 2 from Group 2 also gave his reason on why she prefers online learning in terms of flexibility in pacing rather than in normal setting. Participant 2 stated that "the online setting kind of provided a more flexible schedule I had an easier time practicing and enhancing my skills in English language."

To support this statement, Kokoç (2019) stated from his study that Online learning has emerged as a significant mode of education delivery, offering students the flexibility to learn at their own schedule. With the advent of online learning platforms, students no longer need to be physically present in a classroom to participate in learning activities. Instead, they can access course materials, lectures, and assignments at any time and from any location with an internet connection.

The flexibility in scheduling is particularly beneficial for students who have other responsibilities such as work or family commitments that may prevent them from attending traditional in-person classes (Ammenwerth et al., 2019). Online learning enables these students to balance their academic pursuits with their other obligations, thereby enhancing their opportunities for professional and personal growth.

Based on these researches, it has consistently shown that online learning can be just as effective as traditional classroom instruction, and in some cases, even more effective. This is likely due, in part, to the flexibility that e-learning provides, allowing students to tailor their

learning experience to their individual needs and preferences. As such, e-learning is becoming an increasingly popular option for students of all ages and backgrounds.

Flexibility in Terms of Pacing

According to the results of the FGD, flexibility in terms of pacing also adds to their preferences in online English teaching. Based on the interview, online learning allows them to progress through course material at their own pace and in their own way which leads to improved learning outcomes and a more positive educational experience.

Participant C from Group 1 mentioned that online learning became a positive experience since she stated that "the positive experiences that I had in learning English, basic English was it was in my own time and at the same time, it's in my own comfort zone wherein I do not have to travel far just to attend my classes." Participant B from Group 1 also stated that "mixed modalities is also effective for me because I think it's, like in relation to the question earlier in terms of having our own time, having mixed modality is somehow encourages students to think for themselves and act on their own will as well."

In addition to this, Kokoc (2019)'s study also highlights that the flexibility that online learning can provide students with the opportunity to pace their learning according to their individual needs. This means that by allowing students to review material at their own pace, online learning can help ensure that all students have the opportunity to fully understand course content before moving on to more challenging material.

Overall, Kokoc (2019) suggests that online learning can provide a more personalized and flexible approach to learning, which can support student success and improve learning outcomes. However, it is important to note that online learning is not a one-size-fits-all solution, and some students may still benefit more from traditional classroom-based instruction.

Flexibility in Terms of Course Content

Another theme that the researchers found in the Focus Group Discussion is that online learning can provide significant flexibility in terms of course content, which can be a major advantage for both students and instructors. According to the participants, one of the key benefits of online courses is that they can be designed to be highly modular, allowing students to complete individual units or modules in any order they choose. This can be particularly beneficial for students who may need to balance their coursework with other responsibilities, such as work or family commitments.

To support these statements, Participant G from Group 1 stated that "Also I remember one time, our teacher gave us an opportunity to decide which are topics that we think is most essential in the curriculum and if we would like to add something that we think is important in the curriculum."

In the findings of the study of Turan (2022), The study found that the students' flexibility of time management and flexibility of content levels were quite high. The students could structure their learning processes whenever, wherever, and for as long as they wanted in the online learning process. The students' participation in the learning process through the expression of their opinions, the ability to order the topics in terms of the significance they

hold for them, the freedom to decide where they will study, and the opportunity to study topics that pique their interest were all benefits of this factor.

Flexibility in the Use of Technology

The FGD also highlights the teacher's Flexibility in the use of Technology on being a key factor in online learning. According to the participants who experience online learning in basic English, teachers play a vital role in designing and delivering online courses that meet the needs and preferences of their students. The use of technology in online learning allows teachers to create a more dynamic and engaging learning experience, but it also requires them to be flexible in their approach to teaching. One participant from Group 1 stated that they prefer if teachers have the ability to accommodate students with different learning styles and preferences. Participant B from Group 1 stated that "my professor also used again different modalities to make it interactive using different platforms such as Google Meet and Class In. As well as, we also had a textbook that was online." Participant C from Group 1 also stated that "what I like best was there was this time wherein we had to use Class in as our way of having our online classes. So, in Class IN it was easy to give positive feedback to students, especially when there are rewards being shown on screen such as the trophies and everything else." According to the participants, teachers need to be able to adjust their teaching style and content to cater to the diverse needs of their students. This may involve using a range of technology tools and resources, such as videos, interactive simulations, or discussion forums, to provide students with the most effective learning experience possible.

