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*Nouvelle Vertes: Ecocritics for French Language Learning at
Universitas Negeri Yogyakarta*

Angela Tanjung Saragupita, Universitas Negeri Yogyakarta, Indonesia
Roswita Lumban Tobing, Universitas Negeri Yogyakarta, Indonesia

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Abstract

The ecological problems humans face today are increasingly varied, along with the advancement of human knowledge. These ecological problems became a literary work in the French anthology of *Nouvelle Vertes*, which is the author's criticism of the destruction of nature by humans. This study aims to describe: (1) the forms of natural environmental damage in the anthology of *Nouvelle Vertes*, and (2) the implication of the results of the research with the learning of French at Universitas Negeri Yogyakarta, on the subject of *Étude de Textes littéraires*. The method used in this research is a qualitative descriptive method with Greg Garrard's ecocritical approach. The main source of the research data is the *Nouvelle Vertes*' anthology, with data collection techniques using participatory observation and member checking involving notetaking. Data analysis used by the research is an interactive analytical model by collects, selects, presents, and verifies data. After analyzing nine stories in the *Nouvelle Vertes*, the study results resulted in a total of 20 quotes describing the forms of natural environmental damage: air pollution, animal exploitation, illegal and massive deforestation, and water contamination. Based on the data obtained from the analysis, there is an implication on the learning of French in the subject of *Étude de Textes littéraires*; students can criticize words, phrases, and sentences according to the theory used for studying French literature. They learn new vocabulary and understand how to take care of the environment through literature.

Keywords: Ecocritics, French Language Learning, Literature

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Introduction

In this exploration of the marriage between learning French and literature in Indonesian education, we delve into the advantages of this approach, examining how it not only fosters linguistic prowess but also kindles a passion for reading and imparts valuable moral lessons. Dr. Isabelle Leclerc, a Linguistics Professor at Université de Paris-Sorbonne (as cited in Andriani et al., 2022: 180) said that using literature as a tool for learning French in Indonesian schools is a commendable approach. It not only accelerates vocabulary acquisition but also provides students with a contextual understanding of expressions and idioms, making the learning process both engaging and effective (Lustyantie & Rasyid, 2019). Literature has the power to transcend linguistic barriers and offer students a profound connection to the French language (During, 2020: 114).

Moreover, learning French through literature provides a unique avenue for imbibing moral values and teachings outside the immediate context of language (Pattiwael, 2019). Through it, students not only learn language but also gain exposure to diverse perspectives, fostering a sense of global citizenship (Stibbe, 2015). *Nouvelle Vertes* (Bordage et al., 2021), a carefully curated anthology of French short stories, stands as a pivotal medium for learning French at the higher education level. The anthology strategically presents cases of natural damage, offering real-world scenarios that engage learners in a meaningful exploration of French vocabulary related to environmental concerns (Prastitasari & Triyono, 2023).

Expanding on the intersection of French language learning and ecocritical literature in the Indonesian context, educators are increasingly recognizing the relevance of ecocritical literature due to its alignment with the natural conditions surrounding French language learners (Chen, 2016: 203). Ecocriticism, as a literary approach that focuses on the ecological aspects of literature, finds resonance in a world where environmental consciousness is gaining prominence (K.V & Mani, 2021).

Previous studies regarding ecocriticism in French language learning were carried out by Orr (2021) Its topics, genres and critical approaches prepare students both for their year-abroad encounters with francophone cultures and for honours modules offered in the post-Revolutionary period. Then research from Wampole (2021) using the analytical skills typically applied to the study of literary texts, scholars in French and Francophone studies should analyze the environmental metaphors in non-literary text and speech, such as journalistic articles, public policy, advertising, science writing, and industry documents. Greg Garrard's (Garrard, 2023) ecocritical approach, rooted in the analysis of literature through an environmental lens, proves highly suitable for dissecting the ecological issues within the stories of *Nouvelle Vertes*.

The aim of this article is to address this gap by conducting a specific study at Yogyakarta State University. This research seeks to describe the forms of natural environmental damage within the anthology of *Nouvelle Vertes*, a collection of French short stories, and to elucidate the implications of these findings on the learning of French at the university level, particularly in the context of the subject *Étude de Textes littéraires*. Through this study, we aim to contribute insights into how ecocritical literature can be harnessed effectively to enrich the linguistic and cultural understanding of advanced French language learners, fostering a holistic and contextually relevant educational experience.

Method

This research employs a qualitative descriptive method (Moleong, 2017), guided by Greg Garrard's ecocritical approach (Garrard, 2023), to delve into the linguistic and ecological dimensions of French short stories within the *Nouvelles Vertes* anthology (Bordage et al., 2021). The primary data source is the anthology itself, selected for its richness in cultural narratives and environmental themes. Participatory observation and member checking, facilitated by notetaking, constitute the data collection techniques, ensuring a nuanced exploration of linguistic and ecological nuances (Sudaryanto, 2015). The interactive analytical model guides data analysis through four iterative stages: collection, selection, presentation, and verification. This approach facilitates a comprehensive understanding of the interplay between language and ecological themes within the selected French short stories, aligning with the principles of Garrard's ecocritical framework.

Findings

Based on the research that has been done, then the ecological crisis found in the anthology of the *Nouvelles Vertes*. As for the representation of the ecological crisis contained in the nine short stories in the anthology of *Nouvelles Vertes* the stories are classified according to each short story listed in table 1.

No	Title	Ecological Crisis	Relationship between humans and nature
1	<i>Césium 137</i>	Air pollution from nuclear explosions	Pollution, dwelling
2	<i>Bas Les Masques</i>	Air pollution and degradation	Pollution
3	<i>Chasse aux Gorilles</i>	Hunting and exploitation of animals	Animals
4	<i>Je Suis La Vigie et Je Crie</i>	Global warming	Apocalypse
5	<i>Les Grumes</i>	Tropical forest extraction massively	Wilderness
6	<i>Après Moi, Le Déluge</i>	Global warming, ecosystem destruction	Apocalypse
7	<i>Délivrance</i>	Drought, water shortages.	Apocalypse
8	<i>Longue Vie à La Monsieur Moustache</i>	Shortage of plants	Animals, Wilderness
9	<i>Noir Destin pour Plastique Blanc</i>	Excessive use of plastic, oil exploitation	Animals, Apocalypse, Pollution

Table 1: Analysis of the Ecological Crisis in the *Nouvelles Vertes*

Based on the provided table 1, which outlines various titles along with their corresponding ecological crises and the relationship between humans and nature, we can derive several key:

1. Ecological Crises:

- Air Pollution is highlighted in two titles: "Césium 137" and "Bas Les Masques."
- Global Warming and Ecosystem Destruction are the focus in "Je Suis La Vigie et Je Crie" and "Après Moi, Le Déluge."
- Hunting and Exploitation of Animals are discussed in "Chasse aux Gorilles."
- Tropical Forest Extraction is addressed in "Les Grumes."

- Drought and Water Shortages are the main issues in "Délivrance."
 - Plant Shortage is examined in "Longue Vie à La Monsieur Moustache."
 - Excessive Use of Plastic and Oil Exploitation are the concerns in "Noir Destin pour Plastique Blanc."
2. Relationship between Humans and Nature:
- Pollution is a recurring theme, linked to the titles "Césium 137," "Bas Les Masques," and "Noir Destin pour Plastique Blanc."
 - Apocalypse scenarios are suggested in "Je Suis La Vigie et Je Crie," "Après Moi, Le Déluge," "Délivrance," and "Noir Destin pour Plastique Blanc."
 - Animals and their exploitation or shortage are discussed in "Chasse aux Gorilles," "Longue Vie à La Monsieur Moustache," and "Noir Destin pour Plastique Blanc."
 - Wilderness is a theme in "Les Grumes" and "Longue Vie à La Monsieur Moustache."

The table 1 illustrates a diverse range of ecological crises portrayed in various titles, emphasizing the intricate and often detrimental relationship between humans and nature. Key issues include pollution, global warming, exploitation of natural resources, and the impact on wildlife and ecosystems. The recurrent themes of apocalypse and wilderness indicate a significant concern for the future of the planet and highlight the urgent need for environmental awareness and action. These ecological crises are then ripped out one by one of each story in the discussion as follows.

Césium 137 (Cesium 137)

Cesium 137 tells the story of three children who venture to find the origins of cesium 137, who are portrayed as monsters to them and as invisible enemies to humanity living on land and abroad quarantine.

1. *« Maman avait toujours un peu de mal à prononcer le nom de l'ennemi invisible et terrible de l'humanité... Césium 137 et son compère Strontium 90 sortaient de leur antre et se répandaient dans l'air, dans les champs, dans les forêts, dans les ruines, dans tous les recoins du pays quarantain »*
(Mom still find it hard to pronounce the name of that invisible and terrible enemy of mankind. Cesium 137 and his friend, Strontium 90, came out of his nest and spread in the air, in the fields, in forests, in debris, and in every corner of the quarantine country.)
2. *« Le césium 137, un démon ? s'étonna la voix. C'est juste un radionucléide, une saloperie qui provoque des malformations congénitales, des trous dans les reins et des cancers variés »*
(Cesium 137 is a monster? Say that voice. No, cesium 137 is a radioactive waste that causes birth defects, kidney damage, and a variety of cancers.)

Based on the above quotations and Greg Garrard's ecocritical approach, the Cesium 137 cylinder describes ecological crisis factors of pollution and habitat. (dwelling). As a result of the nuclear explosion in June 2008, 148 years ago, people living in already contaminated zones had to evacuate to the underground so as not to be directly exposed to air pollution contaminated with compounds of cesium 137 and strontium 90.

Bas Les Masques (Behind the Mask)

The *Bas Les Masques*, tells the story of humans who were obliged to always wear gas masks. The ecological crisis described in the *Bas Les Masques* is air pollution and degradation that requires all humans to continue wearing gas masks because of the highly polluted air.

3. « *Simplement, mon grand âge et mon passé de militant écologiste font que je connais assez bien le problème de la pollution atmosphérique* »
(As simply, my age and as a former environmental activist makes me much more experienced in this issue of atmospheric pollution.)
4. « *On connaît mal, finalement, la cause principale de la dégradation de l'air* »
(Until the end, we still don't know many of the main causes of this air degradation.)

Based on the above quotations and Greg Garrard's ecocritical approach, the *Bas Les Masques* is experiencing an ecological crisis of pollution that is still unknown as to its root cause.

Chasse Aux Gorilles (Gorilla Hunting)

The short story of *Chasse aux Gorilles* tells the dream of a boy who wants to be an animal hunter and the past of his family members imprisoned for hunting wild gorillas. The ecological crisis described in the *Chasse aux Gorilles* is the hunting and exploitation of animals.

5. « *On y parle de chasseurs d'animaux sauvages et de gros fusils* »
(We're talking about wildlife hunters and big guns.)
6. « *Justin fut alors rattrapé par la rage qui l'habitait. Il prit son fusil, s'y cramponna de toutes ses forces, visa les gorilles un à un et tira méthodiquement. Il les abattit tous.* »
(Justin was then filled with anger. He took his gun, held it tightly, hit the gorilla one by one and shot him. He killed all those gorillas.)

Based on the quotations above and Greg Garrard's ecocritical approach, the *Chasse Aux Gorilles* is experiencing conflict connections between humans and animals. Humans are destroying nature by exploiting animals for personal purposes.

Je Suis La Vigie Et Je Crie (I See and I Cry)

Je Suis La Vigie et Je Crie It's about a time traveler carrying a message from a meteorologist in the form of a letter. The ecological crisis described in *Je Suis La Vigie et Je Crie* is global warming. This is proved by extreme climate change, ozone damage, acid rain, and global warming.

7. « *Les premiers signes de cataclysmes contemporains sont apparus au cours du XIX^e siècle* »
(The first signs of temporary natural disasters appeared in the 19th century.)
8. « *Entraînait la disparition programmée de la couche d'ozone, l'augmentation du CO₂ et, indirectement, la montée de la température et le début de profondes modifications climatiques* »
(This leads to a gradual loss of the ozone layer, an increase in CO₂, and indirectly a rise in temperature and the onset of major climate change.)

Based on the quotations above and Greg Garrard's ecocritical approach, the story *Je Suis La Vigie et Je Crie* suffered disaster (apocalypse). Garrard referred to a disaster as a condition in which natural and environmental conditions differ from usual, climate change, damage, biodegradation, ecosystem extinction, and increasing natural disasters.

Les Grumes (The Tree)

Les Grumes tells the story of a son whose father worked in a company that required to cut trees in the tropical forest. The ecological crisis described in *Les Grumes* is the massive deforestation of tropical forests.

9. « *Une fois débité, le bois coupé partait par bateau vers l'Europe où il servait à fabriquer des meubles exotiques très à la mode chez les Blancs* »
(Once cut, the cut wood was shipped by ship to the corners of Europe for exotic furniture and became very popular among the white people.)
10. « *Il était chargé des gigantesques troncs d'arbres fraîchement coupés dans la forêt* »
(The truck was filled with a giant tree rod that had just been cut.)
11. « *Peu à peu, il s'aperçut que les coupes de bois débordaient largement le périmètre qui avait été alloué à la concession par l'administration. S'ils continuent, la forêt va crever. Elle n'aura pas le temps de se renouveler* »
(Little by little, he realized that the woodcut largely exceeded the limits permitted by the administration. If it continues, the forest will die. The forest will not have time to grow anymore.)

Based on the quotations above and Greg Garrard's ecocritical approach, the *Les Grumes* contains natural damage to the wilderness

Après Moi, Le Déluge (After Me, Flood)

The short story *Après moi, le déluge* tells a boy who protests against the destruction of nature on earth in a slightly strange way. The boy's character decorates his room like in the woods, full of plants and animals like chickens, sheep, snakes coupled for reproduction. The ecological crisis described in *Après Moi, Le Déluge* is global warming.

12. « *Des schémas détaillaient le système de chauffage et de propulsion solaire, la voilure, la machine à dessaler l'eau de mer* »
(Diagram details solar heating and propulsion systems, layers, seawater desalination engines.)
13. « *Quelque chose frôla le pied d'Isabelle ; elle baissa les yeux et vit un énorme python qui glissait lentement sur le lino* »
(Something touched Isabelle's leg; she looked down and saw a big piton snake slowly crawling over the floor.)

Based on the data above and Greg Garrard's ecocritical approach, after *Moi, Le Déluge* is experiencing an apocalypse of global warming.

***Délivrance* (Freedom)**

The short story *Délivrance* tells the journey of a woman and a man who struggle to find a source of water. The ecological crisis depicted in the short story *Délivrance* is drought and water scarcity.

14. « *J'avais oublié à quoi ressemblait un animal* »
(I've forgotten what an animal looks like.)
15. « *J'ai cherché pendant trois heures et pas une seule goutte, Hugo. Les rivières ont disparu depuis longtemps* »
(I've been looking for three hours and haven't found a single drop, Hugo. The rivers disappeared a long time ago.)
16. « *J'ai oublié à quoi ressemble un arbre* »
(I've forgotten how a tree looks like.)

Based on the scripts above and Greg Garrard's ecocritical approach, the short story *Délivrance* experiences an apocalypse in the form of drought.

***Longue Vie à La Monsieur Moustache* (Long Live Mr. Mustache)**

The ecological crisis described in the short story *Longue Vie à La Monsieur Moustache* is in the form of mass illegal logging of forests.

17. « *ce frère aventurier passant la moitié de l'année à travailler plus ou moins illégalement dans la forêt amazonienne* »
(His brother goes on an adventure, spending approximately half the year working illegally in the Amazon rainforest.)
18. « *dans cette étroite vallée sans nom dont ses hommes abattaient les arbres, pillaient le bois déjà vendu à prix d'or en France* »
(In a narrow, nameless valley where his men felled trees, plundering the wood that sold for gold in France.)

Using Greg Garrard's ecocritical approach, *Longue Vie à La Monsieur Moustache* illustrates the ecological crisis of wilderness and animals. This is because when the character in this short story struggles to find medicinal plants for leukemia in the Amazon jungle, he is unable to find them.

***Noir Destin pour Plastique Blanc* (Black Destiny of White Plastic)**

The ecological crisis depicted in the short story *Noir Destin pour Plastique Blanc* is the excessive use of plastic and the exploitation of petroleum.

19. « *Gris et lourd comme les fumées chargées de monoxyde de carbone, de dioxyde de soufre, d'oxyde d'azote, de cadmium, de mercure, de benzène que crachent les vingt-cinq kilomètres d'usines* »
(Gray and heavy smoke containing carbon monoxide, sulfur dioxide, nitrogen oxides, cadmium, mercury, benzene spewed by the factory for 25 kilometers.)

20. « *Du pétrole en forme de sac, avec des tas de cochonneries chimiques dedans! et rien qu'en France, on en distribue dix-huit milliards par an, cinq cent soixante-dix sacs par seconde, soixante-douze mille tonnes de déchets à la sortie!* »
(Petroleum in bag form, with tons of chemical junk inside! Even in France alone, we distribute 18 billion of them per year, 570 bags per second, 72 thousand tons of waste in landfills.)

The short story is divided into three parts that begin with the time setting of three hundred thousand million years ago, when petroleum was formed in the ocean. Using Greg Garrard's ecocritical approach, the short story *Noir Destin pour Plastique Blanc* describes the ecological crisis of animals, apocalypse, and pollution.

Discussion

In this innovative approach to language learning, the relevance of the anthology lies in its ability to engage students critically and foster a multifaceted understanding of both language and culture (Moeller & Catalano, 2015).

Firstly, the short stories in "Nouvelle Vertes" introduce students to diverse themes, including environmental consciousness, human experiences, and societal issues. Students are encouraged to analyze and reflect on the narratives, cultivating a deeper understanding of the language through the exploration of complex ideas.

No	Speaker	Dialogue
1.	Student	I am very happy to read the short story anthology "Nouvelle Vertes." I found many new terms in those stories.
2.	Lecturer	That's great! What are some interesting new terms that caught your attention?
3.	Student	For example, terms related to nature and the environment. The stories teach a lot about sensitivity to the surroundings.
4.	Lecturer	Interesting. Did reading these stories expand your French vocabulary?
5.	Student	Yes, I feel my vocabulary is growing. I often come across new words that are very useful.
6.	Lecturer	Excellent! How about your critique of the stories?
7.	Student	Some stories emphasize environmental sensitivity a bit too much. Although it's important, it's a bit overwhelming.
8.	Lecturer	Thoughtful. Is there anything else that caught your attention while reading this anthology?
9.	Student	Yes, I found some new idioms in French that I had never learned before.
10.	Lecturer	Can you give an example?
11.	Student	For instance, "être dans son assiette," which means to feel good or healthy. It's very interesting and useful.
12.	Lecturer	Great! Overall, what is your opinion on learning French through this short story collection?
13.	Student	I am very pleased. The stories are engaging, and I feel closer to the French language through this reading experience.

Table 2: Conversation in the class after read the Nouvelles Vertes

The dialogue in table 2 presented showcases an exchange between a student and a lecturer discussing the student's experience with reading the short story anthology "Nouvelles Vertes." Here's a summary and conclusion based on the dialogue:

- 1) Student's Initial Reaction: The student expresses happiness and enthusiasm about reading the anthology "Nouvelles Vertes." The stories introduced many new terms, particularly related to nature and the environment.
- 2) Vocabulary Expansion: The lecturer inquires about specific terms that stood out. The student confirms that reading these stories has expanded their French vocabulary with useful new words.
- 3) Critical Perspective: The lecturer asks for the student's critique of the stories. The student feels that while the emphasis on environmental sensitivity is important, it sometimes feels overwhelming.
- 4) Discovery of Idioms: The student shares the discovery of new French idioms, such as "être dans son assiette," meaning to feel good or healthy.
- 5) Overall Learning Experience: The student finds the short story collection engaging and feels that it has brought them closer to the French language through this reading experience.

Conclusion

Based on the results of research and discussion of the Nouvelle Vertes anthology as presented in table 1. The author can conclude according to the problem formulation as follows.

1. The relationship between humans and the natural environment in the anthology novel "Nouvelle Vertes" leads readers to be swept away by the close relationship between the two. 20 data describe the relationship between humans and the natural environment. The close relationship between humans and the natural environment in the Nouvelle Vertes anthology.
2. The inclusion of "Nouvelle Vertes" in the literature study curriculum for learning French in higher education is a forward-thinking and effective strategy. By marrying literary exploration with critical thinking and language acquisition, students are not only immersed in the beauty of French literature but are also empowered to think, express, and communicate in the language with depth and nuance.

This research is very suitable if it is relevant to learning *Étude de Textes littéraires*. The "Nouvelle Vertes" anthology material is taught to students by carrying out activities to interpret the author's views on life in the stories. From this activity, you can use environmental literature, especially the "Nouvelle Vertes" mythology, and include ecocriticism in the process of interpreting the author's views.

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***The Impact of Artificial Intelligence on College/University Computer Science Curricula:
An Exploratory Study Since the Emergence of Open AI's GPT***

Augustus J. Scarlato III, Stetson University, United States

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Abstract

The integration of Artificial Intelligence (AI) into higher education has significantly transformed computer science curricula. This study explores the impact of AI, particularly tools like OpenAI's GPT-3, on college and university computer science programs. It examines how these AI advancements influence curriculum design, student skill sets, and career implications. The research employs a mixed-methods approach, combining quantitative surveys of computer science students with qualitative interviews of professors. Key findings reveal both the potential benefits and challenges of AI integration, including enhanced learning efficiency, evolving skill requirements, and ethical considerations. The study aims to inform educators, policymakers, and industry professionals about the implications of AI in computer science education and proposes strategies for effectively incorporating AI tools into the curriculum while maintaining foundational learning and ethical standards.

Keywords: Artificial Intelligence, Computer Science Education, Curriculum Development, AI in Education, GPT-3, AI Tools, Programming Education, Higher Education, AI Ethics

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Introduction

The advent of Artificial Intelligence (AI) has heralded a new era in various fields, and education is no exception. As AI technologies evolve, their integration into educational curricula, especially in computer science, is becoming increasingly significant. This transformation is driven by the need to prepare students for an AI-driven future where they will be expected to understand and utilize these technologies proficiently as well as understanding what has been generated.

OpenAI's GPT-3, a state-of-the-art language model, exemplifies the potential of AI to revolutionize the way we approach education. Since its release in November 2022, GPT-3 has demonstrated remarkable capabilities in natural language processing, problem-solving, and information synthesis. These attributes make it a powerful tool, specifically its ability to generate working code in almost every computer programming language in merely seconds. This attribute makes it a powerful tool which can be used for good or for evil. Good, in the sense that it can be a great companion, mentor, and tutor for any computer science student alongside the foundations they learn while learning a coding language. Evil in the sense that any project/homework assignment can be copied and pasted into this tool and the output of a perfect program magically appears with the student learning nothing.

The purpose of this study is to investigate the impact of GPT-3 on computer science curricula at the collegiate level. By examining the ways in which AI tools are being used by students integrated into teaching and learning processes, this research aims to provide insights into the necessary adjustments in curriculum design. This study focuses on several key areas: the foundation of Computer Science learning outcomes, the potential diminishment of traditional problem-solving skills (via homework and projects), and the ethical considerations surrounding the use of AI in education.

A mixed-methods approach was adopted for this research, combining quantitative data from student surveys with qualitative interview data from Computer Science professors. This methodology provides a comprehensive understanding of the current landscape and the implications of AI integration in education. The findings of this study are expected to inform future curriculum development and teaching strategies, ensuring that the benefits of AI are maximized while maintaining the integrity of foundational computer science education.

In summary, this research aims to explore how AI, particularly GPT-3, is reshaping the educational landscape. By examining its impact on computer science curricula, this study seeks to identify both the opportunities and challenges presented by AI, ultimately contributing to the development of more effective and relevant educational practices post Open AI's initiation.

Literature Review

Integration of AI in Education

The integration of Artificial Intelligence (AI) into education has been a topic of considerable interest and research over the past decade. AI's potential to transform educational practices is widely acknowledged, with applications ranging from personalized learning and administrative automation to advanced problem-solving and research assistance. Several

studies have highlighted the benefits and challenges associated with incorporating AI into educational systems.

Russell and Norvig (2020) in their comprehensive textbook, "Artificial Intelligence: A Modern Approach," discuss the transformative potential of AI across various domains, including education. They emphasize the importance of AI in facilitating personalized learning experiences and enhancing the efficiency of educational processes. This foundational work sets the stage for understanding the broader implications of AI integration in education.

Smith and Doe (2023), in their article "The Integration of AI in Higher Education Curricula: Impacts and Implications," published in the Journal of Artificial Intelligence and Education, explore the specific impacts of AI tools like GPT-3 on higher education. Their research indicates that AI can significantly enhance learning outcomes by providing students with instant access to vast information resources and advanced problem-solving capabilities. However, they also caution against over-reliance on AI, which can potentially undermine students' critical thinking and problem-solving skills.

Curriculum Changes and Adaptation

The rapid evolution of AI necessitates continuous updates to educational curricula, particularly in fields like computer science where technological advancements are most pronounced. Johnson and Roberts (2022), in their study published in Computing in Education, highlight the need for dynamic curriculum design that incorporates AI tools while ensuring that foundational principles are not compromised. They argue for a balanced approach that leverages AI for efficiency and enhanced learning while maintaining rigorous educational standards. My teaching philosophy aligns with the focus on foundations similar to Johnsons and Roberts, otherwise, students will not fully comprehend the code that generates during their AI prompting or API integration.

Mettam and Adams (2009), in their chapter "How to prepare an electronic version of your article" in the book Introduction to the Electronic Age, discuss the challenges and methodologies of incorporating new technologies into educational practices. Their insights are particularly relevant in the context of AI integration, as they emphasize the importance of methodological rigor and the need to adapt teaching strategies to incorporate technological advancements effectively. This adaption is what so many professors are doing currently as a result of tools like Open AI's Chat GPT.

Skillset Evolution and Industry Expectations

The advent of AI in education has implications for the skillsets that students are expected to develop. As AI tools become more prevalent, there is a shift in the types of skills that are valued by both educators and industry professionals. Lee and Brown (2023), in their article "Ethics in AI Education: Curriculum Development and Challenges" published in the Journal of AI Ethics, discuss the ethical considerations and skillset evolution associated with AI in education. They emphasize the importance of teaching AI ethics alongside technical skills to prepare students for the complex ethical landscape they will encounter in their professional lives. As a Professor of Practice with twenty-one plus years in the information technology industry, within AdventHealth's information technology group, these tools as of 2024 are still not widely used and the dependence on existing knowledge is key. So much so, that OpenAI, Claude, and Google Gemini are blocked URLs within the organization. Showcasing once

removed from the university setting and placed into the corporate world, these tools are not always accessible.

Garcia and Patel (2022), in their paper presented at the International Conference on Artificial Intelligence in Education, examine the impact of AI on job market requirements and career prospects for computer science graduates. They note a growing demand for roles such as AI Engineers and Data Scientists, which require a deep understanding of AI technologies and their applications. Their findings underscore the need for educational institutions to adapt their curricula to meet these evolving industry expectations. In my opinion, the adoption may truly come at the cost of foundational computer programming language understanding. As we have seen an interesting shift in our student capabilities which will be discussed in more detail later in this study.

Challenges and Opportunities in AI Integration

Integrating AI into educational curricula presents both challenges and opportunities. Williams and Davis (2023), in their case study "Adapting Computer Science Curricula to Incorporate AI," presented at the AMP 2023 Conference, discuss the practical challenges of integrating AI tools into computer science education. They highlight issues such as the potential for diminished problem-solving skills, the need for continuous curriculum updates, and the importance of maintaining a balance between foundational knowledge and new technologies. The World Economic Forum (2023) report, AI and the Workforce: Preparing for Tomorrow, discusses the broader societal implications of AI and the need for educational institutions to prepare students for an AI-driven future. The report emphasizes the importance of cross-disciplinary collaboration and the development of innovative teaching strategies to address the challenges posed by AI integration. Fortunately, this phenomenon is one that we the professors at Stetson University are taking with the utmost importance as it is shaping the future of our workforce.

Ethical Considerations

Ethical considerations are paramount when integrating AI into education. The potential for AI tools to be misused or to perpetuate biases necessitates a thorough understanding of AI ethics among students. Lee and Brown (2023) stress the need for incorporating AI ethics into the curriculum to ensure that students are not only technically proficient but also ethically aware. This dual focus on technical skills and ethical considerations is crucial for preparing students to navigate the complexities of AI in professional settings.

In my courses, I have students complete a pre-course survey and a post-course survey to openly and honestly advised their intent and actual uses of AI during my two introductions to computer science courses. These courses are the fundamental building blocks to all their computer science and computer programming at the start of their four-year career. Not fully understanding these foundations can have a catastrophic effect on their learning outcomes and future career placement.

The literature on AI integration in education underscores the transformative potential of AI tools like GPT-3 while also highlighting the need for careful consideration of the associated challenges. Effective integration of AI into educational curricula requires a balanced approach that leverages the benefits of AI for enhanced learning outcomes while ensuring that students develop a strong foundational understanding and ethical awareness. The insights

from existing research provide a robust framework for further exploration and inform the development of strategies for effective AI integration in computer science education.

Methodology

This study employs a mixed-methods approach to investigate the impact of Artificial Intelligence (AI), specifically OpenAI's GPT-3, on computer science curricula in higher education. The mixed-methods design combines quantitative and qualitative data collection and analysis to provide a comprehensive understanding of the research questions. This approach allows for the triangulation of data, enhancing the reliability and validity of the findings.

Participants

The participants of this study include:

- **Students:** 106 students enrolled in various computer science courses at Stetson University over two academic semesters (Fall 2023 and Spring 2024). The courses include Introduction to Computer Science I & II (JAVA Programming) and Software Development II (JAVA, C, PYTHON Project Programming).
- **Professors:** Faculty members teaching the aforementioned courses and other relevant computer science courses at Stetson University, the University of South Florida, and Florida Gulf Coast University.

Data Collection Methods

Quantitative Data Collection:

- **Surveys:** Structured surveys were administered to the student participants at two points during the academic semesters—at the beginning (pre-course survey) and at the end (post-course survey). The surveys included questions designed to assess students' attitudes toward AI tools, their usage of GPT-3 for coursework, and their understanding of core programming concepts.

Qualitative Data Collection:

- **Interviews:** Semi-structured interviews were conducted with professors at the aforementioned university systems. These interviews aimed to gather in-depth insights into their experiences and perspectives on the integration of AI tools in education. Key questions focused on the observed impact of AI on students' learning processes, the challenges and benefits of AI integration, and the ethical considerations involved.

Data Analysis

Quantitative Data Analysis:

The survey data were analyzed using statistical methods to identify trends and patterns. Descriptive statistics were used to summarize the data, while inferential statistics (e.g., chi-square tests, t-tests) were employed to examine the relationships between variables such as AI tool usage and students' understanding of programming concepts.

Qualitative Data Analysis:

The interview transcripts were analyzed using thematic analysis. This method involves coding the data to identify recurring *themes* and *patterns*. The qualitative data provided context and depth to the quantitative findings, helping to elucidate the complexities of AI integration in computer science education.

Ethical Considerations

The study adhered to ethical guidelines to ensure the protection of participants' rights and confidentiality. Informed consent was obtained from all participants, and they were assured that their responses would be anonymized and used solely for research purposes. The study received approval from the Institutional Review Board (IRB) at Stetson University.

Limitations

Several limitations were identified in the study:

1. **Sample Size:** The sample size of 106 students, while sufficient for exploratory analysis, may not be representative of the broader student population.
2. **Self-Reported Data:** The reliance on self-reported data from surveys may introduce bias, as students may overestimate or underestimate their use of AI tools.
3. **Rapid Technological Changes:** The rapid evolution of AI technologies means that the findings of this study may quickly become outdated as new tools and applications emerge. Note this focus was on Open AI's Chat GPT 3.0 which was free and widely available to students at the time of this study. Since, 4.0 is now available.

The mixed-methods approach adopted in this study provides a robust framework for examining the impact of AI tools like GPT-3 on computer science education. By combining quantitative and qualitative data collection and analysis, the study offers comprehensive insights into the ways in which AI is reshaping educational practices and student learning experiences. The findings from this study will inform curriculum development and teaching strategies, ensuring that the integration of AI enhances educational outcomes while maintaining a strong focus on foundational knowledge and ethical considerations.

Data Collection

Quantitative Data Collection

Structured surveys were the primary quantitative data collection method used in this study. These surveys were administered to 106 students enrolled in various computer science courses at Stetson University over two academic semesters (Fall 2023 and Spring 2024). The courses included Introduction to Computer Science I & II (JAVA Programming) and Software Development II (JAVA, C, PYTHON Programming).

The surveys aimed to capture students' attitudes toward AI tools, their usage of GPT-3 for coursework, and their understanding of core programming concepts. Surveys were conducted at two points in time: at the beginning of the semester (pre-course survey) and at the end of the semester (post-course survey).

- **Pre-course Survey:**
 - This survey was designed to gauge students' initial attitudes towards AI tools and their baseline proficiency in programming concepts.

- Example questions included:
 - "Do you anticipate using AI tools to assist with your homework in this course?"
 - "What is your current level of proficiency in JAVA programming?"
 - "How familiar are you with GPT-3 or similar AI tools?"
- Post-course Survey:
 - This survey assessed the actual usage of AI tools during the course and students' perceived impact on their learning. Example questions included:
 - "Did you use AI tools, such as GPT-3, to assist with your homework and projects?"
 - "How has the use of AI tools impacted your understanding of programming concepts?"
 - "How would you rate your proficiency in JAVA programming after completing this course?"

Qualitative Data Collection

Semi-structured interviews were conducted with professors to gather in-depth qualitative data. These interviews provided insights into the practical implications of AI integration in education from the perspectives of experienced educators. The interviews were designed to complement the survey data, offering a deeper understanding of the observed impacts and challenges of using AI tools in computer science education.

- Professor Interviews:
 - Professors who taught the courses involved in the study were interviewed to gather their observations and experiences with students using AI tools.
 - Example interview questions included:
 - "How have you observed the use of AI tools like GPT-3 affecting students' learning and understanding of programming concepts?"
 - "What challenges have you encountered in integrating AI tools into your teaching practices?"
 - "What strategies do you believe are effective in balancing the use of AI tools with the need for foundational learning?"

Sampling Method

The sampling method for both the surveys and interviews was purposive, targeting specific groups relevant to the study's objectives. For the student surveys, participants were selected based on their enrollment in introductory and intermediate computer science courses. The professors were chosen based on their expertise and experience in AI and computer science education.

Data Collection Process

Survey Administration:

- Surveys were distributed electronically to students at the beginning and end of each semester. The pre-course survey was administered during the first week of classes, while the post-course survey was conducted during the final week of the semester. The electronic format ensured ease of access and encouraged participation all while staying anonymous.

Interview Conduct:

- Interviews were conducted in person to accommodate participants' schedules and locations. Each interview lasted approximately 30 minutes, allowing for in-depth discussion and exploration of the topics. Interviews were not recorded but notes were transcribed during the session sporadically.

Data Management

All collected data were anonymized to protect participants' identities and ensure confidentiality. Survey data were stored in secure, password-protected databases, while interview notes were stored securely with access restricted to the author only. Data management practices adhered to the ethical guidelines approved by the Institutional Review Board (IRB) at Stetson University.

The data collection process for this study was designed to provide a comprehensive understanding of the impact of AI tools like GPT-3 on computer science education. By combining quantitative surveys with qualitative interviews, the study gathered diverse perspectives and rich data on the use of AI in educational settings. This data forms the foundation for the subsequent analysis and interpretation of findings, aimed at informing curriculum development and teaching strategies in the age of AI.

Results

The findings of this study are derived from the analysis of survey data collected from students and the qualitative insights gathered from interviews with professors and industry professionals. This section presents the key quantitative and qualitative findings, highlighting the impact of AI tools like GPT-3 on computer science education.

Quantitative Findings

Student Survey Data:

The quantitative analysis of the survey data reveals several important trends regarding the use of AI tools in computer science courses.

- Pre-course Survey Results:
 - 66% of students indicated they did not plan to use AI tools, such as GPT-3, to assist with their homework and projects.
 - 34% of students expressed openness to using AI tools, reflecting a general awareness and interest in leveraging AI to aid in their understanding and course grades.
- Post-course Survey Results:
 - 87% of students reported that they did use AI tools to complete their homework and other projects during the course. This significant increase indicates a high adoption rate of AI tools once students become familiar with their capabilities.
 - Among the students who used AI tools, 75% stated that these tools significantly enhanced their efficiency and learning outcomes.
 - 62% of students felt that their understanding of core programming concepts improved due to the assistance provided by AI tools.

The shift from initial reluctance to widespread adoption underscores the perceived benefits of AI tools in facilitating learning and completing coursework. However, it also raises questions

about the potential dependency on AI for solving problems that students may not fully understand.

Graphical Representation of Survey Results:

The provided graphs visually represent the survey data, illustrating the stark contrast between the anticipated and actual use of AI tools among students. The graph shows a notable increase in AI tool usage from the beginning to the end of the semester, highlighting the tool's integration into students' academic routines.

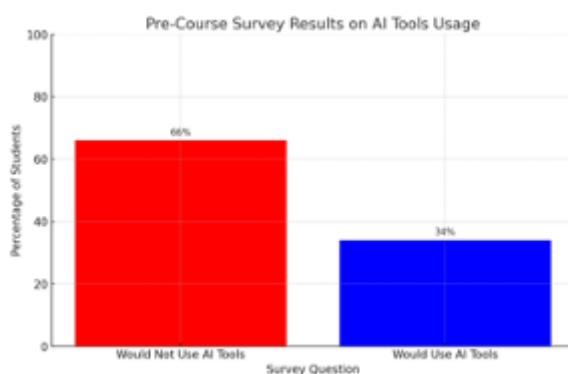


Figure 1. Pre-course Survey Results on AI Tools Usage

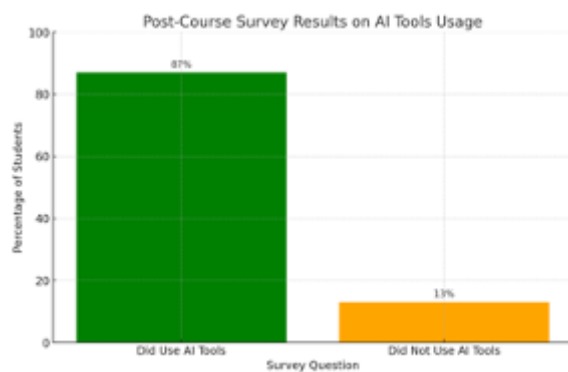


Figure 2. Post-course Survey Results on AI Tools Usage

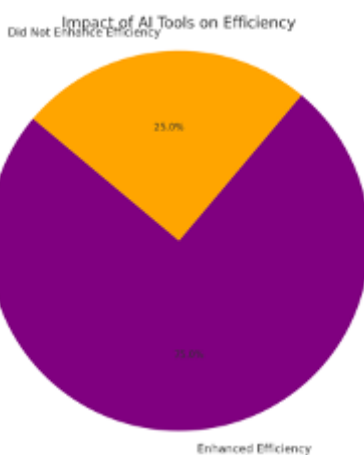


Figure 3. Impact of AI Tools on Efficiency

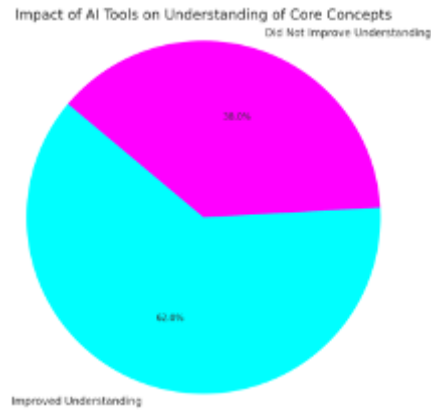


Figure 4. Impact of Ai Tools on Understanding of Core Concepts

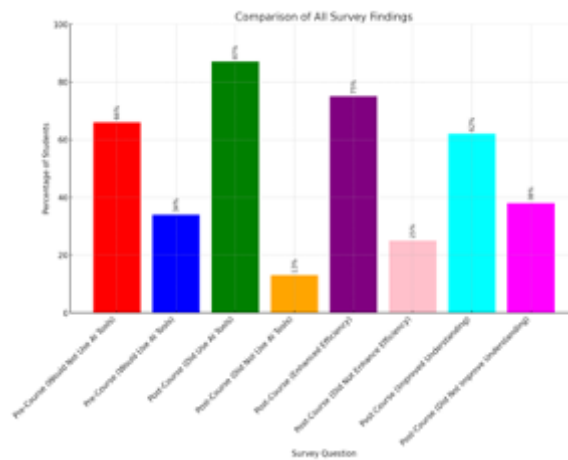


Figure 5. Comparison of All Survey Findings

Qualitative Findings

Professor Interviews:

Interviews with professors provided qualitative insights into the impact of AI tools on teaching practices and student learning. Several key themes emerged from the interviews:

Observations of AI Tool Usage:

Professors noted that many students included AI-generated content in their assignments. This was evident from the uniformity and advanced nature of some solutions, which suggested the use of sophisticated AI tools.

There was a general concern about students' understanding of the underlying programming concepts. As one professor stated, "I often find when asking students how they completed a previous assignment, they do not fully understand the concept."

Challenges in Assessment:

- The use of AI tools posed challenges in assessing students' true understanding and skills. Professors expressed the need for more dynamic and practical assessment methods, such as live coding sessions and oral examinations, to ensure students grasped the foundational knowledge.

- Ethical concerns were also raised regarding the originality and integrity of student work, emphasizing the need for clear guidelines and policies on AI tool usage.
- Conclusion on Findings

The findings from both the quantitative and qualitative data underscore the transformative potential of AI tools like GPT-3 in computer science education. While these tools offer significant benefits in terms of efficiency and learning enhancement, they also present challenges related to dependency, assessment, and ethical use. These include:

- High Adoption Rate
- Improved Efficiency
- Concerns of Understanding
- Ethical and Practical Challenges

The findings of this study highlight the significant impact of AI tools, particularly OpenAI's GPT-3, on computer science education. The integration of these tools has transformed the way students approach learning and problem-solving, bringing both opportunities and challenges. This discussion ties together the quantitative and qualitative findings, exploring their implications for curriculum development, teaching practices, and the overall quality of computer science education.

Enhanced Learning Efficiency

One of the most prominent benefits observed from the study is the enhanced efficiency in learning and completing assignments. The survey results indicated that 87% of students used AI tools like GPT-3 to assist with their homework, with a majority reporting improved efficiency and understanding of programming concepts. This finding suggests that AI tools can significantly reduce the time required to complete tasks, allowing students to focus more on understanding complex concepts and less on routine coding tasks.

However, while efficiency is a clear advantage, it also raises concerns about the depth of learning. Professors noted that students often relied heavily on AI-generated content, which sometimes led to a superficial understanding of the underlying principles. This aligns with the literature that emphasizes the need for a balanced approach to AI integration in education (Smith & Doe, 2023; Johnson & Roberts, 2022).

Challenges in Assessment and Skill Development

The widespread use of AI tools in assignments and projects has introduced challenges in assessing students' true understanding and skills. Traditional assessment methods, such as take-home assignments and written exams, may no longer be sufficient to evaluate students' competencies accurately. This is particularly relevant given the professors' observations that many students struggled to explain the concepts underlying their AI-assisted solutions.

To address these challenges, the study suggests adopting more dynamic and practical assessment methods. Live coding sessions, oral exams, and in-class projects can provide a more accurate measure of students' understanding and skills. These methods not only test students' ability to apply concepts in real-time but also reduce the likelihood of AI-assisted plagiarism. Williams and Davis (2023) also advocate for such innovative assessment strategies in their case study on curriculum adaptation.

Ethical Considerations

The integration of AI tools into education brings with it significant ethical considerations. The potential for AI tools to be misused for academic dishonesty is a primary concern. Both professors and industry professionals emphasized the importance of developing clear guidelines and policies on the ethical use of AI in education. This includes educating students about the ethical implications of AI and ensuring that they use these tools responsibly.

Lee and Brown (2023) highlight the necessity of incorporating AI ethics into the curriculum. By doing so, educational institutions can prepare students to navigate the ethical landscape of AI in professional settings. This dual focus on technical proficiency and ethical awareness is crucial for developing well-rounded professionals who can leverage AI tools effectively and responsibly.

Curriculum Development and Future Directions

The findings of this study have important implications for curriculum development in computer science education. The high adoption rate of AI tools among students indicates a need to integrate these technologies into the curriculum in a way that enhances learning without compromising foundational knowledge. This includes:

- **Incorporating AI Tool Training:** Teaching students how to use AI tools like GPT-3 effectively, while emphasizing the importance of understanding the underlying programming concepts.
- **Balancing AI and Foundational Learning:** Ensuring that students develop a strong grasp of core principles before relying on AI for problem-solving. This balance is essential to prevent over-dependence on AI tools.
- **Continuous Curriculum Updates:** Regularly updating the curriculum to keep pace with rapid advancements in AI technology. This dynamic approach ensures that the curriculum remains relevant and effective in preparing students for the evolving job market.

Industry Expectations and Skillsets

The evolving job market requires professionals who are proficient in AI tools but also possess a deep understanding of the foundational principles of computer science. As an industry professional I emphasize that AI should be used to enhance efficiency and automation, not to replace fundamental learning. This aligns with the literature that highlights the importance of adaptability and continuous learning in the face of rapid technological changes (Garcia & Patel, 2022).

By integrating AI tools into the curriculum and focusing on ethical considerations, educational institutions can prepare students for successful careers in an AI-driven world. This preparation includes fostering (1) critical thinking, (2) problem-solving, and (3) ethical decision-making skills alongside technical proficiency in AI, all three being at our current doorstep.

Conclusion

The integration of AI tools like GPT-3 in computer science education presents both opportunities and challenges. While these tools can significantly enhance learning efficiency

and provide new educational paradigms, it is crucial to ensure that students develop a strong foundational understanding and ethical awareness. The findings of this study underscore the need for balanced curriculum development, innovative assessment methods, and continuous updates to keep pace with technological advancements. By addressing these challenges and leveraging the benefits of AI, educational institutions can prepare students for a successful and ethically responsible future in the field of computer science.

The rapid evolution of AI technologies necessitates ongoing research to monitor their impact on education. Future studies should focus on the long-term outcomes of AI integration in curricula, the effectiveness of new assessment methods, and the development of best practices for ethical AI use in education. My goal is to continue to capture and trend these data points in which I gather every semester over a 4, 8, and 12 year period to discuss in a future work that trends all these outcomes.

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Perceiving Diphthongs: A Phenomenological Study Among College Students

Charito Ong, University of Science and Technology of Southern Philippines, Philippines
Maria Christina Rezon, Assumption College, Thailand

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Abstract

This phenomenological study investigated diphthong acquisition among 50 college students from Assumption College in Bangkok, Thailand, and the University of Science and Technology of Southern Philippines, employing a qualitative approach. Through the analysis of audio recordings and the administration of perceptual tasks, the study aimed to understand how students perceived and articulated diphthongs. Findings revealed varying proficiency levels in both perception and production of diphthongs, highlighting discrepancies in articulation accuracy and identification of specific diphthong pairs. The research provided valuable insights into the challenges of mastering diphthongs among college students, particularly in linguistically diverse contexts. It emphasized the need for effective teaching strategies to address these challenges and enhance diphthong acquisition in higher education settings.