In addition, it should be noted that whereas technology is one of the vital elements for flexible learning, flexible learning refers to more than the use of technologies to minimize constraints in learning environment (Li & Wong, 2018). Overall, teacher flexibility in using technology is also a key preference in the success of online learning. By being adaptable and responsive to the needs and preferences of their students, teachers can create a more engaging and effective learning experience that can improve student outcomes and satisfaction.

Feedback and Assessment

Another theme that is found is the clarity of feedback and assessment by the teachers in an English online learning. It suggests that students value timely and specific feedback on their work, which can help them identify areas of strength and weakness and guide their learning progress.

Participant G from Group 1 stated that "I think it is really helpful in the learning process if every time professors would give out activities, they would give students clear rubrics for review especially since it is hard to ensure communication between the professor and students especially on asynchronous setting." Participant C from Group 1 also commented that, "Maybe what I like best was there this time wherein we had to use Class In as our way of having our online classes. So, in Class IN it was easy to give positive feedback to students, especially when there are rewards being shown on screen such as the trophies and everything else."

Given these findings, it is important for teachers to prioritize the provision of timely and specific feedback to their students. This can be achieved through a variety of methods, such as providing written comments, engaging in one-on-one discussions, or using peer feedback strategies. The preference for immediate and clear feedback and assessment highlights the

importance of feedback in the learning process and emphasizes the need for teachers to prioritize this aspect of their teaching practice.

Teacher Characteristics

Traditional Teacher

Traditional Teacher was also one of the themes identified in the FGD. From the discussions, it appears that the participants also have an attachment to traditional teaching methods and are hesitant to embrace modern technology-based approaches, like online learning. This attachment to traditional teaching methods may be attributed to several factors, such as lack of exposure to modern technology, and a preference for familiar teaching methods, which is the face-to-face set-up. However, it is important to note that the world is rapidly advancing, and the education sector must keep up with these changes to ensure that students are equipped.

Moreover, according to Wang (2022), a student who prefers traditional teaching methods tends to value structure and routine in their learning experience. They may be more comfortable with a teacher-centered approach in which the teacher lectures and provides clear direction for the students. These students may appreciate clear guidelines, assignments, and assessments that are well-defined and consistent. In a traditional classroom, students who prefer this style of teaching may feel more engaged when they are able to take notes, listen to lectures, and participate in class discussions. They may also prefer textbooks and other printed materials as opposed to digital resources. These students may find online learning or other non-traditional methods of instruction to be challenging, as they may miss the social interaction and structure that comes with a traditional classroom setting. They may also struggle with self-directed learning and may require more guidance and support from their teachers.

Interactive Teacher

Another theme identified in the Focus Group Discussion was the Interactive style of Teaching. The participants who prefer interactive teaching methods tend to value active engagement and participation in their learning experience. These students tend to learn best when they are able to explore and discover new information on their own, with the guidance of their teacher, acting as a facilitator.

Interactive teaching methods have been shown to be effective in promoting student engagement, motivation, and academic achievement. According to a meta-analysis of studies on interactive teaching methods by Freeman and colleagues (2014), interactive teaching methods such as group work, peer instruction, and hands-on activities resulted in significantly higher exam scores and lower failure rates compared to traditional lecture-based teaching methods.

Furthermore, interactive teaching methods have been found to promote critical thinking skills and deeper understanding of subject matter. Freeman and colleagues (2011) found that students who participated in interactive teaching methods had greater gains in higher-order thinking skills compared to those who received traditional lecture-based instruction. Students who prefer interactive teaching methods tend to enjoy the opportunity to collaborate with

their peers, to share their opinions and ideas, and to learn from one another. This can lead to increased motivation and engagement in the learning process.

The result of the FGD, the researchers was able to generate 52-items which were later reduced to 22-items. The 30-items that were discarded were rated with very low relevance, clarity, and applicability.