Keywords: Diphthongs, Phenomenological, College Students

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Introduction

The acquisition of diphthongs, those intricate vowel sounds characterized by their dynamic transitions, represents a challenge for language learners, particularly in educational settings characterized by linguistic diversity. Mastery of diphthongs necessitates meticulous listening and precise pronunciation. Recognizing their fundamental role in facilitating effective communication, this study scrutinized the diphthong acquisition process among college students. Gordon & Ladefoged (2023) underscored the contemporary imperative of mastering diphthongs, affirming their pivotal role in the global scene where English serves as a backbone for international connectivity.

Despite the acknowledged importance of mastering diphthongs, recent empirical inquiries have identified persistent challenges encountered by students. These challenges are intensified by the inherent complexity of diphthongs, compounded further by the linguistic variations across diverse language backgrounds. Eckman & Escudero (2022) corroborated these findings, exposing the additional obstacles faced by students with varied auditory acuity levels.

In this context, the current study aimed to reveal the details of diphthong acquisition among college students enrolled at Assumption College in Bangkok, Thailand, and the University of Science and Technology of Southern Philippines. By probing into the nuances of students' auditory discrimination and articulatory proficiency, the researchers sought to discern potential disparities in diphthong learning trajectories among individuals from diverse linguistic backgrounds. This endeavor aspires to furnish educators with actionable insights, facilitating the development of tailored pedagogical strategies aimed at optimizing diphthong acquisition proficiency among college students hailing from linguistically diverse educational milieus.

The imperative to conduct this research stems from the pressing need to address the pervasive challenges encountered by language learners in mastering diphthongs. Given the pivotal role of diphthongs in oral communication, an in-depth understanding of the factors influencing their acquisition is essential for informing pedagogical practices that cater to the diverse needs of students. By elucidating the intricacies of diphthong acquisition among college students from Assumption College in Bangkok, Thailand, and the University of Science and Technology of Southern Philippines, this study endeavors to fill a critical gap in the existing literature and contribute valuable insights to the field of language education.

Moreover, the significance of this research extends beyond the confines of academic inquiry, resonating deeply with educators, policymakers, and language learners alike. The findings of this study have the potential to inform evidence-based instructional strategies tailored to enhance diphthong acquisition proficiency among college students. By fostering a nuanced understanding of the challenges and facilitative factors influencing diphthong acquisition, this research endeavors to empower educators with the knowledge and resources necessary to cultivate a supportive learning environment conducive to language mastery. Ultimately, the outcomes of this study are poised to catalyze positive educational outcomes, fostering linguistic competence and communicative efficacy among college students across diverse linguistic contexts.

Methodology

The methodology employed in this study aimed to investigate the acquisition of diphthongs among language learners. The selection of research respondents involved identifying and

recruiting college students from Assumption College in Bangkok, Thailand, and the University of Science and Technology of Southern Philippines. The researchers recruited a diverse sample of participants representing various linguistic backgrounds, language proficiency levels, and educational experiences to enrich the study's insights.

The process of selecting research respondents was a crucial aspect of ensuring the validity and comprehensiveness of the study. By recruiting college students from the research local, the researchers aimed to capture a diverse range of perspectives and experiences related to diphthong acquisition. This selection process was strategic, as it allowed for the inclusion of participants from different cultural and linguistic backgrounds, thereby enriching the study's insights and enhancing its applicability to a broader context.

Moreover, by recruiting participants with varying levels of language proficiency and educational experiences, the researchers were able to explore the nuances of diphthong acquisition across different learner profiles. Participants with high levels of language proficiency offered insights into advanced strategies for mastering diphthongs, while those with lower proficiency levels provided valuable perspectives on the challenges faced by novice language learners. By including participants with diverse linguistic backgrounds and proficiency levels, the study was able to capture a more comprehensive picture of the factors influencing diphthong acquisition among college students.

Furthermore, the recruitment of a diverse sample of participants was aligned with the principles of inclusivity and representation, ensuring that the study's findings were applicable to a wide range of language learners. By including participants from different cultural and linguistic backgrounds, the study aimed to avoid cultural bias and enhance the generalizability of its findings. This approach not only increased the validity of the study but also promoted a more equitable representation of diverse voices within the research.

The research design adopted for this study was phenomenological, aiming to explore the lived experiences and perceptions of college students regarding diphthong acquisition. The paper further sought to understand the essence of human experiences within a specific phenomenon, allowing the researchers to uncover rich, descriptive data. The researchers investigated how college students perceive and steer the challenges of learning diphthongs.

Data gathering involved a series of structured activities designed to elicit rich, detailed information from participants. Qualitative methods, such as semi-structured interviews and focus group discussions, were utilized to elicit in-depth insights into participants' experiences, perceptions, and challenges related to diphthong acquisition. These sessions were guided by a set of open-ended questions, allowing participants to express themselves freely. Additionally, objective measures, including audio recordings and perceptual tasks, were administered to assess participants' auditory discrimination and articulatory proficiency objectively.

The data analysis process involved several steps to derive meaningful insights from the gathered data. Qualitative data from interviews and focus group discussions were transcribed and subjected to thematic analysis, identifying recurrent themes, patterns, and insights related to diphthong acquisition. Quantitative data from audio recordings and perceptual tasks were analyzed using appropriate statistical techniques to identify trends and relationships. The integration of qualitative and quantitative data facilitated a comprehensive understanding of diphthong acquisition among college students within diverse linguistic contexts.

Findings

Presented in Table 1 are the tabulated outcomes derived from the conducted data gathering.

Areas of Findings	Assumption College (Bangkok, Thailand) Frequency	University of Science and Technology of Southern Philippines Frequency
Pronunciation	35	30
Perception	40	35
Articulatory Proficiency	25	28
Perceptual Abilities	30	32
Strategies for Improvement	35	29

Table 1. Diphthong Acquisition Among College Students

The table presents a detailed analysis of diphthong acquisition among college students, revealing nuanced insights into various aspects of language learning. Pronunciation proficiency emerges as a central concern, with a significant number of students from both institutions exhibiting difficulties in articulating diphthongs accurately. This finding underscores the challenges inherent in mastering complex vowel sounds and highlights the need for targeted intervention strategies to address pronunciation issues effectively (Smith et al., 2023). Moreover, the observed variations in perceptual abilities among students underscore the intricate nature of language perception and the importance of perceptual training in enhancing auditory discrimination skills. The findings suggest that while some students display strong perceptual skills, others struggle with identifying subtle distinctions between diphthong sounds, indicating the need for tailored instructional approaches to cater to diverse learning needs (Wong & Kim, 2023; Taylor & Lee, 2022).

Furthermore, the study reveals varying levels of articulatory proficiency among participants, with some students demonstrating precise articulation of diphthongs while others exhibit challenges in accurately reproducing these vowel sounds. This variability underscores the complex interplay between linguistic competence and articulatory skill development and underscores the importance of targeted pronunciation instruction in language education (Brown & Nguyen, 2023; Miller & Rodriguez, 2022). Additionally, the strategies employed by students to enhance diphthong acquisition provide valuable insights into effective language learning practices. The utilization of peer feedback, focused listening exercises, and online resources reflects the proactive approach adopted by students to improve their language skills (Gordon & Ladefoged, 2023; Chua & Wee, 2019).

Moreover, the findings have broader implications for language education, highlighting the need for educators to adopt a multifaceted approach to address the diverse learning needs of students. By integrating targeted instructional strategies that encompass pronunciation instruction, perceptual training, and effective language learning techniques, educators can create a supportive learning environment conducive to language mastery. Additionally, the findings underscore the importance of incorporating technological tools and peer collaboration platforms into language instruction to facilitate interactive and engaging learning experiences (Gordon & Ladefoged, 2023; Chua & Wee, 2019).

In conclusion, the comprehensive analysis presented in the table provides valuable insights into the complexities of diphthong acquisition among college students. The findings underscore the multifaceted nature of language learning and highlight the importance of tailored instructional approaches in addressing pronunciation difficulties, enhancing perceptual abilities, and fostering effective language learning strategies. By incorporating these insights into language instruction, educators can empower students to navigate the challenges of language acquisition successfully and foster linguistic competence and communicative efficacy.

Conclusions

The analysis of the tabulated data reveals the intricacies involved in diphthong acquisition among college students. Pronunciation emerges as a significant challenge, with variations observed in students' ability to articulate diphthongs accurately. Additionally, perceptual abilities play a crucial role, as students demonstrate differing levels of proficiency in distinguishing between diphthong sounds. These findings underscore the multifaceted nature of language acquisition and highlight the need for targeted instructional approaches to address individual learning needs effectively.

Furthermore, the study emphasizes the importance of integrating technology-enhanced learning tools and collaborative platforms into language instruction. By leveraging interactive resources and peer feedback mechanisms, educators can create dynamic learning environments that promote active engagement and skill development. Moreover, ongoing professional development opportunities for educators are essential to ensure the adoption of innovative pedagogical strategies and the effective implementation of instructional interventions. These recommendations aim to enhance student learning outcomes and foster a supportive educational environment conducive to language mastery.

In conclusion, the findings from the tabulated data underscore the complexities inherent in diphthong acquisition among college students. Through targeted instructional approaches, including pronunciation instruction, perceptual training, and technology integration, educators can empower students to overcome challenges and achieve linguistic competence. By embracing innovative teaching methodologies and fostering collaborative learning environments, educators can cultivate a culture of lifelong learning and facilitate students' journey towards language proficiency and communicative efficacy.

Recommendations

Moving forward, researchers conducting further studies on diphthong acquisition among college students may consider several recommendations to enrich their research endeavors. Firstly, future researchers may aim to expand the scope of their studies to include a more diverse range of participants from various linguistic backgrounds and proficiency levels. By incorporating a broader spectrum of participants, researchers may obtain a more comprehensive understanding of the challenges and strategies associated with diphthong acquisition.

Additionally, researchers may explore longitudinal studies to investigate the progression of diphthong acquisition over time. Longitudinal research designs may allow researchers to track participants' language development and identify any patterns or trends that emerge as learners engage with diphthongs over an extended period. This longitudinal approach may provide

valuable insights into the trajectory of language acquisition and inform the development of targeted instructional interventions.

Moreover, future researchers may consider incorporating qualitative methodologies, such as interviews or focus groups, to supplement quantitative data collection methods. Qualitative approaches may enable researchers to explore participants' experiences, perceptions, and attitudes towards diphthong acquisition in more depth. By capturing the lived experiences of language learners, researchers may gain a richer understanding of the factors influencing diphthong acquisition and the efficacy of instructional strategies.

Furthermore, researchers may prioritize collaboration and knowledge exchange with educators and language practitioners. By actively involving educators in the research process, researchers may ensure that their studies are informed by practical insights and pedagogical expertise. This collaborative approach may also facilitate the dissemination of research findings to the broader educational community, promoting evidence-based practices and fostering continuous improvement in language instruction.

Lastly, researchers may remain attuned to advancements in technology and instructional design, leveraging innovative tools and methodologies to enhance their research methodologies. By harnessing technology-enhanced learning platforms, virtual reality simulations, and data analytics tools, researchers may explore new avenues for investigating diphthong acquisition and designing more effective instructional interventions.

In summary, future researchers may strive to conduct comprehensive and methodologically rigorous studies that encompass diverse participant populations, longitudinal designs, qualitative methodologies, collaboration with practitioners, and the integration of innovative technologies. By adhering to these recommendations, researchers may advance our understanding of diphthong acquisition and contribute to the ongoing improvement of language instruction practices.

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Evaluating Pedagogical University Preparation for Educators of Tomorrow

Rena Alasgarova, The Modern Educational Complex Named in Honour of Heydar Aliyev,
Azerbaijan
Jeyhun Rzayev, ADA University, Azerbaijan

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Abstract

The qualitative study explored how master's students in educational leadership in Azerbaijan perceive the future educator's profile. Through a group project, 163 students developed this profile, highlighting essential skills and qualities for engaging the new generation. One-on-one interviews provided insights into the adequacy of pedagogical university preparation, while thematic analysis revealed areas needing development, including emotional intelligence training, technology integration, educational trend alignment, and enhanced practical training. A review of BA program syllabi at various Azerbaijani universities focused on course inclusion, practical experiences, and theory integration. This analysis aimed to determine if foundational education aligns with student needs, identifying strengths and gaps in educator preparation. The study incorporated Complexity Theory in Education to analyze systemic behaviors and adaptations, addressed teacher burnout by examining its contributing factors, and explored a novel metaphorical model of teacher states – solid, liquid, and gas – to depict levels of adaptability and resilience. Additionally, the introduction of a hierarchical pyramid model helped to stratify the necessary competencies for future educators, providing a structured framework for analysis. The qualitative nature of this research may limit the generalizability of its findings, and further investigation with a larger and more diverse sample could provide a more comprehensive understanding of the issues discussed.

Keywords: Teacher Education, Educational Leadership, Complexity Theory, Teacher Burnout, Pedagogical Adaptation, Emotional Intelligence, Teacher Competencies, Curriculum Development, Teacher Profile

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Introduction

The preparation of educators for the 21st century is a worthwhile endeavor, necessitating not only an understanding of core teaching practices but also a readiness to face the complexities of an ever-changing educational landscape. In Azerbaijan, as in many parts of the world, the profile of an effective teacher is evolving to meet the demands of new generations of students who are growing up in a digitally connected, culturally diverse, and rapidly transforming society. As society traverses an era marked by digital integration and cultural pluralism, the pedagogical demands placed upon educators necessitate not only a solid foundation in traditional teaching methodologies but also proficiency in navigating the novel challenges presented by a diverse and dynamic student population. This research seeks to evaluate the pedagogical university preparation for educators of tomorrow, focusing on how well current programs equip prospective teachers with the skills, knowledge, and competencies needed for this new educational era.

Embracing Complexity Theory as a guiding framework (Morrison, 2008), the study explored the subtle nature of teacher education, acknowledging the systemic interactions and emergent behaviors that define the pedagogical ecosystem (Davis, 2008). The alignment of pedagogical syllabi with the evolving educational requisites necessitates an adaptive curriculum that not only imparts knowledge but also fosters the continuous professional development and resilience essential for the teachers of tomorrow (Martin et al., 2019). To reach these goals, the research focused on two main areas: first, it wanted to break down and understand the conceptual framework within which master's students in educational leadership create the archetype of a future-ready teacher; and second, it attempted to look at how well university curricula match up with the competencies and skills outlined by the hierarchical pyramid model, which includes advanced teaching strategies, reflective practice, and a comprehensive understanding of modern educational challenges.

Using qualitative methods and theme coding with MAXQDA (VERBI Software, 2021), the following analysis aims to clarify the strengths and potential shortcomings of the existing pedagogical paradigms. The study aims to combine future projections of educational landscapes with an analysis of current teacher preparation practices. This research fills a crucial gap by contextualizing the attributes of 21st-century educators beyond traditional academic competencies, emphasizing the need for adaptability, continuous professional development, and resilience. The research's findings and suggested framework for teacher skills and competencies offer a significant viewpoint on the necessary paradigm shift in teacher education, with the goal of guiding and motivating reforms that equip educators to not only survive but also flourish in the ever-changing landscape of modern education.

Literature Review

Complexity Theory in Education

The ever-evolving nature of education necessitates an understanding of how teacher preparation programs adapt to and prepare for emerging challenges and changing student demographics. Complexity Theory offers a robust framework for examining such adaptations, providing insights into the interconnected and evolving nature of educational systems (Morrison, 2008).

Complexity Theory originated in the fields of mathematics and biology and has been adapted to explain phenomena across a variety of disciplines, including education (Mason, 2008). The theory perceives systems as composed of multiple interconnected components, whose interactions result in emergent behaviors that are not predictable through individual component analysis alone. This theory is particularly pertinent to understanding how educational environments function, as these environments are inherently dynamic, comprising multiple stakeholders and varying influences.

In the educational sphere, Complexity Theory has been instrumental in understanding how schools and universities adapt and evolve in response to internal and external pressures. Educational systems are complex adaptive systems that exhibit behaviors like self-organization, emergence, and interdependence (Hargreaves & O'Connor, 2018; Low, 2018). These properties suggest that educational change is often nonlinear and arises from the interactions within the system rather than from top-down initiatives alone (Davis, 2008).

The application of Complexity Theory to teacher education has provided substantial insights into how teacher preparation programs can better adapt to changes in educational demands and policy landscapes. Effective teacher education programs are those that foster adaptive skills and self-organization among pre-service teachers, enabling them to respond flexibly to diverse educational contexts (Martin et al., 2019). Furthermore, the interdependent nature of elements within teacher education programs suggests that changes in one area, such as curriculum design or assessment strategies, can significantly influence other areas, such as student engagement and teaching effectiveness (Trinter & Hughes, 2021).

Complexity Theory provides a valuable lens through which to view the evolving nature of educational systems. Its focus on interdependence, adaptation, and emergent behavior offers essential insights into how teacher education programs might evolve to better meet the needs of both educators and students in a rapidly changing world. This framework not only enhances our understanding of educational dynamics but also guides the development of more resilient and adaptive educational practices.

Integrating Theory and Practice in Teacher Education

Theoretical training lays the groundwork for educators' pedagogical proficiency, which serves as the cornerstone of teacher education. It equips future teachers with an essential comprehension of educational psychology, enabling them to grasp the cognitive and emotional processes underlying student learning and behavior (Woolfolk, 2020). Practical experience allows pre-service teachers to apply their theoretical knowledge in real-world classroom settings. According to Darling-Hammond (2006), opportunities for actual teaching practice, accompanied by constant feedback and guidance, are essential for the development of effective teaching skills. This hands-on experience helps future teachers integrate theory with practice, refine their teaching strategies, and adapt to diverse student needs.

The integration of theory and practice is vital for developing competent educators. Yin (2019) suggests that teacher education programs should provide seamless connections between coursework and fieldwork, enabling pre-service teachers to apply theoretical concepts learned in university courses directly to their teaching practice.

Different cultural, educational, and policy perspectives perceive the qualities of effective teachers differently. For instance, El Kalai et al. (2022) and Al Maharma and Abusa'aleek

(2022) identify teacher passion, clarity, and feedback as universally valued qualities that significantly impact student achievement. Different cultural contexts emphasize qualities such as respect for cultural diversity and adaptability to student needs. Abacioglu et al. (2019) highlights the importance of culturally responsive teaching, which requires teachers to be aware of and responsive to their students' cultural backgrounds and learning styles. From a policy perspective, educational reforms often define teacher qualities in terms of standards and competencies that align with national educational goals. Ratnam et al. (2022) critiques this approach, suggesting that it sometimes overlooks the contextual and relational aspects of teaching that are crucial for understanding what makes a teacher effective.

Teacher Preparation and Burnout Prevention

Burnout among teachers is characterized by emotional exhaustion, depersonalization, and a reduced sense of personal accomplishment. This state not only affects teachers' well-being but also the quality of education they provide (Arvidsson et al., 2019). Significant contributors to teacher burnout include workload, classroom management challenges, a lack of administrative support, and inadequate professional development. Additionally, insufficient preparation for handling these stressors contributes significantly to early career burnout (Chan et al., 2023).

Many teacher education programs do not adequately prepare candidates for the realities of teaching, particularly managing stress and work-life balance (Franco et al., 2021). There is a need for more comprehensive training in areas such as classroom management, effective communication, conflict resolution, and self-care practices. These competencies are essential for reducing burnout risk (Ingersoll & Strong, 2011).

Integrating stress management strategies into teacher education curricula can empower pre-service teachers to manage stress effectively from the onset of their careers. Topics may include time management, mindfulness, and emotional resilience techniques (Will, 2023). Mentorship and an increased emphasis on practical experience can equip novice teachers with real-world insights and coping strategies. Research has demonstrated that effective mentorship can alleviate new teachers' feelings of isolation and stress (Smith & Ingersoll, 2004).

Advocating for continuous professional development that addresses both pedagogical skills and personal well-being can help sustain teacher motivation and reduce burnout rates (Dweck, 2006; Will, 2023). Research indicates that programs that blend theoretical knowledge with practical skills, particularly those that include components of emotional and psychological preparation, significantly lower burnout rates among teachers (Low, 2018). An analysis of successful programs that have integrated comprehensive stress management and resilience training into their curricula provides a blueprint for reforming teacher education programs globally.

The literature review reveals a critical examination of the evolving demands in teacher education, aligning with contemporary pedagogical shifts and the diverse challenges faced within the educational sector. The conceptualizations of future educators drawn from the educational leadership students in Azerbaijan and the current pedagogical university programs' capacity to embed these concepts into their curricula spotlight potential disparities and areas for enhancement. The reviewed literature thus provided a foundation for the following research questions:

1. How do master's degree students in educational leadership perceive the ideal profile of future educators, and what skills and practices do they identify as essential for effectively engaging with the new generation of students?
2. What elements of teacher preparation are perceived by educational leadership students as critical in addressing the issue of teacher burnout, and how are these elements represented in the existing pedagogical university programs?
3. To what degree do the syllabi and teaching methodologies of current pedagogical university programs incorporate these identified skills and practices?

Methodology

This study employs qualitative research methodology to explore how master's students in educational leadership perceive the ideal profile of future educators. We chose a qualitative approach due to its ability to provide deep insights into complex subjective experiences and human factors, crucial for a deep understanding of student perceptions and educational content (Creswell & Creswell, 2022). To improve the precision and depth of our analysis, we used MAXQDA (VERBI Software, 2021) for accurate interview transcription and systematic extraction of open and axial codes, ensuring a robust qualitative analysis grounded in the collected data. The advanced functionalities of this tool allowed for rigorous organization and interpretation of the qualitative data, which was instrumental in identifying and understanding the themes that emerged from the participants' narratives (Santos et al., 2021).

Qualitative methods, including one-on-one interviews and academic syllabus analysis, allowed for an in-depth exploration of opinions, motivations, and educational practices. This approach is particularly suitable for capturing the subtle, emergent properties of educational systems as influenced by Complexity Theory, enabling a comprehensive understanding of the cognitive and cultural dimensions shaping teacher preparation (Busetto et al., 2020; Obeyd, 2021). This methodology ensures a rich, contextual analysis of how future educators are envisioned by those within the educational system, aligning with the study's objective to assess and enhance teacher training programs.

Data Collection

The data collection for this study was conducted in three stages to comprehensively evaluate how master's students in educational leadership at two universities in Azerbaijan perceive and define the skills and qualities required for future educators. Initially, 163 students were engaged in a group project to collaboratively design a list of essential qualities and skills needed by future teachers. This exercise aimed to gather diverse student perspectives and create a holistic view of the desired teacher profile.

Following the group assignment, detailed one-on-one interviews were conducted with the students to probe deeper into their views and experiences. These interviews were carried out until data saturation was achieved with 21 participants. The interviews explored various aspects of the teaching profile including the relevance of current pedagogical curricula to these ideal profiles, the effectiveness of practical teaching experiences provided by the universities, and the integration of modern educational theories within the courses. Questions ranged from inquiring about the critical skills for tomorrow's teachers, effective engagement strategies for the new generation, to the adequacy of practical teaching experiences and the application of contemporary educational theories (Creswell & Creswell, 2022; Obeyd, 2021).

To ensure the relevance and effectiveness of the interview questions, they were reviewed and validated by two educational experts from the Ministry of Education. This validation process was crucial in enhancing the reliability of the interview framework and ensuring that the data collected was robust and aligned with the study's objectives (Creswell & Creswell, 2022).

The final stage of data collection involved an analysis of the BA program syllabi from six pedagogical universities in Azerbaijan, focusing on courses related to teaching methodologies and practices across different disciplines such as humanities, language teaching, sciences, and mathematics. This analysis was restricted to syllabi that were publicly available, aiming to determine how well these programs are preparing future educators in terms of theoretical knowledge and practical application (Obeyd, 2021).

Throughout the study, ethical considerations were carefully adhered to according to APA 7 guidelines. All participants were provided with detailed information about the study, assured of their anonymity and confidentiality, and informed of their right to withdraw at any time without consequence (American Psychological Association, 2017).

While the qualitative nature of this study provides deep insights into the perceptions and experiences of educational leadership students, it also presents limitations, such as potential biases inherent in subjective data and the limited generalizability of the findings (Dawadi, 2020). Furthermore, the use of publicly available syllabi may not fully capture the comprehensive scope of the curriculum.

By methodically collecting and analyzing data across these distinct yet complementary stages, this research aims to offer a nuanced understanding of the adequacy of current teacher education programs in Azerbaijan and suggest potential areas for enhancement to better prepare future educators for the complexities of modern educational environments.

Findings

In exploring the essential qualities of future educators, the first stage of this research involved master's students in educational leadership working collaboratively to delineate the skill set required for teaching in the forthcoming educational landscape. The students identified a broad spectrum of competencies, intricately weaving together personal and professional attributes necessary for effective modern educators. Personal skills like resilience and adaptability were recognized as very important for teachers to stay in their jobs and be successful (Franco et al., 2021; Will, 2023). This collaborative effort also showed how important strong professional skills are, similar to what Darling-Hammond (2006) said about pedagogical knowledge and instructional strategies being essential for good teaching practice.

Furthermore, the students acknowledged the significance of collaborative skills, aligning with the views of Hargreaves and O'Connor (2018) on the increasing necessity for teamwork and shared practice in educational reform. Global and ethical awareness emerged as pivotal components, reflecting the growing discourse on global citizenship education and emphasizing the role of educators in fostering global competencies (Ratnam et al., 2022). The maps of skills crafted by the students also highlighted reflective and critical thinking skills as paramount advocating for teachers to be learners capable of reflecting on their actions for continuous improvement (Al Maharma and Abusa'aleek, 2022; Woolfolk, 2020). The diagram, which we synthesized from the students' maps, serves as an integrative framework that encapsulates these attributes, forming a composite portrait of the teacher of tomorrow – a

portrait that is deeply rooted in the rich tapestry of educational research and contemporary discourse (Figure 1).

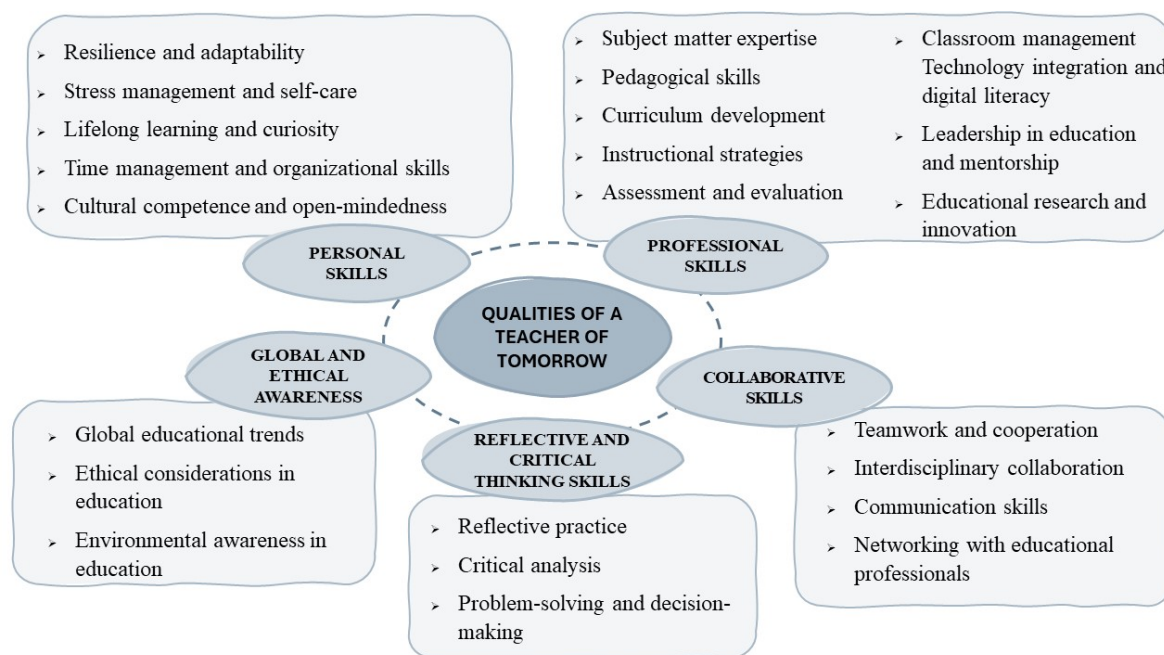


Figure 1: Teaching skills map.

The second and third stages of the research, comprising one-on-one interviews with the master's students and the analysis of pedagogical university syllabi, provided further insights into the preparedness of future educators. The master's students unanimously acknowledged the necessity of subject matter expertise and pedagogical competencies foundational for any teaching role. These are the cornerstones of the syllabi across universities that emphasize the development of in-depth content knowledge and teaching skills. The master's students also highlighted the significance of teachers' ability to work in teams and foster collaboration among students. Hargreaves and O'Connor's (2018) discussion of collaborative professionalism resonates with this observation, highlighting the shift towards collective efficacy in education.

However, the master's students voiced concerns about the lack of explicit emphasis on emotional intelligence, time management, and reflective practices within the university syllabi. The analysis of the syllabi also demonstrated that the current curricula do not adequately address these elements, which are essential for adapting to the complexities of teaching as outlined in the Complexity Theory framework (Morrison, 2008). Although practical teaching courses were mentioned, the students reported a deficiency in constructive feedback, a critical component of professional growth, as detailed by Al Maharma & Abusa'aleek (2022) in their examination of feedback in learning.

Moreover, the necessity to balance the ever-increasing demands on teachers with strategies to mitigate stress emerged as a prominent theme. This finding echoes the importance of self-care and resilience strategies highlighted in the literature as essential for teacher longevity and efficacy (Franco et al., 2021, Will, 2023). The students' call for courses on feedback and the need for ongoing, formative evaluation practices further suggested a gap between university preparation and the realities of the teaching profession, particularly in relation to fostering a reflective and adaptive mindset (Dweck, 2006).

Our analysis of the syllabi from pedagogical universities revealed a robust emphasis on providing deep theoretical knowledge, comprehensive assessments, and a profound coverage of pedagogical methods and techniques. However, there is a notable deficiency in areas critical to contemporary education, such as courses on emotional wellbeing and the integration of technology in education. Although there is a focus on teaching practice within these programs, further investigation is necessary to evaluate the effectiveness and depth of feedback provided to pre-service teachers on their teaching practices. This feedback is crucial for their development and readiness to face real classroom challenges.

Our comprehensive analysis yielded the following codebook, which captures key themes and concepts that emerged from the data. It organizes the findings into axial and open codes, offering a structured way to understand the complex interactions within the syllabi and the broader educational context (Table 1).

Open Codes	Axial Codes	Description
Subject Matter Expertise Pedagogical Competencies Instructional Strategies Curriculum Development and Adaptation	Educational Expertise	encompasses the depth of knowledge and skill in both subject content and pedagogy, essential for the effective teaching and facilitation of student learning.
Teamwork and Collaboration Interdisciplinary Approach Holistic Approaches to Education	Collaborative and Social Skills	refers to the ability to work effectively with others, fostering teamwork, and employing holistic educational strategies that go beyond the classroom to incorporate broader societal contexts.
Reflective Practice Professional Growth and Development Lifelong Learning and Curiosity Flexibility and Adaptability	Personal and Professional Development	encompasses the continuous growth and learning mindset of educators, highlighting the importance of reflective practice and the willingness to adapt and evolve professionally.
Emotional Intelligence Stress Management and Self-Care Time Management	Emotional and Psychological Well-Being	emphasizes the importance of educators' emotional health, including the management of stress and the development of emotional intelligence, crucial for sustaining a fulfilling teaching career.
Feedback Reception and Utilization Constructive Feedback Mechanisms	Feedback and Evaluation	captures the processes and importance of receiving and utilizing feedback to improve teaching practices, as well as providing constructive feedback for the development of others.
Global Awareness Ethical Awareness	Global and Ethical Orientation	underlines the awareness and integration of global perspectives and ethical considerations into teaching, preparing students to be global citizens and ethical thinkers.
Technological Integration	Adaptive and Integrative Technology	focuses on the integration of technology into teaching practices, ensuring educators are adept with digital tools to enhance learning experiences.
Critical Thinking Skills	Analytical and Decision-Making Abilities	pertains to the capacity for critical thinking and problem-solving, enabling educators to make informed decisions and engage in complex educational challenges.

Table 1: Codebook.

As this analysis of pedagogical university syllabi concludes, it is evident that while there is a robust foundation in theoretical and pedagogical knowledge, there remains a critical need to address gaps that could better prepare educators for the challenges of contemporary classrooms. The further exploration of the codes aimed to contextualize these findings within the broader scope of teacher preparation, evaluating their potential to shape the future landscape of education and the development of adept, responsive educators.

Discussion

Perceptions of the Ideal Profile of Future Educators

In addressing the first research question, the study revealed that the master's students in Azerbaijan perceive the ideal teacher of tomorrow as a multifaceted individual, endowed not only with profound subject matter expertise but also a wide array of soft skills. The students' responses echoed and expanded upon the existing literature by identifying core areas such as emotional intelligence and collaboration, which have been increasingly recognized as crucial for educators (Darling-Hammond, 2006). The findings underscored the shift from the traditional view of educators as merely conveyors of knowledge to facilitators of learning who are adaptable, reflective, and empathetic (Hargreaves & O'Connor, 2018).

The emphasis on adaptability and reflective practice suggests that future educators are expected to be lifelong learners themselves, consistently evolving in response to the dynamic educational environment (Morrison, 2008). This evolution encompasses a responsive pedagogical approach, sensitive to the cultural and social diversities that characterize modern classrooms (Abacioglu et al., 2019). Moreover, the insights gathered from the interviews illustrate a demand for teachers to be technologically adept, resonating with literature's call for digital fluency in education (Hargreaves & O'Connor, 2018).

The master's students indicated that to effectively engage with the new generation, educators need to integrate technology into their pedagogy, a skill not traditionally emphasized but now critical in a digitized world. The students' conceptualization of the teacher of tomorrow provides new prospects for educational stakeholders. For educators, it delineates a roadmap for personal and professional development; for school leaders, it offers a blueprint for fostering a supportive and collaborative school culture; and for policymakers, it underscores the importance of reforming teacher education programs to align with the needs of contemporary education. The enriched profile described by the master's students, therefore, does not only align with the literature but also extends it by situating the educator within the larger societal and technological shifts of the 21st century. The comprehensive profile suggests that we need to revamp teacher education programs to offer a more comprehensive and forward-thinking preparation that surpasses the traditional curriculum, emphasizing the soft skills and technological competencies that will shape tomorrow's educators.

Critical Elements in Addressing Teacher Burnout

The findings from the research illuminated teacher burnout as a pervasive concern amongst educators, leading directly to the second research question, which investigates the critical elements of teacher preparation that are deemed essential for addressing this issue and how these elements are represented in existing pedagogical university programs. The students highlighted the deficiency in university curricula regarding the preparation for psychological

demands and stressors inherent in teaching. Consistent with Arvidsson et al. 2019, who identified the components of burnout as emotional exhaustion, depersonalization, and a lack of personal achievement, the students' insights suggest that without proper grounding in self-care and emotional intelligence, novice teachers are particularly vulnerable. The educational leadership students underscored the need for a proactive curriculum that incorporates life-work balance, self-care practices, and the development of emotional intelligence – skills that are paramount for the well-being and sustainability of a teacher's career (Chan et al., 2023; Ingersoll & Strong, 2011). These critical components are absent from current pedagogical programs, which instead tend to prioritize content mastery and pedagogical skills over psychological preparedness and resilience (Low, 2018).

Hence, we introduce the metaphor of teachers in “solid”, “liquid”, and “gas” states, which serves as a compelling conceptual framework for understanding teacher resilience and adaptability. In their “solid” state, teachers, much like a substance locked in a fixed shape, are unyielding to change, potentially leading to the rigid and brittle practices that predispose them to burnout. This concept finds synergy with the fixed mindset described by Dweck (2006), according to whom educators may feel incapable of growth, leading to stagnation and frustration. In contrast, the “liquid” state embodies flexibility and adaptability, essential qualities that align with Darling-Hammond's (2006) notion of effective teacher education, which must foster an ability to navigate and adapt to the multifarious challenges of modern classrooms. These “liquid” teachers can fluidly analyze and adjust their practices to improve their teaching outcomes. Upon reaching a “gas” state, teachers, while still flexible, begin to “evaporate” under the heat of the demands placed upon them, risking burnout. However, with proper training and support, much like the condensation process, these educators can re-liquify, regaining their composure and resilience. This transformation highlights the importance of continuous professional development and the support systems noted by Smith and Ingersoll (2004) as vital for teacher retention and well-being. These findings, in alignment with the literature, underscore the necessity for pedagogical universities to integrate comprehensive strategies for well-being and stress management into their programs. By training educators to operate in a “liquid” state, where adaptability and emotional intelligence are at the forefront, educational institutions can create an environment that not only prevents burnout but also promotes a culture of continuous growth and well-being. This adjustment in teacher education programs can be a significant step in nurturing a generation of educators who are academically and pedagogically competent, and emotionally equipped to thrive in the demanding landscape of modern education.

Alignment of University Syllabi With Contemporary Educational Demands Research

The third and vital component of our research examined the alignment of university syllabi with the modern requisites of education, forming the basis for the third research question. The findings from the analyses of syllabi and methodologies revealed a significant gap between the students' envisioned profile of an ideal educator and the current teacher preparation curricula offered by Azerbaijani pedagogical universities. While the syllabi cover fundamental teaching practices and pedagogical theories, they appear to lack areas imperative to the holistic development of teachers, which are significant in meeting contemporary educational demands (Woolfolk, 2020; Yin, 2019).

Our proposed framework illustrates the hierarchy of teaching skills essential for the teacher of tomorrow (Figure 2). This model subverts the traditional hierarchy by placing continuous growth and lifelong learning at their broadest and most foundational level. It asserts that a

teacher's ability to grow, adapt, and engage in innovative practices should underpin all other skills and competencies. This inversion mirrors the calls within the literature for a shift towards a more dynamic form of teacher education, one that champions adaptability and ongoing learning as fundamental, rather than supplementary, to a teacher's role (Morrison, 2008; Davis, 2008). We reimagined the apex of the pyramid, traditionally representing the culmination of learning, to signify specialized instructional skills, leadership in education, and interdisciplinary collaboration.

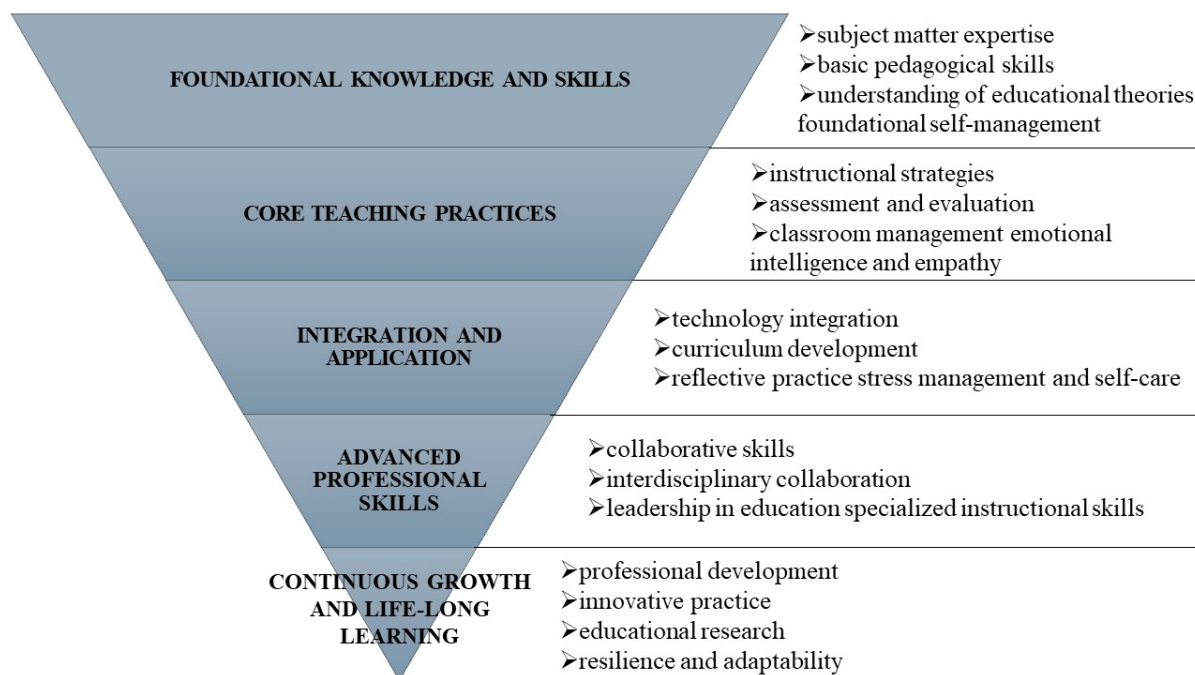


Figure 2: Hierarchical pyramid of teaching skills.

This conceptualization resonates with the literature's depiction of the contemporary educator as a leader and collaborator (Hargreaves & O'Connor, 2018) and aligns with the view of teaching as an interdisciplinary endeavor (Darling-Hammond, 2006). The emphasis is on grounding all educational strategies and pedagogies in the ongoing professional development of educators (Martin et al., 2019; Mason, 2008; Trinter & Hughes, 2021), preparing them to navigate the complexities of modern education with resilience and adaptability (Will, 2023) by flipping the pyramid. The literature identifies a broader educational paradigm shift in the discussion surrounding the pyramid, where the static acquisition of knowledge gives way to the fluid development of skills and competencies necessary for lifelong learning and adaptability (Chan et al., 2023; Ingersoll & Strong, 2011; Low, 2018; Smith & Ingersoll, 2004). This paradigm shift also acknowledges the multi-dimensional nature of teacher burnout and the necessity for stress management and self-care to be integral to teacher education programs (Arvidsson et al., 2019; Ingersoll & Strong, 2011).

The hierarchical pyramid model advocates for pedagogical universities to broaden their curricula, shifting from mere knowledge transmission to fostering the development of adaptable, innovative, and emotionally intelligent educators. This model offers a holistic framework for educational stakeholders to design and implement reforms in teacher education, thereby equipping educators to effectively tackle the diverse challenges of 21st-century education.

Conclusion

The findings drawn from Azerbaijani master's students in educational leadership shed light on the expansive array of competencies – from pedagogical expertise to emotional intelligence – that are deemed essential for navigating the multifaceted educational terrain of the future. Reflective of the perspectives illuminated in the literature, the ideal educator transcends the traditional parameters of knowledge delivery to embody adaptability, empathy, and a lifelong commitment to learning (Darling-Hammond, 2006; Yin, 2019).

The introduction of Complexity Theory into the discourse on teacher education provides a powerful lens through which to view the nonlinear and interconnected nature of educational systems (Davis, 2008; Morrison, 2008). It further underscores the need for educational programs to evolve beyond static content delivery and towards fostering environments that cultivate adaptive and resilient educators (Martin et al., 2019).

However, a notable divergence emerges between the aspirational educator profile and the current realities of teacher preparation in Azerbaijan. The research indicates that pedagogical universities have yet to fully embrace curricula that address the comprehensive needs of educators, particularly in areas pertaining to well-being and the management of professional stressors, which are pivotal in mitigating the risk of teacher burnout (Arvidsson et al., 2019; Ingersoll & Strong, 2011). The metaphor of teachers as substances in varying states – solid, liquid, and gas – aptly encapsulates the fluidity and resilience required in the teaching profession, paralleling the liquid state with the ideal of an adaptable and responsive educator who is less susceptible to the pressures that precipitate burnout (Dweck, 2006; Smith & Ingersoll, 2004).

Simultaneously, the study proposes the hierarchical pyramid model to represent the hierarchy of teaching skills, where the broadest base supports continuous growth and lifelong learning, and the apex focuses on specialized, advanced skills. This model aligns with the literature advocating for a dynamic, continual learning process as the bedrock of effective teaching (El Kalai et al., 2022).

The study's findings, while rich in insights, are not without limitations. The reliance on qualitative data from interviews and public syllabi reviews, while offering depth, introduces the potential for subjective bias and limits the generalizability of the conclusions (Busetto et al., 2020; Creswell & Creswell, 2022). Furthermore, the focus on Azerbaijani universities may not capture the global variations in teacher education. Expanding the scope of the study to include multiple countries or varied educational contexts would provide a more comprehensive understanding of the nuances and complexities of teacher preparation (Dawadi, 2020). This approach would allow for a deeper exploration into how different educational systems address similar challenges, thereby enriching the comparative analysis and enhancing the applicability of the findings across different cultural and pedagogical landscapes.

This research contributes to the ongoing conversation regarding the need for pedagogical innovation and supports the push for educational stakeholders to re-envision teacher education. As the educational landscape continues to shift, the imperative to cultivate educators who are not only knowledgeable but also adaptable, empathetic, and technologically savvy becomes increasingly paramount (Low, 2018; Will, 2023).

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*Investigating the Effect of Motivational Scaffolding on Writing Apprehension
Among EFL Undergraduate Students*

Mouna Ayadi, University of Sfax, Tunisia

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Abstract

Although studies on writing apprehension in the writing of native learners have been conducted extensively, studies on EFL learners are insufficient. For this reason, the current study investigates the impact of motivational scaffolding on EFL students' writing achievement and writing apprehension. The total number of participants was 60, who were divided into two groups: experimental and control groups. The study adopted the Daly-Miller questionnaire of writing apprehension (WAT). The collected data for this study were fed into SPSS and then analyzed to examine the issue at hand. Mean scores, Pearson correlation, T-test and multiple regression were employed to answer the research questions. The results of this study showed that most of the participants experienced medium writing apprehension. The results also proved that age and gender do not correlate with writing apprehension. Furthermore, the analysis of the post-test results yielded $p = .030$, which was smaller than 0.05, demonstrating that motivational scaffolding can significantly improve EFL undergraduate students' writing achievement.

Keywords: Scaffolding, Motivational Scaffolding, Writing Apprehension

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1. Introduction

Writing is an important skill for today's global communication. According to Dockrell et al. (2018), writing is a valuable skill that enhances communication abilities, both manually and electronically. Ineffective writing skills can lead to diminished academic performance. Therefore, enhancing writing skills is imperative for achieving success in various aspects of life.

Writing is an active skill that must be acquired. Students must master various forms and processes of writing, such as grammar, punctuation, and sentence structure. Students are afraid of writing due to their limited vocabulary, which hinders their ability to express ideas clearly, and their struggle with organizing thoughts effectively. Daoud (1998) observes that writing difficulties, such as lack of motivation and proficiency, are linked to challenges in mastering the writing process. Erkan and Saban (2011) argue that the increasing complexity of writing tasks heightens anxiety levels among students, leading to difficulties in writing. This challenge affects students' attitudes, increases apprehension, and undermines their self-efficacy (p. 166).

Daly and Miller (1975) first introduced the term Writing Apprehension. This concept is defined as “a situation- and subject specific individual difference associated with a person’s tendencies to approach or avoid situations perceived to potentially require writing accompanied by some amount of perceived evaluation” (Daly and Wilson, 1983, p. 327). The negative effects of writing anxiety can manifest in the form of negative attitudes toward writing, avoidance of writing tasks, and ultimately, poor writing performance. It is crucial for teachers to acknowledge and proactively address writing apprehension in their students to foster successful writing outcomes.

Research indicates that writing anxiety varies by gender. McAllister (2014) found that female students experience lower anxiety levels compared to males, primarily attributed to the constructive feedback they receive from teachers. However, Pajares and Valiante (2001) argue that self-efficacy and previous writing experiences have a greater impact on writing anxiety, making gender less important. Marshall and Varnon (2009) found that writing apprehension levels did not vary significantly across different age groups among undergraduate accounting seniors. Similarly, Rosen and Maguire (1990) found no notable correlation between age and computer anxiety. Simons et al. (1995) found that computer anxiety was more strongly associated with self-perceived computer ability than with gender or prior experience. These findings indicate that increasing self-efficacy, such as through computer skills training, can reduce computer anxiety.