Establishing the Validity and Reliability of the Instrument

Table 1: Factor Loadings on Online Teaching Preference in Terms of Teacher Characteristics

Item#	Statements I prefer my online English teachers to…	Factor
1	use simple language and break down complex concepts into smaller, more manageable parts to help students understand	0.846
2	be comfortable in using different communication tools and techniques, such as video conferencing, email, and instant messaging, to communicate with their students	0.845
3	use gestures, facial expressions, and tone of voice to convey meaning and engage their students	0.843
4	be sensitive to cultural differences and avoid language and behavior that may be offensive or insensitive to their students.	0.827
5	respond promptly to student questions and comments and provide feedback on student work in a timely manner	0.822
6	actively listen to their students and show an interest in what they have to say	0.783
7	use clear and concise language to communicate with their students	0.776
8	Be where the student is at the center of the learning process, with the teacher acting as a guide and facilitator	0.756
9	makes use of technology, such as multimedia presentations and interactive whiteboards, to enhance the learning experience	0.747
10	emphasizes students working together to solve problems and complete tasks	0.739
11	who emphasizes hands-on activities that engage the student in the learning process	0.684
12	works with students individually to identify their strengths and weaknesses, tailoring the teaching approach to meet the needs of each student	0.673
13	focuses on the student, with the teacher acting as a facilitator rather than an authority figure.	0.692
14	contributes to the conversation (two-way communication)	0.665
15	gives emphasis on discussion between the teacher and the students	0.614

Based on the results, out of the 22 items corresponding to the preference to online English teaching in terms of teacher characteristics 4 items were removed due to low factor loadings and communalities value (i.e. below 0.6). This is about 18.18% of the total items, which leaves to 18 items as shown in Table 1.

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.899
Bartlett's Test of Sphericity	Approx. Chi-Square	2357
	df	231
	Sig.	0.000

Table 2 shows the Kaiser-Meyer Olkin (KMO) and Bartlett's Test that measure of sampling adequacy used to examine the appropriateness of Factor Analysis. It also revealed that the data was adequate by 89.9% and was tested significantly. When the test run was completed, data was encoded, and all analyzed. The approximate of Chi-square is 2357 with 231 degrees of freedom, which is significant at 0.05 Level of significance. The KMO statistic of 0.899 is also large (greater than 0.50). Therefore, Factor Analysis is considered as an appropriate technique for further analysis of the data.

Reliability Analysis

Table 3: Cronbach Alpha of the Developed Student's Preference on Online English Teaching

I prefer my online English teachers to…	Cronbach's α
1. use simple language and break down complex concepts into smaller, more manageable parts to help students understand	0.898
2. be comfortable in using different communication tools and techniques, such as video conferencing, email, and instant messaging, to communicate with their students	0.897
3. use gestures, facial expressions, and tone of voice to convey meaning and engage their students	0.896
4. be sensitive to cultural differences and avoid language and behavior that may be offensive or insensitive to their students.	0.896
5. respond promptly to student questions and comments and provide feedback on student work in a timely manner	0.897
6. actively listen to their students and show an interest in what they have to say	0.899
7. use clear and concise language to communicate with their students	0.898
8. Be where the student is at the center of the learning process, with the teacher acting as a guide and facilitator	0.897
9. makes use of technology, such as multimedia presentations and interactive whiteboards, to enhance the learning experience	0.898
10. emphasizes students working together to solve problems and complete tasks	0.896
11. who emphasizes hands-on activities that engage the student in the learning process	0.895
12. works with students individually to identify their strengths and weaknesses, tailoring the teaching approach to meet the needs of each student	0.900
13. focuses on the student, with the teacher acting as a facilitator rather than an authority figure.	0.900
14. contributes to the conversation (two-way communication)	0.900
15. gives emphasis on discussion between the teacher and the students	0.896
16 who is an authority figure	0.910
17. who emphasizes habitual memorization of facts and figures	0.910
18 that speaks, and the students listen (one-way communication)	0.914

Questionnaire

The ratings of each items got a Cronbach Alpha of >.8 to >.9 which has a verbal interpretation of GOOD to EXCELLENT which indicate high item homogeneity per factors.

In conclusion, our research followed a systematic process, commencing with a Focus Group Discussion (FGD) involving fourteen students to discern significant themes influencing preferred methods of online English teaching. The outcomes of this FGD informed the development of a comprehensive 52-item questionnaire. Subsequent content validation by four experts and face validation through two student groups refined the questionnaire, ensuring its clarity and relevance. Pilot testing involving 140 students provided valuable insights and confirmed the reliability of the questionnaire through factor analysis, resulting in the retention of 18 items. The positive outcome of face validation underscored the instrument's appropriateness, affirming its role as a substantive output in comprehending online English teaching methods.

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Contact email: jareyes@tua.edu.ph

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The International Academic Forum (IAFOR)
Sakae 1-16-26-201
Naka Ward, Nagoya, Aichi
Japan 460-0008
www.iafor.org