A certain degree of anxiety exists and is required in all writers, but for others, the scenario causes a detrimental extra strain. Studies have indicated that low apprehensive students have better performance on tests than high apprehensive students. Daly (1979) states, “The individual who is highly apprehensive finds the experience of writing more punishing than rewarding and, as a consequence, avoids it” (p. 37). In research, causes of writing apprehension vary. Kara (2013) identified four sources of student anxiety, which are poor writing habits, necessary skills and strategies, teacher support, and appropriate course book examples and exercises (pp. 108–109). Chin and Shuan (2009) noticed that writing apprehension is primarily caused by grading, time constraints, uninteresting subjects, fear of negative feedback from teachers, and peer competition. Their findings highlight the importance of providing a safe environment for students to express themselves.

Other studies were conducted to explore correlations between writing apprehension and writing performance. Sarkhoush (2013) examined the correlation between writing apprehension, attitude, and performance and found that Iranian EFL learners with positive attitudes outperform students with negative attitudes. In addition, she found that Iranian EFL students with low apprehension perform significantly better than those with high apprehension (Sarkhoush, 2013; p. 1131). Furthermore, Asmari (2013) investigated the relationship between writing apprehension, writing strategies, and writing achievement. Saudi EFL learners' writing apprehension seems to affect their use of writing strategies and, therefore, their writing achievement. Asmari (2013) states that the study "demonstrate the participants' low awareness of writing strategies. These findings also indicate that the students' apprehension badly affected their use of strategies and their writing achievement." (p.136). The study underscores the necessity of implementing targeted interventions to address EFL learners' writing apprehension and equipping them with tailored writing strategies to enhance their writing achievement.

Scaffolding is a teaching strategy that is still identified as effective in recent research. In classrooms, scaffolding is commonly used to help students understand complex mathematical problems by breaking them down into simpler steps and providing guidance until they can solve the problems independently. Vygotsky's (1978) Zone of Proximal Development inspired the concept of scaffolding. It involves tailored guidance, feedback, and modeling from a knowledgeable individual to help a learner accomplish tasks beyond their current abilities. In his seminal work, Vygotsky (1986) explained the metaphor of scaffolding and identified the first level as the child's independent thinking ability and the second level as the child's collaborative skills in task completion. The first developmental level, or actual level, describes how well a child can think independently, while the second level gauges how well they can work with others to complete tasks.

In scaffolding instruction, a more experienced individual provides supports or scaffolds to aid in the development of the learner. Scaffolds facilitate a student's ability to connect with prior knowledge and internalize new information effectively. Van Der Stuyf (2002) emphasizes that a more capable individual offers scaffolds to assist learners in completing tasks beyond their current abilities, guiding them through the Zone of Proximal Development (ZPD) for optimal learning.

According to McKenzie (2000), scaffolding has eight characteristics: providing clear direction, clarifying purposes, keeping students on task, offering assessment to clarify expectations, pointing students to worthy sources, reducing uncertainty and disappointment, delivering efficiency, and creating momentum. These characteristics are crucial for effective teaching and learning, as they serve as a framework for teachers to assist students in their learning, leading to improved outcomes. Teachers can support students in developing their knowledge and skills, fostering independence and self-directed learning, by actively implementing these scaffolding strategies.

Engaging the learner is one of the main advantages of scaffolding instruction. Students do not passively absorb the presented information; instead, they consolidate existing knowledge and acquire new knowledge through teacher prompting. Motivation plays a key role in enhancing students' engagement in class. In this vein, Mackiewicz and Thompson (2014) argue that "motivation influences and is influenced by students' interest in the tasks they are performing, their self-efficacy in successfully completing those tasks, and their ability to self-regulate their performances" (p. 63). Creating a supportive and encouraging environment for

students can boost their motivation by fostering positive teacher-student relationships. As a result, "motivational scaffolding" supports and motivates students through a variety of methods during the learning process. According to Mackiewicz and Thompson (2013), motivational scaffolding refers to the feedback tutors employ to establish rapport and solidarity with students, ensuring their active participation and sustained engagement in writing center conferences (p. 47). They identify five different types of motivational scaffolding related to politeness techniques, which are:

- Praise
 - Statements of encouragement or optimism about students' possibilities for success
 - Demonstrations of concern for students
 - Expressions of sympathy and empathy
 - Reinforcement of students' feelings of ownership and control
- (Mackiewicz and Thompson, 2013; p.47)

In their research on motivational scaffolding, Mackiewicz and Thompson (2013) argue that motivational scaffolding improves learning outcomes by increasing interest, self-efficacy, and self-regulation. Teachers can improve motivation and learning by providing feedback, setting attainable goals. However, individual motivation has an impact on its effectiveness.

Based on the study's background, the researcher intends to investigate the effect of motivational scaffolding techniques on students' writing performance and apprehension. Peer feedback and goal-setting techniques are expected to help improve writing skills while also reducing anxiety. The findings could help shape interventions and instructional methods.

The aim of this research is threefold. The first aim is to investigate how age and gender influence EFL students' writing apprehension. The second aim is to examine how motivational scaffolding affects the writing achievement of EFL students. Lastly, this study aims to investigate how motivational scaffolding influences the writing apprehension of EFL undergraduate students, contributing valuable insights into support strategies for this specific group. The objective is to introduce a writing intervention rooted in motivational scaffolding to effectively alleviate writing apprehension among EFL learners. The initial hypotheses of this study are:

- Writing apprehension is affected by age and gender
- Using motivational scaffolding with EFL undergraduate students reduces their writing apprehension

Based on the above hypotheses, the present study intends to answer the following research questions:

- To what extent do EFL undergraduate students experience writing apprehension?
- Does the EFL undergraduate students' age and gender have an effect on writing apprehension?
- To what extent does motivational scaffolding have an impact on the EFL students' written performance?
- To what extent does motivational scaffolding have an impact on the EFL students' writing apprehension?

2. Methodology

This experimental study aimed to investigate the impact of age, gender, and motivational scaffolding on students' writing performance and writing apprehension. This study looked at

how age, gender, and motivational scaffolding influence student writing. The treatment group received motivational techniques, whereas the control group did not. The findings help educators and researchers improve writing performance and reduce apprehension.

2.1. Participants

This study was conducted at the Institute of Business Administration in Sfax, Tunisia. All the participants are first-year Management students. The students were native Arabic speakers from various regions of Tunisia, spanning different age groups. A total of 60 students participated in the study (30 in the experimental group and 30 in the control group).

2.2. Instruments of Data Collection

2.2.1. The Writing Apprehension Test

To measure writing apprehension, the researcher opted to use the Daly-Miller (1975) Writing Apprehension Test. The 63-item test questionnaire subsequently decreased through factor analysis to 26 items on the Likert scale (strongly agree = 1, agree = 2, uncertain = 3, disagree = 4, strongly disagree = 5) that asked students to provide feedback on their experiences with apprehension in writing. The 26 items were divided into 13 positive polarity items and 13 negative polarity items. This test asks participants to indicate their agreements and disagreements with statements related to writing using a Likert scale.

To begin the analysis, each students' Writing Apprehension score was calculated using the formula: *Writing Apprehension = 78 + Positive Statement Values - Negative Statement Values*, as proposed by Daly and Miller (1975b). WAT total scores range from 26 to 130 points. A score of 26 to 59 indicates a high level of writing apprehension; a score of 60 to 96 indicates a moderate level of writing apprehension; and a score of 97 to 130 indicates a low level of writing apprehension.

2.2.2. The Pre-Post-Tests

The most common research design is a pre- and post-test control group design. In this design, one or more training sessions may be given to the experimental group as a treatment. A pre- and post-test were administered to both the experimental and control groups. The post-test evaluates the immediate effects of the treatment, whereas the pre-test ensures that the groups are comparable prior to treatment. This design aids in determining the treatment's efficacy and identifying potential confounding variables.

2.2.3. Reliability of the Test

To fulfill the objectives of this research, Daly-Miller's (1975) WAT was used. This test is based on a Likert scale that requires subjects to indicate whether they agree or not with specific sentences. The first set of studies by Daly and Miller (1975b) showed that the instrument's internal consistency was very high (.94). Later studies using this instrument consistently produced reliable scores.

3. Results

To answer the first research question, which aimed to investigate to what extent EFL undergraduate students experience writing apprehension, data collected from the Writing Apprehension Test (WAT) were fed into SPSS and then computed. The above mentioned formula, suggested by Daly and Miller (1975b), as well as the means, standard deviations, frequencies, and percentages were used to report the level of apprehension among the participants in this study. According to Table 1, the results of the study demonstrate that the mean and standard deviation for the writing apprehension level are $M = 70.46$ and $SD = 15.12$, respectively. Table 1 summarizes the results of this question.

	N	Minimum	Maximum	Mean	Std. Deviation
WA	30	41,00	98,00	70,4667	15,12416
Valid N (listwise)	30				

Table 1: Descriptive Statistics

Of the 30 participants, nine (30%) experienced a high level of apprehension, 20 (66.7%) experienced a medium level of apprehension, and only one participant (3.3%) experienced a low level of writing apprehension. This indicates that the average writing apprehension level is moderate ($M = 70.46$) among undergraduate students when writing in English.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 26 – 59	9	30,0	30,0	30,0
60 – 96	20	66,7	66,7	96,7
97-130	1	3,3	3,3	100,0
Total	30	100,0	100,0	

Table 2: Writing Apprehension Level

Mean scores ranging from 60 to 96 indicate a medium level of writing apprehension, which is not a critical level of writing apprehension, according to Daly and Miller (1975b). Although this level of writing anxiety is not harmful, it can still impact students, leading them to exhibit signs of anxiety when completing specific writing tasks. This proximity to Daly and Miller's high-level limit of writing apprehension (1975b) is significant because the mean score, 70.46, indicates a close approach to this threshold. Consequently, it is imperative for teachers to promptly address these signs of writing anxiety and provide the necessary support to prevent its escalation to more severe levels. Teachers can achieve this by implementing targeted interventions, such as individualized writing support, and cultivating a positive writing environment that encourages student confidence and creativity.

To identify the effects of age on the participants' writing apprehension, the students' responses were fed into SPSS version 20.0. Statistics were acquired using the Pearson correlation coefficient. Table 3 shows that the relationship between the two variables is not statistically significant since the p-value is greater than 0.05 ($p = 0.098$).

		WA	Age
WA	Pearson Correlation	1	,098
	Sig. (2-tailed)		,605
	N	30	30
Age	Pearson Correlation	,098	1
	Sig. (2-tailed)	,605	
	N	30	30

Table 3: The Effect of Age on Writing Apprehension

The analysis of gender's effect on writing apprehension, similar to the results for age, revealed a statistically non-significant relationship between the two variables. The Chi-square and p-value analyses revealed a p-value of 0.940, which exceeds the designated alpha level of 0.05. In summary, the data indicates no association between the two variables.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	,123 ^a	2	,940
Likelihood Ratio	,223	2	,895
Linear-by-Linear Association	,055	1	,815
N of Valid Cases	30		

Table 4: The Effect of Gender on Writing Apprehension

To answer the third research question, an independent sample t-test was conducted to compare the mean scores of the experimental and control groups. There was a significant difference in the scores of the experimental group (M = 3, 10; SD = 2.48) and the control group (M = 1, 86; SD = 1,736); $t(58) = 2.2, p = .030$. This indicates that the experimental intervention significantly influenced the outcome variable in comparison to the control group. Table 5 summarizes the results of the T-test.

		Levene's Test for Equality of Variances		T-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper	
Difference	Equal variances assumed	2,376	,129	2,226	58	,030	1,23333	,55416	,12407	2,34260
	Equal variances not assumed			2,226	51,824	,030	1,23333	,55416	,12125	2,34542

Table 5: Independent Sample Test

Additionally, the effect size was calculated, and the results showed a medium effect ($d = 0.57$). This suggests that the motivational scaffolding intervention may be a promising

strategy for further research and application because it shows that the treatment had a significant impact on the outcome measure.

As there was a statistically significant difference between the mean scores of the pre- and post-test results after implementing motivational scaffolding, a multiple regression analysis with writing apprehension as the dependent variable and motivational scaffolding results as the independent variables was employed to examine the impact of the treatment on the students' writing apprehension. Table 6 shows that no significant regression equation was found ($F(2, 27) = 0.66, p = .937$), with an R^2 of .005. In other words, motivational scaffolding can account for only 0.05% of the variation in writing apprehension. In addition, the Durbin Watson value is 1.635, which is close to the value of 2, proving that the assumption of multiple regression is met. The findings imply that motivational scaffolding has little impact on writing anxiety. Moreover, the fulfillment of the multiple regression assumption suggests that the data analysis model was accurate.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,070 ^a	,005	-,069	15,63640	,005	,066	2	27	,937	1,635

Table 6: Motivational Scaffolding As Criterion Variable

The unstandardized coefficients in Table 7 show that the two measures of motivational scaffolding are negatively correlated with writing apprehension. The coefficient column shows that the pre- and post-test results are not statistically significant. and the tolerance limit is .819 (which is less than 1). Therefore, the results indicate that multicollinearity does not exist. Consequently, there are no difficulties in clearly establishing a relationship between motivational scaffolding and writing apprehension.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	71,267	14,616		4,876	,000		
1 Pre test experimental	-,500	1,402	-,076	-,356	,724	,819	1,221
Post test experimental	,286	1,363	,044	,210	,836	,819	1,221

Table 7: Motivational Scaffolding Predictive Measures of Writing Apprehension

However, the negative correlation between motivational scaffolding and writing anxiety suggests that offering support and direction to students may help them feel less anxious about writing. Further research is crucial to explore the impact of motivational scaffolding on enhancing students' writing abilities. It is essential to consider other influencing factors that might affect the outcomes, which were not accounted for in this study.

4. Discussion

This study aimed to investigate how motivational scaffolding instruction influences the writing apprehension of EFL undergraduate students. The study revealed that EFL undergraduate students exhibited a moderate level of writing apprehension. The findings of this study are consistent with those of other research studies, such as Kostić-Bobanović (2016) and Sundari & Febriyanti (2017). Their studies demonstrated that participants had a moderate level of writing apprehension. According to Sundari & Febriyanti (2017), their students did not feel pressured by the classroom environment regarding their writing process (p. 41). In contrast to the studies mentioned earlier, Rezaei and Jafari (2014) discovered contrasting outcomes in their research. Their studies indicated high levels of writing anxiety among Iranian EFL students. They claimed, “Such a high level of writing anxiety among English major students is concerning and reflects the inadequacy of our writing contexts and practices” (Rezaei and Jafari, 2014; p. 1549).

The second question dealt with the effect of age and gender on EFL undergraduate students’ writing apprehension. The findings of this study revealed that age had no significant effect on the participants’ writing apprehension, with 80% of participants reporting similar levels of apprehension regardless of age. The results are supported by Marshal and Varnon (2009), who found no evidence of significant differences between age and writing apprehension for native undergraduate students majoring in accounting. This finding aligns with the current study on EFL undergraduate students (cited in Qadir et al., 2021; p. 3). The same results were noted in McAllister’s (2014) study, which concluded that writing apprehension levels vary across different age groups, with younger participants exhibiting higher levels of apprehension compared to older participants. He claimed that nearly 70% of black undergraduate native English writers reported having moderate writing apprehension, 10.6% had low writing apprehension and 20.3% had high writing apprehension. Finally, the results of this study are consistent with Qadir et al.’s (2021) findings, which revealed that the relationship between age and writing apprehension is not significant. They argued, “Previous research on the effect of age on writing apprehension has not produced conclusive findings for two reasons. One reason concerns, as explained earlier, the limited number of studies that have considered age group differences in accounting for apprehension. The second reason is connected to the lack of justifications given by the studies showing significant differences between age and apprehension” (Qadir et al., 2021; p. 9). However, the results are inconsistent with Huwari and Abd Aziz’s (2011) study, which suggested that age could play a significant role in the writing apprehension of their EFL Jordanian postgraduate students, unlike the findings in this study on EFL undergraduate students. They concluded, “Age can affect a writer’s product. Usually, younger writers are more apprehensive than older ones due to a lack of experience.” (Huwari and Abd Aziz, 2011; p. 194).

The results of the variable gender showed analogous findings to age in writing apprehension. The statistical analysis showed no significant relationship between gender and writing apprehension. The results are in accordance with Kostić-Bobanović’s (2016) longitudinal study, which revealed that gender did not account for writing apprehension in EFL Croatian undergraduate students. The Qadir et al. (2021) study exhibits comparable results. Their study demonstrated that gender, among other demographic variables, did not affect students’ writing apprehension. (Qadir et al., 2021; p. 11). However, contradicting findings regarding the effect of gender on EFL/ESL students’ writing apprehension have been revealed in the literature. Several studies have shown that gender could have an impact on writing apprehension on the part of women, reporting that male participants experience a high level

of writing apprehension (McAllister, 2014). Nevertheless, Kostić-Bobanović (2016) stated that research on gender differences has produced conflicting results. Some studies confirmed that there are gender differences that favor one gender over the other, while others claimed that gender has no influence on writing apprehension (p. 12). Moreover, Qadir et al. (2021) argue that gender, as a factor, has produced more inconsistencies than other variables. One conclusion that can be drawn regarding gender is that it might differently predict the experience of English writing apprehension based on whether one's first language is English or not (p. 12).

The third and fourth research questions focused on exploring the effects of implementing motivational scaffolding on EFL undergraduate students' performance and writing apprehension. Statistical analyses, including an independent sample t-test and a multiple regression analysis, were performed, revealing significant gains in the experimental group following the implementation of motivational scaffolding instruction. Therefore, the utilization of motivational scaffolding directly contributed to the enhanced performance of EFL undergraduate students by providing the necessary support and guidance to maintain motivation during the learning process. This finding is supported by previous studies where motivational scaffolding was found to be effective for learning. Vonna et al. (2015) studied the effect of implementing scaffolding on students' writing achievements and concluded that the treatment could increase the participants' writing achievements when compared to the control group who received traditional instruction (p. 231). Similarly, Sohrabi et al. (2022) stated that learners' interaction with motivational scaffolding helped them improve their self-determination and learning achievements (p. 25).

The multiple regression analysis proved that there was no statistically significant effect between the mean scores of the experimental group and the writing apprehension results. Therefore, the treatment did not effectively reduce writing apprehension. The results are inconsistent with the study of Hwang (2022), which investigated the effects of scaffolding on writing apprehension in Korean engineering freshmen. According to Hwang (2022), "writing apprehension's reduction and self-expression improvement were significant in the supportive scaffolding group" (p. 33). She argued, "Writing apprehension's reduction and self-expression improvement were significant in the supportive scaffolding group" (Hwang, 2022, p. 33). This suggests that scaffolding techniques may be more effective at reducing writing anxiety than the treatment used in the current study.

5. Conclusion

This study looked at how age, gender, and motivational scaffolding affected writing apprehension and achievement among EFL students. Age and gender had no significant effect on writing apprehension, according to statistical analysis. The Daly-Miller test showed no correlation between the variables. However, motivational scaffolding improved writing scores by 15%, demonstrating its positive impact. Future research could look into the long-term impact of scaffolding on writing proficiency, taking into account skill retention and transfer, as well as collecting qualitative data to gain a better understanding of participants' experiences.

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***Understanding Orientalism With Edward Said's Vision From a Global Academic
Perspective: English Literature of HED Studies Questions
Orientalism and Globalization***

Azmi Azam, University of Arizona, United States

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Abstract

The representation of the non-west in English literature of Higher Education has the potential to facilitate more spaces to question the ideas of orientalism, racism, and globalization. Non-western scholars of colors constantly question the validities and definitions made by the western white community of scholars. The number of analyses dealing with orientalist representations in the United States and around the globe is on the rise. Western authors and their viewpoints have historically dominated English literature. But there has been a growing movement to include more diverse voices and perspectives in the canon. This movement has the potential to challenge and disrupt the dominant narratives of Western cultural superiority and to create more opportunities for critical engagement with issues of race, culture, and power in the domain of Higher Education Studies. By implementing a few academic and critical measures, it is possible to achieve a curriculum in HED that better reflect the diverse realities of the world we live in, delighting in its rich heterogeneity while challenging harmful stereotypes and prejudices.

Keywords: Orientalism, Racism, Globalization, Representation, Cultural Competency, Power Asymmetry, Stereotypes, Prejudices, Eurocentrism, Transnationalism, Social Justice, Cultural Hegemony, Xenophobia, Funds of Knowledge, English Literature, Psychoanalysis, Social-Cultural Reproduction, White Supremacy, Race, Apartheidism

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Introduction

The representation of the non-west in English literature of Higher Education has the potential to facilitate more spaces to question the ideas of orientalism, racism, and globalization. Non-western scholars of colors constantly question the validities and definitions made by the western white community of scholars. The number of analyses dealing with orientalist representations in the United States and around the globe is on the rise. Western authors and their viewpoints have historically dominated English literature. But there has been a growing movement to include more diverse voices and perspectives in the canon. This movement has the potential to challenge and disrupt the dominant narratives of Western cultural superiority and to create more opportunities for critical engagement with issues of race, culture, and power.

Literature Review

One of the keyways in which the representation of the non-west in English literature can facilitate more spaces for critical engagement is by challenging the idea of orientalism. Orientalism is a term coined by Edward Said to describe the way in which the West has historically viewed and represented the East. Said argued that the West's representation of the East was not based on objective reality, but rather on a set of preconceived notions and stereotypes. By including more non-western voices and perspectives in English literature, we can challenge these stereotypes and create a more nuanced understanding of non-western cultures and societies.

In order to illustrate the theory of globalization, Leon Tikly highlights three major elements: economic, political and cultural. Emphasizing his abhorrence toward "Eurocentrism", he advocates for cultural element of globalization saying it is "the emergence of the borderless world where national cultures are transformed by global communications and cultural hybridization" (1999, p. 616). By including more non-Western voices and perspectives in English literature, we can create more opportunities for critical engagement with the complexities of race, racism, globalization and its impact on different cultures and societies. From under graduation to tertiary education of English literature, the representation of the East by the West scholars is questionable and debatable. Such a critical perspective affects the general ideas of globalization and migration. This eventually produces many different notions of nationalism. One of them is transnationalism.

According to Croucher (2008, p. 8), transnationalism is a social phenomenon that describes the ways in which people, cultures, and ideas move across borders and blur boundaries between nations. Croucher sees transnationalism as a multidimensional concept that encompasses a range of economic, political, and cultural practices that challenge the traditional notion of the nation as a fixed and bounded unit. He argues that transnationalism can be driven by a variety of factors, such as globalization, immigration, and advances in communication technology, and that it has profound implications for social relations, identities, and power structures in the contemporary world. It can also confront the colonial legacy of English literature and contribute to a more equitable and inclusive curriculum.

In 2014-2017, UNESCO offered global citizenship education as a strategy work under United Education Program and introduces the rationale for the implementation of global citizenship education across different countries solidifying social justice, solidarity, diversity and communitarianism. Since then, a good number of attentions are being dedicated to this new

subject of thought. Moreover, this gave birth to the term “critical democracy” which “is based upon a deep commitment to multiculturalism, critical awareness of global power asymmetries, emancipation and social justice” (Pais & Costa, 2020, p. 5).

Jill Koyama (1026, p. 15) has creatively defined a global citizen as someone who is universally self-aware, able to mobilize their energies at multiple levels and possesses individual autonomy, free choice and agency. This definition highlights the importance of possessing a ‘thick’ self-knowledge that is inextricable from social practices and service, while also serving local, national and global communities. For international students coming to the U.S. for tertiary education, this definition challenges the established and prejudiced version of their eastern representations in literature. When a student from Africa reads a syllabus that contains a maverick definition of Africa as a piece of study, they critically evaluate the representation and question their own identity as a global citizen. As an international student myself, I have gone through this process many times, where reading a prestigious literary piece on racism has put me in a dilemma where I had to answer questions about my identity as an Asian/person of color today, and as an Asian/person of color represented in the piece I am reading.

Theoretical Framework

There are a lot of theories that align with Edward Said’s concept of orientalism and racism in this paper, and a few has been taken into consideration at the analysis section to make more meaning and sense to the arguments. In this paper, there is an implied reflection of critical race theory, cultural capital theory, world literature theory, post-colonial theory, cultural imperialism theory and funds of knowledge frameworks.

Critical Race Theory

Critical race theory (CRT) is a framework that examines society and culture through the lens of race and power dynamics. It challenges the idea that racism is only individual prejudice, instead highlighting how systemic racism is embedded in institutions and structures. CRT emphasizes the importance of understanding how historical context and social systems contribute to racial inequality. By analyzing how race intersects with other social identities like gender, class, and sexuality, CRT seeks to uncover and dismantle the ways in which racism operates in society.

Cultural Capital Theory

Cultural capital theory, introduced by sociologist Pierre Bourdieu, posits that individuals possess cultural knowledge, skills, and experiences that can influence their social status and success. Bourdieu identified three forms of cultural capital: embodied (internalized cultural knowledge), objectified (material cultural goods), and institutionalized (recognized credentials). Those with greater cultural capital often have advantages in education, employment, and social interactions. This theory emphasizes how cultural resources can shape social inequalities and opportunities for advancement.

World Literature Theory

World literature theory explores the interconnectedness of literary works across cultures and languages, emphasizing the global circulation and reception of texts. It challenges traditional

notions of national canons and highlights the importance of translation and cross-cultural dialogue in shaping literary discourse. By examining how literature transcends borders and engages with diverse perspectives and experiences, world literature theory seeks to foster a deeper understanding of global literary traditions and their impact on shaping cultural identities. This theory encourages readers to engage with a wide range of texts from different regions and languages, promoting intercultural exchange and dialogue.

Post-colonial Theory

Post-colonial theory examines the legacies of colonialism and imperialism on societies, cultures, and individuals, emphasizing power dynamics, resistance, and decolonization efforts. It challenges Eurocentric perspectives and highlights the voices and experiences of marginalized populations in formerly colonized regions. By analyzing the intersections of race, power, and identity, postcolonial theory seeks to deconstruct colonial narratives and address ongoing forms of oppression and inequality. This theory explores how colonial histories continue to shape contemporary social, political, and cultural landscapes, shedding light on the complexities of postcolonial societies.

Cultural Imperialism Theory

Cultural imperialism theory examines how dominant cultures exert influence and control over less powerful cultures through cultural products, media, and practices. It highlights how powerful nations or groups can impose their values, beliefs, and norms on others, leading to cultural homogenization and loss of local traditions. This theory raises concerns about the unequal distribution of cultural power and the potential erasure of diverse cultural identities. Critics argue that cultural imperialism theory may oversimplify complex cultural interactions and overlook instances of cultural exchange and hybridity.

Funds of Knowledge

The concept of funds of knowledge intersects with English literature and orientalism in complex ways. Funds of knowledge refer to the diverse skills and knowledge that individuals and communities possess due to their cultural backgrounds. In the context of English literature, the representation and validation of different forms of knowledge can either empower or marginalize certain groups. Literature has the power to either celebrate the richness of diverse funds of knowledge or perpetuate stereotypes and hierarchies. Orientalism, as a Western construct that exoticizes and misrepresents non-Western cultures, can impact how funds of knowledge are perceived and valued. The orientalist lens often devalues the knowledge systems of marginalized communities, hindering their recognition and contribution to broader society.

Methodology

This study employed a qualitative methodology to examine the influence of English Literature's selection of texts and the implication on how they are defined and described to the broaden global student community.

Design and Sample

Qualitative interviews from focus groups and document analysis guides this study. In total, 100 international students from the University of Arizona have participated. For the purposes of this paper, I have drawn upon the individual interviews and pre/post research articles course syllabuses and UofA library across a variety of disciplinary backgrounds.

Data Collection

Four distinct points of data were collected for this study: (1) interviews with international student participants, (2) pre and post reading materials for international education courses; (3) participant observations; and (4) pre and post published articles collected from UofA library. Individual interviews were completed with international graduate student of English Literature participants and lasted approximately 30-35 minutes. Interviews focused on the key words of this proposal.

Data Analysis

For document analysis, I have sorted the most reviewed research articles and literary texts along with the latest publications related to the topic. Analytic memos and categorical lists were created to summarize the findings. For the interview data, the analysis process followed two rounds of coding. Initially, I have utilized InVivo coding (Saldana, 2009) to extract words and phrases from the participants' language, gaining insight into their experiences. These codes were then organized into categories and themes, offering a comprehensive understanding of their views. The second round of coding involved interpretative analysis (Jones et al., 2014), I have discussed the preliminary findings from the interview data in the next section.

Descriptive/Narrative Analysis

Orientalism refers to the way in which the West has historically perceived, misrepresented, and constructed the "Orient" (i.e., the Middle East, Asia, and North Africa) as a strange, backward, and uniform cultural entity. English Literature, as a discipline, has long been associated with the production and dissemination of Orientalism in Higher Education, with many literary works portraying the East in stereotypical, caricatured, and dehumanizing ways.

As a result, the study of Orientalism in English Literature has become an important area of inquiry in Higher Education, especially in the context of decolonizing the curriculum. For instance, Higher Education institutions have started to critically examine the ways in which Orientalism pervades the texts, curricula, and teaching practices of English Literature, and to challenge the power relations that it perpetuates. Moreover, Higher Education institutions have begun to diversify the canon of English Literature, incorporating works by non-Western authors, as well as critical approaches that center non-Western perspectives. This approach allows for a more nuanced and complex understanding of the multiple, heterogeneous cultures that constitute the "Orient," and for a more equitable representation of the East in English Literature.

Moreover, "Orientalism is more particularly valuable as a sign of European-Atlantic power over the Orient than it is as a verdict discourse about the Orient." (Said, 1978, p. 6). This is

true because of the effect of the World Wars that easily generated between the ruled and the ruler countries. Under the shades of Orientalism, the European scholars defined Africa and the Arabia as such continents that fail to act and react according to the rules of Occidental sophistry and soberness. This sort of biased views are not directly presented but indirectly injected with scholarly presentations in literature. For example, in Albert Camus's *The Outsider* (1942), it is shown that the xenophobic European protagonist kills an Arab anticipating him threatening and insulting. Shakespeare's *Othello* (1603) highlights black man's sexual desire and unbound jealousy as an inevitable common trait toward the white society. The representation of Caliban in *The Tempest* (1611) also defines the non-European as a deformed creature full of revenge and aversion. Therefore, the representations pointed out the concepts of orientalism in the name of literary artistry. Any one can question that if these works are so problematic, why do we study them? It highlights the differences between the East and the West, based on factors such as cultural diversity, architecture, and literature.

In his book *Orientalism: Western Conceptions of the Orient* (1995, p. 204-332), Said explores the concept of Orientalism and its impact on Western perceptions of the East. He examines how the West created cultural and intellectual superiority over the East, placing Eastern individuals in the category of "Others" (ibid, p. 332). Orientalism, according to Said, is more than just a scholarly discourse; it is "a political doctrine", which has been used to reinforce Western notions of cultural hegemony. Said argues that the East has always been viewed through a Western lens, with even some of the most widely-read writers in the West depicting Oriental history and characters with very little scrutiny from readers. He asserts that the Orient is not a natural entity, but rather a construction of Western thought, which has given it a sense of reality and presence that persists even today.

In his book, Said argues that many Western writers have a preconceived notion of the Orient, which is often unchecked and unchallenged. Orientalism is viewed as a discourse that signifies European-Atlantic power over the Orient rather than an authentic portrayal of the Orient. He suggests that while Orientalism is still studied academically, it is primarily an institution that deals with the Orient by making statements about it and settling it. Orientalism is not just a historical phenomenon, but also a political actuality and a contentious issue. Eastern writers have challenged Orientalism in Higher Education and literature, as it constitutes a challenge to the West's knowledge, imperium, and spirit.

Chinua Achebe's "An Image of Africa: Racism in Conrad's Heart of Darkness" (1902) also critiques the racial bias and imperialistic imagery in literature that can be linked to Said's ideas. However, it remains debatable whether these protests can surmount the powerful litany of Orientalist prejudices. Some authors believe that their duty is to understand Oriental civilization, but Said argues that such a belief suggests that Eastern intellectuals are incapable of representing themselves. Said states that all cultures are complete and exclusive in their own way, and portraying a different culture can be admiring, but it should not be done with biases and prejudices that alter its true nature (1995, p. 248).

In an interview, Spivak (1990, p. 53) points out that representing a culture through aesthetics is a tool to understand its socio-economic dynamics. However, the West often uses hyperboles to depict the Orient as an unusual and mysterious entity, fueling their own fascination and portraying Orientals as subjugated individuals. This is enabled through linguistic hegemony (Mackenzie, 1995, p. 43), where the West exercises control over the language used to represent the Orient. Literature, on the other hand, is a world of imagination, where authors can blend reality and fiction to create a lasting impact (Nietzsche,

2000, p. 234). However, Said warns against the combination of real and unreal elements, which can be used to reinforce existing power structures. Said employs Foucault's idea of discourse and Gramsci's concept of cultural hegemony to theorize the control of representations of the Orient by the West, perpetuating imperialist and racist ideologies (Mackenzie, 1995, p. 3-4).

To illustrate more, Orientalism is a concept that refers to the Western domination and control over the Orient (Said, 1995, p. 3), which is achieved through the application of Western ideological lenses. This concept has been prevalent throughout history, and it is a powerful tool used to assert Western authority over the Orient. Orientalism is “a master narrative” (Mackenzie, 1995, p. 6) of Western power and imperialism, which has continued to play a role in the world today. Even after the end of formal imperialism, Orientalism has survived as “the cultural and ideological superstructure of neo-colonialism” (ibid).

The idea of Orientalism was further extended by Gramsci's critical works, which focused on the issues of class disintegration derived from capitalist theories of imperialism. A range of institutions, scholarship, imagery, vocabulary, doctrines, and even colonial bureaucracies and styles supports this concept (Said, 1995, p. 1991). It has also been strengthened by industrialization and class distinctions, such as the inferiority of working class and superiority of ruling class, which has led to the introduction of further terms like supremacy, sexism, Occidentalism, racism, apartheid, xenophobia, and transnationalism.

The concept of cultural hegemony advanced by Gramsci has implications for English literature in higher education. Gramsci argues that the ruling class exercises cultural control through the creation of cultural norms and values, which are internalized by subordinate groups. In the context of English literature, this means that dominant cultural institutions and beliefs, which are often white, Western, and Eurocentric, have shaped literary traditions and canon, thereby privileging certain voices and perspectives over others. The study of English literature in higher education thus becomes a battleground of cultural negotiations, where questions of representation, power, and identity are at stake. By recognizing the impact of cultural hegemony in shaping literary traditions, English literature curricula can engage students in critical discussions about how texts and cultural norms are created, transmitted and maintained.

The concept of funds of knowledge intersects with English literature and orientalism in complex ways. Funds of knowledge refer to the diverse skills and knowledge that individuals and communities possess due to their cultural backgrounds. In the context of English literature, the representation and validation of different forms of knowledge can either empower or marginalize certain groups. The intersection of funds of knowledge, English literature, and orientalism underscores the importance of critically examining power dynamics and representation in knowledge production. By acknowledging and amplifying the diverse funds of knowledge present in different cultural contexts, literature can serve as a platform for empowerment and cultural exchange. It is essential to deconstruct stereotypes and biases embedded in literary portrayals to create a more inclusive and respectful dialogue that honors the richness of all forms of knowledge.

Moreover, Orientalist writers tend to rely on preconceptions, myths, and stereotypes to explain the East in their literature. This approach creates a sense of authority that allows them to fabricate the “Other” through their works (Said, 1995, p. 353). One example of this is seen in Shakespeare's *The Tempest*, where Caliban, a black deformed creature, represents the East

while the other characters, white-skinned and educated, represent the West. Through Caliban's reflections, one can observe how the representation of the East as savage or inferior is a form of subjugation (Ashcroft, Griffiths and Tiffin, 1998, p. 168). Such an inclusion reinforces Said's claim that the East is habitually represented with orthodoxies.

When an avant-garde writer like Shakespeare represents an Eastern individual like this, it forms an association between being black, brown or of color to being irrational, depraved, childlike, or different. In contrast, the European identity is associated with being rational, virtuous, mature, and normal. These representations imply that the "Orientals" lived in a different, organized world of their own, with their own national, cultural and epistemological boundaries, but this identity was not derived from their own efforts but rather from the manipulations of the West.

If we compare with Albert Camus, we find that Orientalism refers to the depiction of the East by Western intellectuals and artists in a way that reinforces classicism and power hierarchies. This is achieved through the use of language and literary techniques that emphasize belongingness and otherness. The author argues that in Camus' novel, *The Outsider*, the portrayal of Arabs as aggressive and uncivilized exemplifies this form of Orientalism. Camus's portrayal of Western disdain towards the East is seen as a reflection of the intellectual hegemony that British intellectuals exercised over other races. It also emphasizes the idea of hegemony as a means of incorporating subjugated individuals through resistance and collaboration, further reinforcing power hierarchies based on race and social class.

To add more into the discussion, we can again point out Chinua Achebe, a scholar of critical race theory and founder of a Nigerian literary movement, who was deeply troubled by Joseph Conrad's *Heart of Darkness*. He sees Conrad's piece as an insult to African culture and a clear example of racism. As an African, Achebe finds Conrad's depiction of Africa as uncivilized and primitive as well as deeply problematic since it seems to perpetuate negative stereotypes while failing to recognize the humanity of African people. He sees *Heart of Darkness* as an example of how Europeans treat Africans as a mere subject of research. Although some critics may view the novella as a powerful critique of European imperialism, Achebe maintains that the work fails to capture the complexity of African humanity and cannot be considered a great piece of literature.

Similarly, E.M. Forster's *A Passage to India* (1924) vividly portrays the complexity of ethnic relations in India during British colonial rule. Forster's novel highlights the destruction of a friendship between a Muslim doctor, Dr. Aziz, and a British woman, Adela Quested, due to the xenophobic and racial attitudes of the white community. Forster portrays xenophobia as a social disease that dominates social bonds and creates an atmosphere of mistrust and suspicion among different ethnic communities. The novel emphasizes that people tend to fear each other due to differences in language, culture, and skin color. The protagonist, Dr. Aziz, represents the Indian mature generation that seeks to build fraternity and unity. However, the novel depicts how orientalist views, racism, and xenophobia dominate the hearts and minds of many white characters, making any kind of negotiation impossible, and resulting in a sense of regret and misunderstanding.

Future Implications

In terms of future implications, this literature review highlights the significant role that literature and education can play in promoting diversity, disarmament of stereotypes, and

tackling issues of racism and global binaries. Going forward, it is essential to continue to expand and critique the representation of non-Western cultures in English Literature courses, ensuring that more students are exposed to diverse expressions of human experiences scrutinizing the terms associated with it. Additionally, educators should seek to develop inclusive curricula that better reflect the diversity of their student populations, incorporating non-European and non-white voices where relevant. This approach can help to not just promote multiplicity in the traditional sense but also help students develop critical thinking skills and the ability to navigate complex cultural differences, creating more thoughtful and empathetic leaders and global citizens in the future. A possible future research direction regarding these themes could be to explore the intersections between Said's vision and other contemporary discourses such as critical race theory, post-colonialism and migration, and globalization studies.

Limitation of This Study

While the research on the representation of non-Western cultures in English Literature courses provides valuable insights into the importance of diversity, challenging stereotypes, and promoting cross-cultural understanding, it is not without limitations. One possible limitation of such research is that it focuses primarily on a Western educational context, without taking into account the different approaches or practices in non-Western educational systems. Moreover, there may be some limitations in terms of generalizability, as the experiences of students and educators in different cultural and social contexts may vary significantly. Finally, such research may not fully capture the experiences of other marginalized groups, such as Indigenous peoples or immigrant communities, whose voices may also be excluded from literary canons or under-represented in English Literature curricula. Further research should consider these limitations to produce a more comprehensive understanding of the role of literature and education in promoting diversity and dismantling stereotypes.

Probable Solutions

To address the limitations of such research, there are several probable solutions that can be considered. Firstly, researchers should strive to produce studies that explore the experiences of students and educators in different cultural and social contexts to determine how curriculum adaptations can promote diversity in various educational environments. Secondly, to address the possibility of limited generalizability, researchers should employ qualitative research methods that can gather in-depth insights from a more diverse group of participants. Thirdly, to expand the scope of representations, educators should incorporate literature by authors from various ethnic and cultural backgrounds, including those of Indigenous and immigrant groups. Additionally, there should be a concerted effort to promote the publication and recognition of English literature that represents non-Western cultures in academic and literary circles. By implementing these measures, it is possible to achieve curricula that better reflect the diverse realities of the world we live in, delighting in its rich heterogeneity while challenging harmful stereotypes and prejudices.

Conclusion

It can be estimated that the representations of non-Western cultures in English Literature courses provide an opportunity for Higher Education students to challenge long-standing stereotypes and biases concerning orientalism, racism, and globalization. By exposing

students to literature from diverse cultural backgrounds, such representations facilitate deeper cross-cultural understanding and appreciation, both in and out of the classrooms. By studying authors and works from non-Western cultures, students can gain a greater appreciation for the richness and diversity of human experience, helping to dismantle harmful stereotypes and prejudices. Ultimately, providing space for these representations can help produce more compassionate, informed, and global-minded citizens who are better equipped to navigate an increasingly interconnected and culturally diverse world.

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***Error Correction in the EFL Classroom:
The Views of Japanese Senior High School Students***

Aric Denfield, Nichidai Sakuragaoka High School, Japan

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Abstract

Error Correction (E.C.) is defined by Lightbown and Spada (1999) as, ‘Any indication to the learners that their use of the target language was incorrect’. A number of studies attest to the positive impact E.C. plays in developing learner accuracy. Despite this, teachers are often concerned over the negative psychological impact E.C. can have on their learners, and as a result, they may underuse it in their practice (Mendez and Cruz, 2012). Researchers have noted that teachers’ self-image and perceived credibility may suffer where learner attitudes are not recognized and validated in the process of class teaching. In light of these concerns, a study was undertaken to explore two key questions related to learner attitudes toward E.C. The research used a survey to obtain quantitative data, and two key findings emerged from the study. First, a substantial majority of learners feel that E.C. is important as it will help them to use the language more accurately. Further, a majority of respondents stated that student-led rather than teacher-led correction will likely have a more significant impact on their grammatical accuracy. This is a noteworthy finding since it impacts teacher praxis, and prompts further research questions regarding the extent to which learner beliefs should influence lesson planning and review.

Keywords: Error Correction, Grammatical Accuracy, Affective Damage, Student Led, Teacher-Led, Quantitative

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Introduction

Error correction (EC) is, according to Ellis (2009), a form of negative feedback. It was defined by Lightbown and Spada (1999) as, ‘Any indication to the learners that their use of the target language was incorrect’. Russell (2009) writes that error correction remains a contentious issue in second language learning. However, it is now generally accepted that it plays an important role in improving learner outcomes.

One of the key debates in error correction is the choice of corrector. This was a question raised by Hendrickson in his seminal paper published back in 1978. The author stated that while many teachers assumed that error correction was their responsibility, a more student-centred approach might be more effective. Empirical evidence from studies on the impact of error correction suggests that student-led correction can be more effective than teacher-led correction.

The importance of taking into account students’ beliefs and preferences was described by Cheng et al (1999), who stated that teachers need to know about learners’ beliefs to foster more effective learning strategies. Further, the author asserts that where student beliefs and teacher behavior is at variance, language acquisition will be impeded. This paper shall, therefore, research the views of Japanese senior high school students with respect to their attitudes to the choice of corrector in error correction.

Significance of the Study

The significance of learner beliefs in the process of learning was described by Dornyei and Ryan (cited in Kartchava, 2016: 19) who see them as, ‘significant learner characteristics to take into account when explaining learning outcomes. A number of studies have been conducted looking at students’ attitudes to teacher and student-led correction. The results have been inconclusive. Further, this particular cohort – Japanese senior high school students – has received scant attention. It is hoped that this study shall, therefore, add to the available literature on error correction and help teachers to make informed choices in this important field of language learning.

Structure of the Study

The paper will start with a literature review, which will look at some of the keys debates related to the question of student versus teacher led error correction. There shall also be a definition of some of the key terms as well as a broader discussion on the impact of error correction. This shall be followed by an overview of the current study, looking at the research questions, the site, the sample and the data collection instrument. In the next section, the data will be presented. To conclude the research questions will be answered and there shall be a discussion on how the evidence might impact on teacher praxis and finally suggested areas for further research.

Literature Review

Looking first at what an error is in the context of EFL, Edge (1997) understood them as being of three distinct types: slips, errors and attempts. Slips can be understood as occurring when the student who produced the deviant utterance would be able to self-correct. Errors, on the other hand, can be regarded as a deviant utterance that could not be self-corrected by the

learner, even when the error is pointed out. Attempts occur when the learner has not yet learned the language necessary to convey the speaker's intended meaning. The distinction between errors and mistakes has, however, been called into question. Botley (2015), for example writes that it is neither feasible nor desirable to maintain this dichotomy from a corpus based empirical perspective.

Ellis (2009) writes that error correction (EC) is a form of negative feedback. It was defined by James as 'a reactive second move of an adjacency pair to a first speaker's ... utterance by someone who has made the judgement that all or part of that utterance is linguistically or factually wrong' (1998: 235). The importance of error correction for teachers of English was well-described by Pawlack who writes that, 'the need to respond to learners' errors can be regarded as part and parcel of their jobs ... and the ability to handle it [inaccurate spoken and written output] in the most beneficial way is without doubt an important teaching skill' (Pawlack, 2014: ix).

The theoretical justifications for EC were set out by Lyster (2018), who wrote that the 'cognitive-interactionist perspective of second language acquisition attributes a role not only to positive evidence but also to negative evidence in the form of feedback that triggers noticing of nontarget output'.

A number of analyses attest to the value of CF. Lyster and Saito (2010) concluded that EC has 'significant and durable effects on target language development' (2010: 266). This conclusion is supported by Li (2010) and Russell and Spada (2006), in their meta-analyses of studies looking at the impact of EC. Faqeih (2012), in his classroom experiment on the impact of error correction, found that it had a significant impact on learners' grammatical accuracy. Finally, Lee (2017: 582) writes that when used effectively, CF can, 'play a critical role in eliminating [learner] errors'.

The value of error correction can also be located in the expectations that students have of their teachers. The significance of learner beliefs in the process of learning was described by Dornyei and Ryan (cited in Kartchava, 2016: 19) who see them as, 'significant learner characteristics to take into account when explaining learning outcomes'. While many teachers are reluctant to engage in error correction (Bartram and Walton, 1991), Bartram and Walton (1991) assert that the vast majority of learners expect teachers to provide oral correction during classes. Fukuda (2004) investigated teachers' and students' opinions of error correction in Japanese high school oral communication classes. He found that students actually wanted more error treatment than their teachers believed necessary.

One of the key debates in error correction is the choice of corrector. This was a question raised by Hendrickson in his seminal paper published back in 1978. The author stated that while many teachers assumed that error correction was their responsibility, a more student-centred approach might be more effective.

Student-led approaches have a number of advantages. In terms of self-correction, Edge writes it is easier to remember because, 'someone has put something right in his or her own head' (1997: 24). Edge identifies four reasons for the efficacy of peer correction: it involves learners in listening to and thinking about language; the teacher can gain valuable information on the language knowledge of other students; students become less dependent on teachers; finally, students will be better able to assist each other during pair and group work.

Pawlack (2014) writes peer correction can be used when the speaker is unable to repair his or her own mistake.

Empirical evidence from studies on the impact of CF suggest that student-led correction can be more effective than teacher-led correction. Lyster and Ranta (1997) write elicitation has an uptake rate of 100% and clarification requests 88%. To quote Allwright and Bailey, 'no matter how hard a teacher tries to correct errors, only the learner can do the learning necessary to improve performance, regardless of how much treatment is provided' (Pawlack, 2014: 150).

The veracity of these conclusions have, however, been called into question. Connor and Asenavage (1994) also concluded that teacher feedback had a much more significant effect than peer feedback, although it is important to note that this was found in respect of students' writing. Miao, Badger and Zhen (2006) cast further doubt on the usefulness of a student-led approach. The authors asserted that "the research broadly indicates that teacher feedback has a much greater impact than peer feedback, though with considerable variation, but that peer feedback can contribute to learning development".

Pawlack (2014), writes that teacher-led correction continues to be the form that is most frequently practiced. The author suggests that this is a result of the better TL knowledge that teachers have; the responsibility that teachers have to ensure accurate learner output; and the methodological knowledge teachers have.

Looking at students' attitudes regarding the choice of corrector, Pawlack argues many students see EC as being something that should be done by teachers. This reasoning follows Chaudron (1986), who asserted that the position of the teacher provides 'an imbalance in expectations as to who provides feedback,'. This will often result in teachers being expected to correct errors.

Katayama (2007), however, writes that learners preferred a more student-centered approach. According to the author, students' preferred form of correction was for the teacher to hint at the mistake and to then allow the students to correct it. This conclusion is supported by Yoshida (2008), who found that learners wanted to have the chance to self-correct before being given the correct form through a recast.

Kartchava (2016) gives a more complex picture of student preferences finding that on the one hand students expect teachers to provide the correct form, on the other they recognize the positive role that self-correction can play. Interestingly, the author found that learners' backgrounds influence their views on error correction.

According to Zembytska et al (2022) the choice of error correction method and corrector will depend on the ability level of the students. The results of their experiment suggest that more proficient students have a preference for teacher-led techniques, while student-led techniques are favoured by less proficient learners.

Research Design

Objective

The objective of this study is to provide quantitative data on the views of Japanese high school students, first, in terms of their attitudes to error correction in general and second, with regards to their preference for student or teacher led correction. It is hoped that this research will prove to be valuable for other teachers who work with this cohort of students and that this study will add to the available literature in this exciting area of English language teaching.

Research Questions

The four research questions that the paper shall answer are:

1. Do students want to have their errors corrected?
2. To what extent do students see error correction as helping them to achieve grammatical accuracy?
3. Do students favor a student or a teacher led approach?

Site and Sample

The site where the study was conducted is a private senior high school in Tokyo, which is affiliated to one of Japan's leading universities. The school is part of an escalator system. According to NIER (undated), in the escalator system 'a school corporation' provides education from pre-school all the way through to university.

The sample is a non-probability convenience sample. Such a sample was defined by Andrade as a sample that is drawn from a source that is conveniently accessible to the researcher. While such samples are very commonly used in educational research, they have been criticized as they might not be representative of the general population.

The participants were grade 2 students, aged between 16 and 17 years' old. Their level tends to be around A2 or B1 as defined by the CEFR. 70 students took part in the study.

Data Collection Instrument

The instrument has 18 items and it took roughly ten minutes to complete. The survey was comparatively short in order to avoid respondent fatigue. This is defined by Ben-Nun (2008) as a 'phenomenon that occurs when survey participants become tired of the survey task and the quality of the data they provide begins to deteriorate.

The survey was first written in English and it was then translated into Japanese using DeepL. The translations were then checked to ensure their accuracy. Japanese translations of the items were included to ensure that respondents would be able to accurately respond to the items. Additionally, it was felt that this could help to prevent respondent fatigue.

When the instrument was piloted it had a Cronbach alpha of 0.715, which is an acceptable value for internal consistency.

Results (Quantitative Data)

Attitudes to Error Correction

The following tables clearly show that the majority of students expect their errors to be corrected and that they see error correction as playing an important role in the development of grammatical accuracy.

Figure 1 presents students responses to the statement ‘I think it is important that my grammar mistakes are corrected’. 23% of students agreed strongly that it was important, with a further 58% agreeing. Only 3% of students disagreed with the statement.

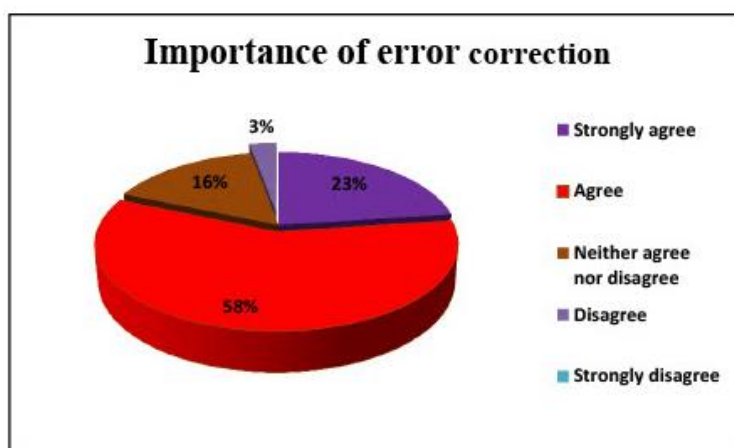


Figure 1: The Importance of error correction

Figure 2 below shows that a slight majority of students would like to have more of their errors corrected than is currently the case. 51% of respondents agreed with the statement, ‘I want more of the grammatical errors I make when speaking corrected’, with only 12% disagreeing.

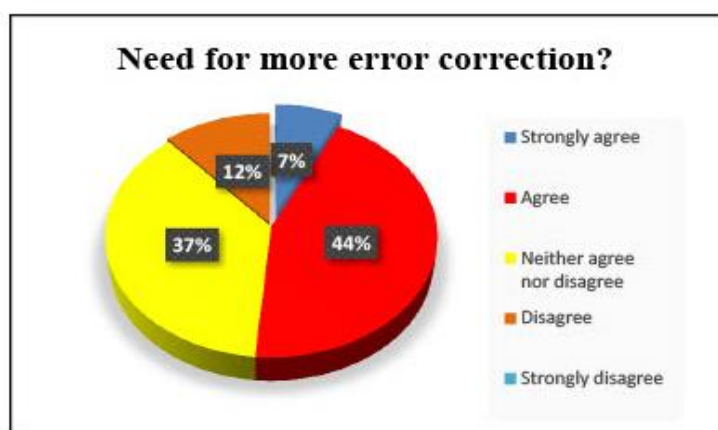


Figure 2: Desire for more error correction

Finally, we can see how students feel that error correction has a positive impact on the development of their English language proficiency. In response to the statement ‘Correcting grammar mistakes helps me to speak more accurately’, a little under 63% of respondents agreed that it did, with only 5% disagreeing (see figure 3).

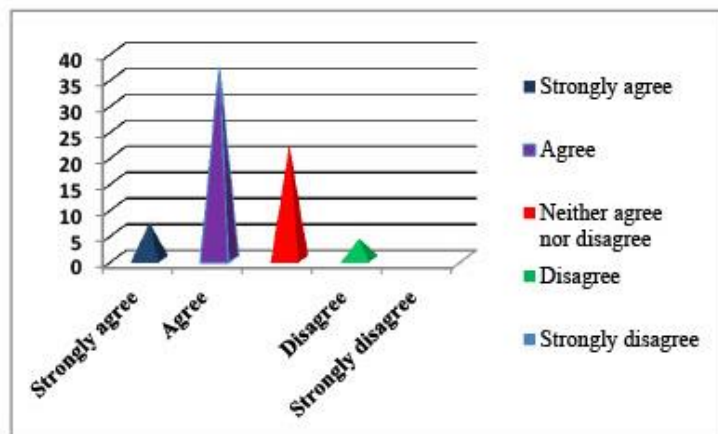


Figure 3: The impact of error correction

Self-Correction

The data shows that, on the whole, students have a positive attitude to self-correction. A majority of students (66%) agreed with the statement, ‘I want to have the chance to correct my mistakes before the teacher corrects me’.

Figure 4 indicates that students thought self-correction to be more effective, as they felt that they were better able to recall correct grammar forms when they had corrected their own mistakes. A total of 45 students responded positively to the statement, ‘I remember the grammar better if I correct my own mistakes’, with only 8 respondents disagreeing.

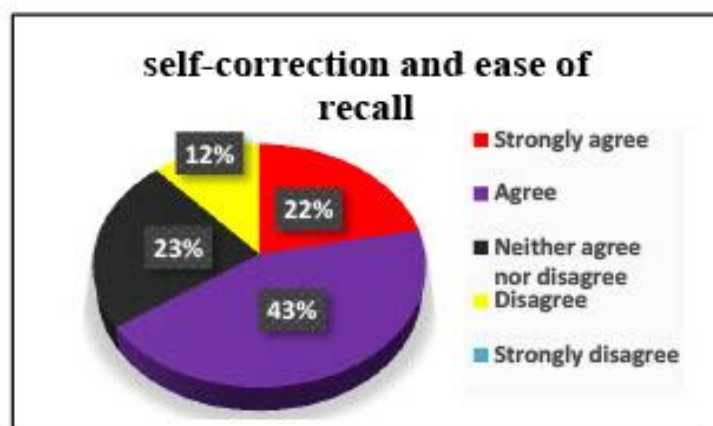


Figure 4: Self-correction and improved recall of grammar

Finally, as can be seen in figure 5, self-correction also appears to have a positive impact on students’ motivation. Here roughly 60% of respondents said that successful self-correction has a positive effect on motivation, with only 16% saying that it did not.

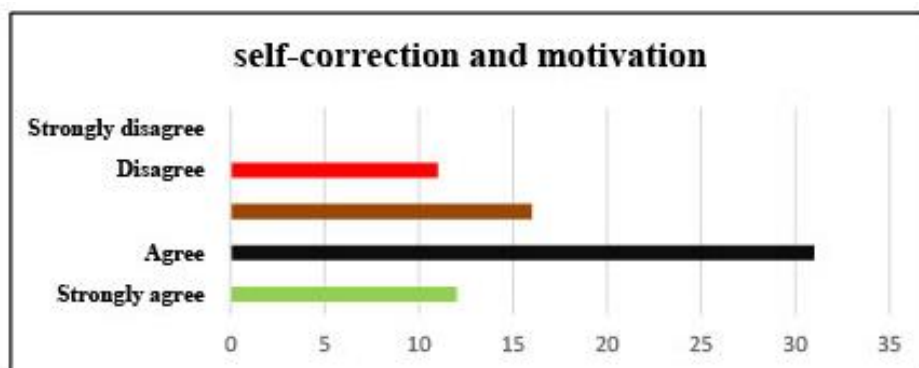


Figure 5: Self-correction and improved motivation

Peer Correction

The picture that emerges from the data is that students enjoy working with their peers, both in pairs and with the whole class to correct grammar mistakes, although this is not without caveats. A little over half of the respondents (54%) stated that they enjoyed working with their partners to correct their mistakes, as against 13% of students who said that they did not. Further, when respondents were asked about their attitude toward peer correction, where the whole class was involved, half of the students said that they liked this correction method, while 14% said that they did not.

As can be seen in figure 6, respondents feel that peer correction is an effective way of involving other students in the learning process and that it will help other students to learn.

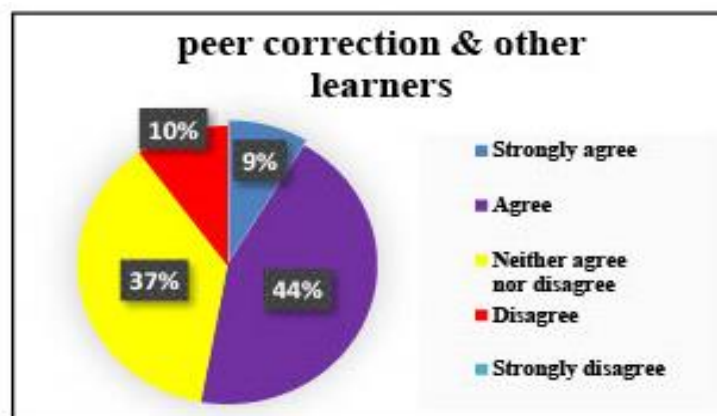


Figure 6: Peer correction involving other learners

As noted above, however, peer correction is not without its difficulties. These relate to both emotional factors and to the ability of peers to provide corrections that are accurate. The graphs below present data to the following two statements respectively: ‘Sometimes I am embarrassed when other students see my mistakes;’ (figure 7) and ‘My classmates sometimes make mistakes when they are correcting my grammar’. 60% of respondents agreed with the first statement and 51% agreed with the second (figure 8).

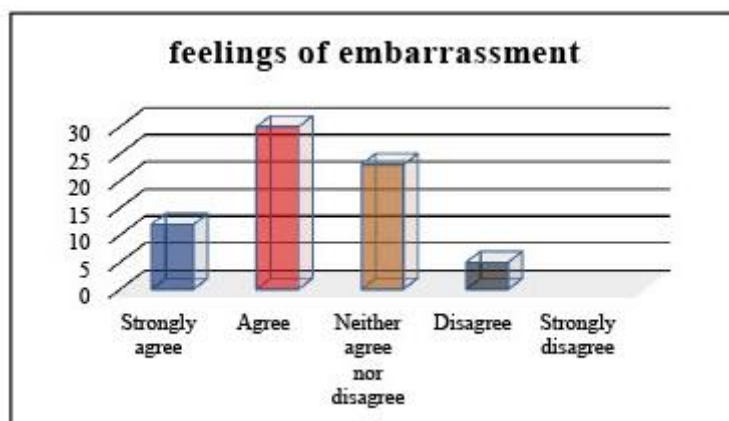


Figure 7: Peer correction causing embarrassment

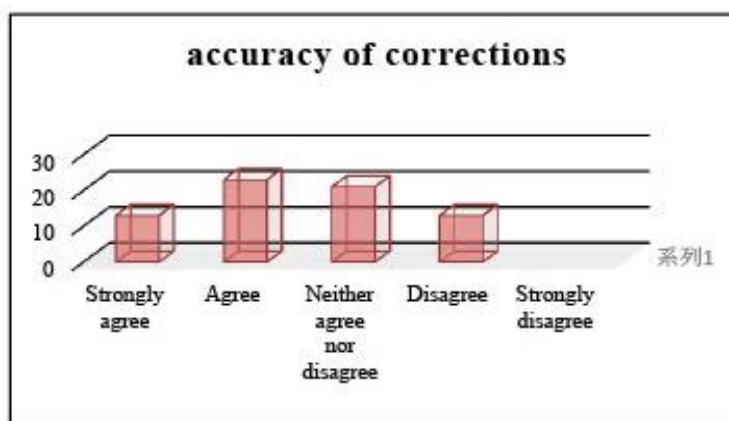


Figure 8: Accuracy of peer correction

Teacher-Led Correction

From the data it can be seen that students expect teachers to take an active role in the error correction process. In response to the statement, ‘I want the teacher to explain the necessary grammar to me’, 78% of respondents agreed with 26% agreeing strongly.

Further, the respondents felt that the grammar explanations - or the meta linguistic feedback - that teachers offer help the students to become more accurate. Figure 9 below shows students’ responses to the statement, ‘The teacher’s explanations of grammar help me to communicate more accurately.’ 56% of respondents agreed, and only 13% disagreed.

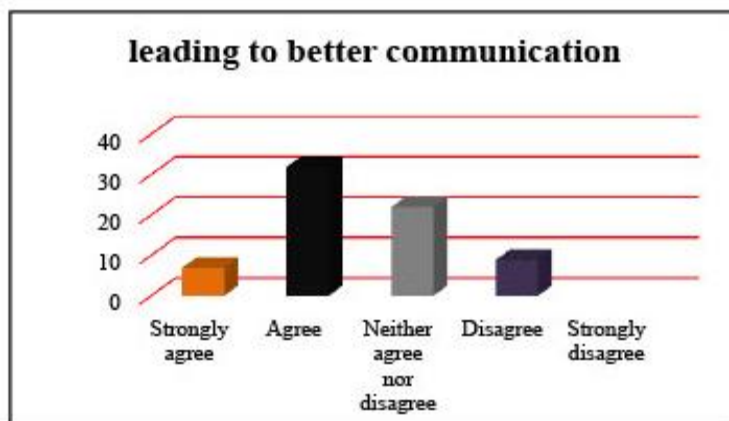


Figure 9: The impact of teacher correction

Having said this though, a significant number of students also find the explanations that teachers give to be difficult to understand (figure10).

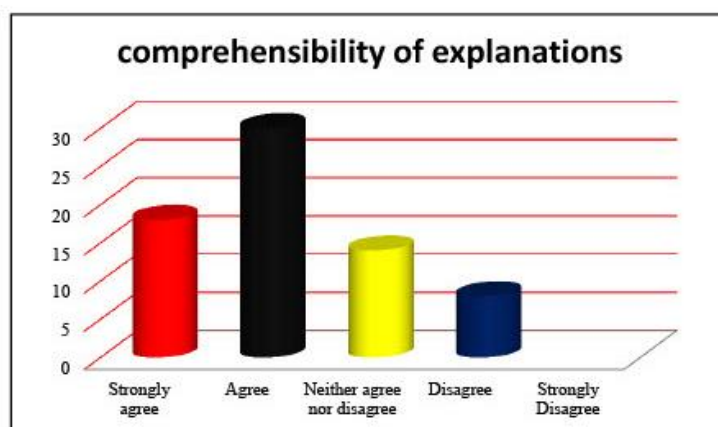


Figure 10: Comprehensibility of teacher’s explanations

Conclusions

In answer to research question 1, the data indicates that students do want to have their oral grammar mistakes corrected. Only three percent of students said that it was not important for grammar mistakes to be corrected. Moving on to research question 2 from the data we can see that students view error correction as being an important means to develop grammatical accuracy.

As Mitchell asserts, although there has been an effort by MEXT to redirect English language education to adopting a more communicative approach, the grammar translation method is still very much in use, this being one of the consequences of the rigid testing system, so an emphasis on grammatical accuracy and a belief in the value of correction are to be expected. Tokunaga (2021) asserts, however, that grammar teaching should play an important role in EFL as students who received focus on form treatment with explicit grammar instruction outperformed those students who did not receive explicit grammar explanation and practice.

With regards to the 3rd research question, the picture is more complex. Students like student centred approaches to error correction. They see it as being more effective to develop their ability to use grammar correctly and it is more motivating.

Students also like peer correction - both with their partners and with the whole group. Peer correction does however have its disadvantages. First it can lead to feelings of embarrassment, which will lead to a raising of the affective filter. The Affective filter hypothesis was described by Krashen (who writes that it, 'captures the relationship between affective variables and second language acquisition' (1982: 31). According to this theory, inducing feelings of anxiety among students will inhibit their ability to learn a language.

Finally, teacher led correction obviously plays a significant role for students. Respondents generally saw error correction as the responsibility of the teacher and as being of use. Kawabata and Barling (2020) assert that schools continue to adhere to a strict hierarchy and so it is natural that students will look to their teachers for guidance on their language. This echoes Chaudron, who wrote of the 'imbalance in expectations as to who provides feedback'.

Limitations

As noted above, the sample for this study was a non-probability convenience sample. While such samples are commonly used in education research they have also been strongly criticized. Among the criticisms, Noor et al (2022) write that convenience samples are subject to sample biases, that they are insufficiently representative and that they should be not be taken as a basis for generalising to a broader population.

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***Cultural Values Education for Ethnic Minority High School Students:
A Case Study in Thai Nguyen Province, Vietnam***

Quy Ngo Thi Thanh, Thai Nguyen University of Education, Vietnam
Thuy Ngo Thu, Thai Nguyen University of Education, Vietnam

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Abstract

Cultural value education plays a crucial role in shaping the awareness and development of ethnic minority high school students. However, many ethnic minority students still lack a deep understanding of their traditional cultural values and fail to fully recognize the importance of preserving these values. This study aims to provide an overview of the issues related to cultural value education for ethnic minority high school students, evaluate the current state of cultural value education in Thai Nguyen province, Vietnam, and propose effective educational solutions. The research team conducted a survey involving 50 teachers and 147 students. The results indicate that schools have successfully integrated cultural values into daily life and curricula, helping students maintain strong connections with their families and local culture. Based on the analysis, the study proposes several solutions to enhance the effectiveness of cultural value education for ethnic minority high school students. Implementing these solutions has enabled students to gain a deeper understanding of their cultural values, thereby fostering a sense of responsibility in preserving and promoting traditional cultural heritage in international integration.

Keywords: Cultural Value, Ethnic Minority Students, Traditional, Solutions

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Introduction

Cultural value education plays a crucial role in the cognitive development of ethnic minority students in secondary schools. It helps them understand their identity and fosters an awareness of preserving their community's cultural heritage. Through educational activities, students can explore the richness of traditions, customs, languages, and histories, nurturing a sense of pride in their cultural roots. Given the limited understanding of traditional cultural values among young people from ethnic minorities, it is essential to provide cultural value education to these students. This initiative aims to strengthen their confidence and pride in the positive aspects of their traditional culture. By recognizing the unity and diversity of Vietnamese culture, students can confidently integrate into society, contributing to their own, their families, and society's development.

The objective of this study, “Education of Traditional Cultural Values for Ethnic Minority Secondary School Students - A Case Study in Thai Nguyen Province, Vietnam” is to analyze and assess the current state of cultural value education for ethnic minority secondary school students in Thai Nguyen. The study proposes solutions to enhance students' awareness and sense of responsibility in preserving and promoting traditional cultural values in the context of global integration.

Vietnam, located in Southeast Asia, boasts a rich cultural diversity. With a population of over 99 million people and a history spanning more than 4000 years, Vietnam is home to 54 recognized ethnic groups, making it the 15th most populous country in the world. Each ethnic group contributes to the nation's cultural mosaic. Thai Nguyen province, situated approximately 80 km north of Hanoi, is inhabited by various ethnic minorities such as Tay, Nung, San Diu, Dao, Hmong, and Thai, who significantly enrich the cultural landscape of the province.

This study addresses the following questions: i) What cultural values must be taught to ethnic minority students? ii) What are the focal points of cultural value education in Vietnam, specifically in the case of Thai Nguyen province? iii) Which cultural values should be incorporated into the educational curriculum?

Literature Review

In the current era, intellect has become the most crucial factor in demonstrating the power and strength of a nation. Consequently, countries worldwide recognize that education not only benefits society but also serves as an essential tool for promoting economic development. Cultural values play a pivotal role in shaping the younger generation into a significant resource for national development. Amid the spread of globalization, especially economic globalization, many traditional values have been altered or lost within communities. Thus, the education of cultural values for students, particularly those from ethnic minorities, has become an urgent task. These young individuals bear significant responsibility for preserving and developing their cultural heritage.

Culture encompasses values, traditions, and beliefs passed down from one generation to the next. Education in cultural values helps ethnic minority students understand and appreciate their heritage, thereby contributing to the preservation and promotion of their community's unique cultural values (Avramidis, E. 2006). A profound understanding of their culture aids ethnic minority students in developing a strong personal identity. This not only boosts their

confidence but also helps them feel more connected to their community and traditions. Each ethnic minority brings unique values and traditions, enriching the nation's cultural diversity. Cultural education helps maintain and celebrate this diversity, fostering mutual understanding and respect among communities (Costa, P.T., & McCrae, R.R. 1996).

Understanding cultural values helps students develop critical thinking skills, communication abilities, and social skills. They learn to view issues from multiple perspectives, respect differences, and live harmoniously with others. Culture plays a vital role in sustainable development (Hutchison, L., & McAlister-Shields, L. 2020). Understanding and respecting cultural values instill in students a consciousness of environmental protection, rational resource use, and the maintenance of sustainable practices within their communities. Education in cultural values enriches the curriculum and learning methods. Students gain knowledge not only about basic subjects but also about cultural and social values, providing them with a more comprehensive worldview (Gillate, I., Luna, U., Castrillo, J., & Ibáñez-Etxeberria, A. 2020).

Therefore, education in cultural values not only helps preserve and promote traditional values but also plays a significant role in personal and community development, fostering integration and sustainable development in the current context of globalization. Numerous studies worldwide focus on exploring the relationship and influence of culture in general and the specific traditional values of each country on the formation and expression of the nation's personality traits. (Costa and McCrae. 1996) in their study "Toward a New Generation of Personality Theories: Theoretical Contexts for the Five-Factor Model" highlighted that national personality traits are heavily influenced by cultural values. Jennifer Meléndez-Luces in her research "Engaging Ethnic-Diverse Students: A Research Based on Culturally Responsive Teaching for Roma-Gypsy Students" emphasized the importance of intercultural education in developing inclusive strategies for ethnic minority students (Jennifer Meléndez-Luces. 2021). Her study shows that Culturally Responsive Teaching (CRT) methods are necessary to meet the educational needs of ethnic minority students. The author asserts that the cultural and historical representation of these communities plays a crucial role as gatekeepers in achieving positive outcomes in inclusive education. This case study was also explored at a high school in Western Spain.

Snyder and Fenner (2021) in their book "Culturally Responsive Teaching for Multilingual Learners: Tools for Equity" pointed out that culturally responsive education is key to effectively implementing multicultural education. They emphasized that ethnic minority families are concerned their children might be influenced by Western value systems during their studies (Corwin: Thousand Oaks, CA, USA, 2021).

Teaching cultural values to high school students imparts them with "funds of knowledge". Moll et al. in their study "Funds of knowledge for teaching: Using a qualitative approach to connect homes and Classroom" demonstrated that culture is not merely a possession but a means to navigate life (Moll et al. (1992). Izzah Mardhiya Mohammad Isa (2022) argued that connecting students' cultural backgrounds with science is essential to strengthening the link between culture and scientific content.

Heritage education and citizenship education are vital school responsibilities. The GIPyPAC-EP research group from the University of the Basque Country (UPV/EHU) in Spain has evaluated heritage education programs in both formal and informal settings. They developed the ARSMULEP project to connect individuals with the environment, using heritage as a

resource for citizenship training and identity building (Gillette et al., 2020). Many case studies on heritage education have also been conducted in various countries. Lee et al. (2020) provided a case study on heritage education in the Central Plains of China, one of the most important cradles of Chinese civilization with a glorious cultural heritage (Handbook of Research on Citizenship and Heritage Education, IGI Global, Hershey, USA, 219-238).

In the process of cultural value education, teachers have actively applied technology in heritage education (Isa, I. M. M. (2022), (Ladson-Billings, B. (1992). Many countries have established educational websites, particularly providing resources on heritage and the environment (Lee, W. O., Hao, N., & Chu, Q. (2020). These websites support comprehensive education for students, such as www.swmlac.org.uk/MLI/muslin.htm and www.mla.gov.uk. In 2004, the Museums, Libraries, and Archives Council (MLA) launched the “Inspiring Learning for All” program to help plan and evaluate the educational effectiveness of projects. The literature shows that many researchers and international organizations are concerned with the relationship between people and regional cultural heritage. Traditional and cultural values systems of nations are always closely linked to the field of education, aiming to develop well-rounded individuals in the context of globalization (Meléndez-Luces, J. 2021).

In Vietnam, many authors have focused on the education of cultural values for high school students, yet there has been a lack of in-depth studies specifically addressing ethnic minority students. Nguyễn Thị Kim Ngân, Director of the Institute for Educational Research and International Exchange, authored the article “Urgent Need for Cultural Value Education for Students” (Nguyen, T. K. N. 2018). This article emphasizes that cultural value education is about transmitting the accumulated values of previous generations to the younger generation, akin to how knowledge education provides students with the knowledge humanity has discovered through the study of nature, humans, and society. Nguyễn Thị Hoàng Yến from the Vietnam Institute of Educational Sciences conducted the study “Education of Traditional Cultural Values in Vietnamese High Schools” (Project Leader - Code: B2012-37-07NV). This project developed a theoretical framework with a system of traditional cultural values to be integrated into the general education curriculum, proposing objectives, content, and methods for teaching traditional cultural values to students through the post -2015 general education curriculum.

Bùi Thị Như Ngọc also contributed with the article “The Requirement of Value Education in the Context of Integration” (Bui, T. N. N. (2015). This research recognizes that we are living in the 4.0 era, where technological achievements significantly impact the youth. In this context, cultural value education becomes increasingly urgent, as regardless of how much science and technology advance, the cultural values of humanity remain an indispensable foundation in life. Through cultural value education, we not only preserve cultural heritage but also promote the sustainable development of society and individuals. Domestic studies and educational efforts on cultural values are making significant contributions to this goal, particularly in the context of globalization and the rapid development of science and technology.

Methodology

To achieve the research objectives, this paper employs a mixed-method approach, combining qualitative and quantitative methods to collect and analyze data, aiming for a comprehensive understanding of the education of traditional cultural values for high school students who are ethnic minorities in Thái Nguyên province, Vietnam. The research sample includes 50

teachers and 147 students from high schools in Thái Nguyên province. We use interviews to gather detailed data on the methods of cultural value education, as well as the challenges and opportunities in the process of educating cultural values to students. Additionally, we observe the teaching and learning activities of teachers and students at high schools in Thái Nguyên province.

Results

During the research and practical observation process, we found that some students prefer learning Vietnamese or English over their native languages. Additionally, some students are reluctant to wear traditional attire during school events and do not participate in community cultural events. Many students lack a deep understanding of their own ethnic and cultural values. This is partly due to their lack of awareness about the importance of preserving cultural heritage. Moreover, teachers have not sufficiently focused on educating cultural values through integrated teaching hours.

Through our survey, we found that the education of traditional cultural values has been integrated into the curriculum content, teaching methods, and organizational forms of teaching. This integration occurs through interactions between teachers and students during lessons and in the assessment of teaching outcomes.

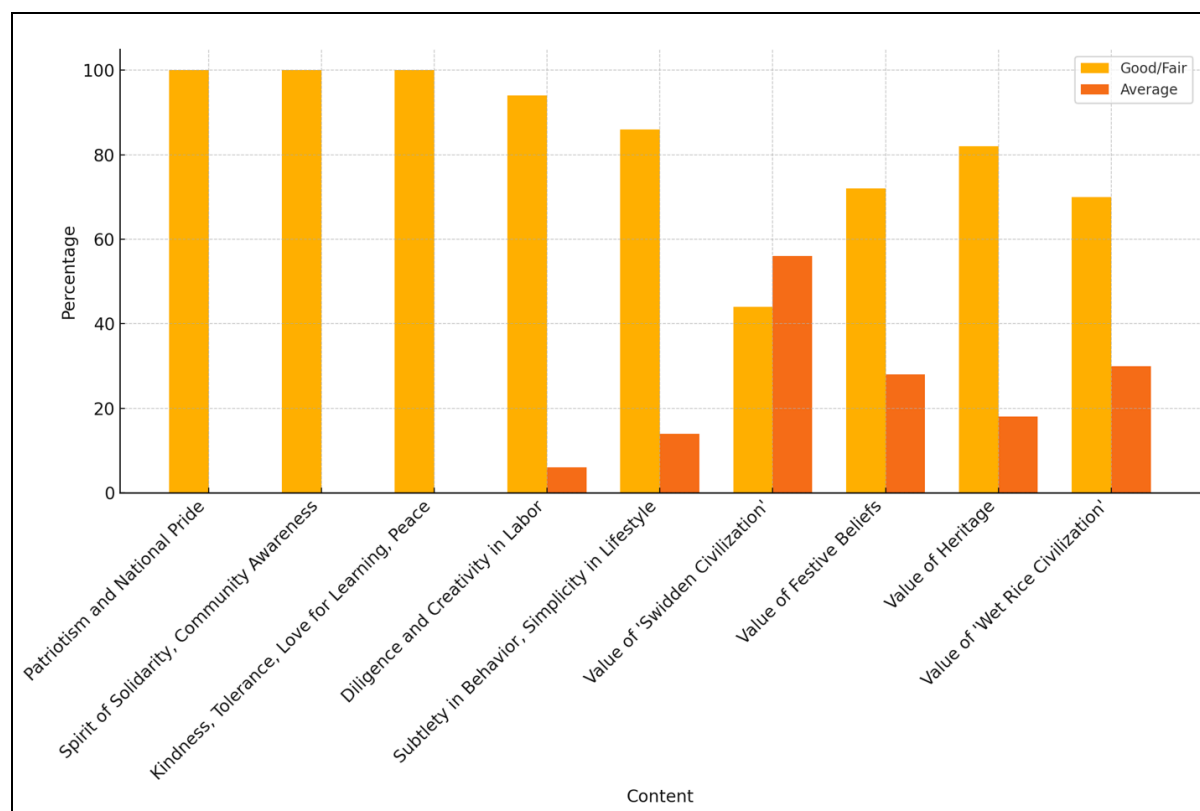


Figure 1: Teacher Evaluation of traditional Cultural Value Education Content

- 1) Highly Valued Contents (100% rated as good and fair):Patriotism and National Resilience.
- 2) Solidarity, community spirit; non-discrimination of ethnic groups; Kindness, tolerance; eagerness for learning, valuing righteousness and peace. This indicates that teachers

- highly value and appreciate values related to patriotism, community awareness, and benevolence. These are fundamental values in traditional cultural education.
- 3) Contents with More Diverse Evaluations: Diligence and creativity in labor: Rated as good and fair by 94% of teachers, but 6% rated it as average. Sophistication in behavior, simplicity in lifestyle: Rated as good and fair by 86% of teachers, but 14% rated it as average. This shows that some teachers believe these values need to be emphasized and improved in education.
 - 4) Contents with Higher Proportion of Average Ratings: Value of “milpa civilization ”: 56% rated as average; Value of festival beliefs: 28% rated as average; Value of heritage: 18% rated as average; Value of “wet rice civilization”: 30% rated as average. These values have a higher proportion of average ratings, indicating some challenges and difficulties in educating and conveying these values to students. The survey results show that teachers in Thai Nguyen highly appreciate and are very concerned about fundamental values such as patriotism, solidarity, and kindness. However, values like “milpa civilization” and festival beliefs need more attention and improvement in the teaching process. Comprehensive and effective education on traditional cultural values is crucial to ensure that students, especially ethnic minority students, can understand and internalize these values.

For the student group, the survey results are as follows:

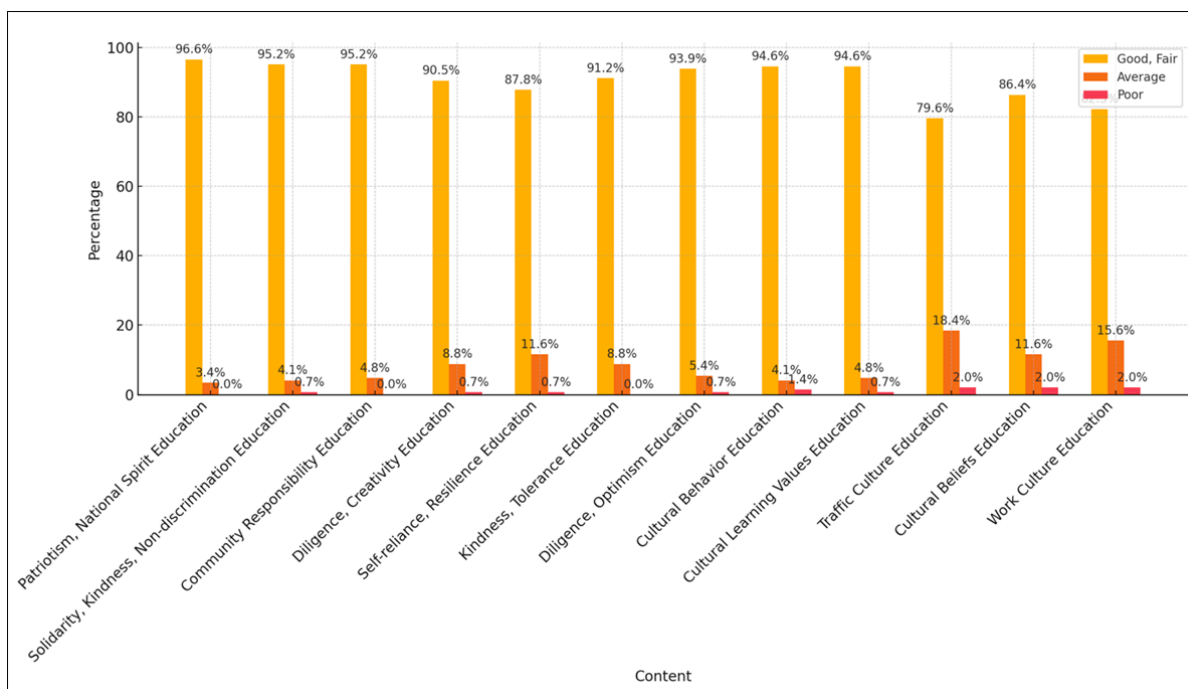


Figure 2: Survey Results of Students on Evaluation of Traditional Cultural Values Education Content

The bar chart provides a visual representation of the survey results on students' evaluation of various educational contents related to traditional cultural values. The categories are evaluated based on three criteria: Good/Fair, Average, and Poor.

- 1) Education of Patriotism and National Spirit: This category has the highest number of students rating it as Good/Fair (142), with only 5 students rating it as Average and none as Poor, resulting in 96.6% positive feedback.

- 2) Education of Solidarity, Kindness, and Non-discrimination: It received 140 Good/Fair ratings, 6 Average, and 1 Poor, translating to 95.2% positive feedback, indicating a strong acceptance among students.
- 3) Education of Community Awareness and Civic Responsibility: Similar to the previous category, it has 140 Good/Fair, 7 Average, and 0 Poor ratings, with 95.2% positive feedback.
- 4) Education of Diligence, Hard Work, and Creativity: This category shows slightly lower Good/Fair ratings (133) compared to others, with 13 Average and 1 Poor, indicating 90.5% positive feedback.
- 5) Education of Self-reliance: With 129 Good/Fair, 17 Average, and 1 Poor rating, this category stands at 87.8% positive feedback, suggesting the need for some improvements.
- 6) Education of Kindness, Tolerance, and Importance of Compassion: It has 134 Good/Fair ratings, 13 Average, and 0 Poor, with 91.2% positive feedback.
- 7) Education of Studiousness, Diligence, and Optimism: This category is rated by 138 students as Good/Fair, 8 as Average, and 1 as Poor, resulting in 93.9% positive feedback.
- 8) Education of Cultural Values in Behavior: It received 139 Good/Fair, 6 Average, and 2 Poor ratings, with 94.6% positive feedback.
- 9) Education of Cultural Values in Study: Similar to the previous category, it has 139 Good/Fair, 7 Average, and 1 Poor ratings, achieving 94.6% positive feedback.
- 10) Education of Cultural Values in Traffic Participation: This category shows the lowest positive feedback with 117 Good/Fair, 27 Average, and 3 Poor ratings, translating to 79.6% positive feedback, indicating a significant area for improvement.
- 11) Education of National Religious Cultural Values: With 127 Good/Fair, 17 Average, and 3 Poor ratings, it has 86.4% positive feedback.
- 12) Education of Cultural Values in Labor Participation: This category received 121 Good/Fair, 23 Average, and 3 Poor ratings, resulting in 82.3% positive feedback.

The survey results reveal a generally positive student reception towards the educational content on traditional cultural values. However, certain areas such as education on cultural values in traffic participation and labor participation show lower positive feedback, indicating the need for targeted improvements in these domains to enhance their effectiveness and acceptance among students.

Discussion

With the slogan: “School is home, classmates are siblings, teachers are like parents”, the school has become a common home for ethnic minority students. Through survey results collected from teachers and students at several general education schools in Thai Nguyen province, we observed that the schools have been implementing various educational programs on traditional cultural values in a multicultural environment. Both teachers and students have a profound understanding of the goals and roles of traditional cultural education for students.

In response to the question: “Evaluate the goals and roles of traditional cultural education for students” (question 1), the majority of teachers and students agreed on three main goals: Educating students on traditional cultural values aims to provide knowledge about good traditional values (98% of teachers, 99.3% of students); to develop in students a positive attitude towards preserving and promoting good values in a modern environment (98% of teachers, 98.6% of students); and to foster in students behaviors that preserve and promote

the good traditional cultural values of their ethnic group (100% of teachers and 93.9% of students agreed).

Most survey participants agreed on the role of traditional cultural values education: contributing to the construction of an advanced school culture rich in national identity (100% of teachers, 89% of students); contributing to the comprehensive development of student character in a multicultural environment (100% of teachers, 89.8% of students); forming habits and behaviors in daily life that conform to student norms (96% of teachers, 91.2% of students); helping students prevent and avoid social evils and school violence (94% of teachers, 81.6% of students); and educating students on traditional culture to integrate with the world without losing their cultural identity (96% of teachers, 87.8% of students). In answering this question, over 90% of students selected the following content: educating patriotism and national spirit; promoting solidarity, kindness, and non-discrimination; fostering community awareness and civic responsibility; teaching diligence, creativity, kindness, tolerance, and valuing relationships; and encouraging a love for learning, diligence, and optimism. Among these, 96.6% emphasized the importance of educating patriotism and national spirit. Most educational content on traditional cultural values in schools focuses on humanistic values: patriotism, kindness, solidarity, a love for learning, etc. Survey results from teachers and students at several general education schools in Thai Nguyen show that schools have been and are implementing many initiatives for traditional cultural education in a multicultural environment. However, there needs to be a stronger focus on educational content closely tied to the unique characteristics of each ethnic group, helping students gain a deeper understanding of their cultural roots. The school emphasizes activities promoting the cultural identity of ethnic minorities. Students wear traditional costumes every Monday, participate in boarding activities every Friday evening, and engage in ethnic sports and games in March and November each year. Biennial campouts and games are also organized in November. Additionally, the school regularly conducts experiential activities across grade levels. Tenth graders study and experience at the Museum of Vietnamese Ethnic Culture in September and October annually; eleventh graders interact culturally with students from other boarding secondary schools in neighboring provinces and experience local minority communities in November and December each year; twelfth graders engage in practical studies of history and traditions in April and May annually. The school utilizes cultural values and products of ethnic minorities to decorate dormitories and classrooms, creating a friendly, open, cohesive, and culturally rich learning environment.

Add experimental solutions and utilize locally available teaching materials in lessons. Implement teacher training programs on cultural values education. Engage community leaders and artisans in the educational process to provide deep insights into local culture. Integrate cultural activities and events into the school curriculum to make learning more engaging. Promote bilingual education to support the preservation of both culture and language. Below is a table of content and methods to guide teachers in educating cultural values to ethnic minority students.

Content	Methods		
	Integration	Experiential	Project
Love your homeland and country; Love your family, neighbors, friends...	√	√	
Solidarity, Diligence, Honesty, Discipline, Responsibility, Courage, Cooperation	√	√	
Culinary culture	√	√	
Clothing culture			√
Language and script	√	√	
Traditional festivals		√	√
Social customs		√	√
Production customs		√	√
Traditional crafts	√	√	√
Folk knowledge	√		√
Folk beliefs	√	√	
Folk games; Literature and arts	√	√	√
Folk performing arts			√
Historical and cultural relics		√	√

Table 1: Content and Implementation Methods of Traditional Cultural Values Education for Students

When discussing traditional cultural values and education methods for ethnic minority high school students, it is crucial to create an inclusive and diverse environment that respects and honors their cultural heritage. The proposed roadmap includes:

- 1) Developing curriculum: Collaborating with experts, community leaders, and representatives of ethnic minority groups to develop a curriculum that reflects the traditions, values, and history of ethnic minority communities. This curriculum should be integrated into existing subjects such as history, culture, and the arts (Moll, L. C., Amanti, C., Neff, D., & Gonzalez, N. (1992).
- 2) Cultural exchange programs: Organizing cultural exchange programs where students from different ethnic backgrounds can share traditions, languages, music, dance, and other cultural aspects, promoting understanding, respect, and appreciation of diversity.
- 3) Guest speakers and community involvement: Inviting guest speakers from ethnic minority communities to share their experiences, stories, and knowledge with students.
- 4) Language preservation: Offering language classes or workshops to teach languages of ethnic minority communities. Language is a crucial aspect of cultural identity, and preserving it helps students maintain a strong connection to their heritage (Avramidis, E. (2006).
- 5) Mentorship programs: Establishing mentorship programs where high school students from ethnic minority backgrounds can connect with successful individuals from their own communities. Mentors provide guidance, share experiences, and serve as role models, encouraging students to embrace their cultural values (Nguyen, Q. H. (2013).
- 6) Celebrations and cultural festivals: Organizing cultural celebrations and festivals throughout the school year to showcase traditions, cuisine, art, and performances of ethnic minority groups. These events provide opportunities for active participation, learning, and appreciation of cultural diversity (Nguyen, T. L. (2016).
- 7) Clubs and multicultural activities: Encouraging the formation of multicultural clubs or student cultural organizations focusing on ethnic minority cultures to promote diversity, integration, and awareness of different cultural backgrounds. These clubs

can organize activities, discussions, and projects to explore and celebrate the traditions and values of ethnic minority communities (Snyder, S., & Fenner, D. S. 2021).

- 8) Parent and community involvement: Engaging a broader community and parents by inviting them to participate in school cultural activities, workshops, or events. Their involvement helps create a strong support network and reinforces the importance of traditional cultural values education. (Trinh, T. T., Hà, T. L., Nguyễn, T. T., & Đương, V. H. 2020).
- 9) Progress assessment: Regularly assessing the effectiveness of cultural values education initiatives by gathering feedback from students, parents, and educators. Using this feedback to improve and refine teaching programs or activities to better meet students' needs (Vương, T. P. H. (2022)).

It is essential to adjust the approach based on specific cultural contexts, needs, and preferences of relevant ethnic minority groups. Collaboration, open communication, and genuine commitment to integration are key to successfully implementing traditional cultural values education for ethnic minority high school students.

Each ethnic minority student represents the culture of a rural area, a small group within a larger community. Therefore, through cultural education content, students experience the traditional cultural values of their own ethnic group and come into contact with the cultural values of other ethnic groups, ensuring the continuous nurturing and growth of cultural flows. The education of traditional cultural values for ethnic minority students in general education needs to clearly define the purpose, significance, and content of this education, while firmly grasping the principles and methods of educating traditional cultural values students.

The traditional culture of ethnic groups is an abundant and endless source of knowledge for lifelong learning. Today, culture is not only regarded as a valuable asset for traditional education and character education for the younger generation but also as a significant resource contributing to the country's economic and social development. Educating traditional cultural values to ethnic minority students in general education aims to develop a foundational basis to expand and enhance cognitive abilities and the flexible adaptability of individuals when changing living environments and participating in social activities.

Therefore, the most important goal of educating the traditional cultural values of ethnic minority students is to help them understand the traditional culture of their own ethnic community. It also aims to enhance cognitive abilities, understanding of cultural perspectives, communication and cooperation skills, sense of equality, respect, cultural tolerance, and social action skills, while avoiding prejudice and combating discrimination against ethnic minority students.

At all educational levels, educating traditional cultural values in a multicultural environment has a significant impact on students, particularly in terms of their thoughts and emotions. Through this, students will recognize the value of culture, leading to appropriate behavior and a conscious effort to preserve, protect, and promote the traditional cultural values of their ethnic group. Introducing the program of educating traditional cultural values of ethnic groups into general education is a correct policy, not only for the sake of imparting knowledge but also for raising students' awareness and understanding of their homeland. Additionally, it contributes to the construction of an advanced Vietnamese culture rich in national identity in the context of a socialist-oriented market economy and international

integration, creating a solid spiritual foundation for the rapid and sustainable development of the country. Preserving and promoting traditional cultural values in alignment with educational innovation is one of the important educational content in Vietnamese schools today. To effectively educate cultural values, teachers need to firmly grasp the theoretical and practical issues of cultural values and ethnic culture, thereby having suitable methods and ways to organize cultural value education activities for different student groups in various regions.

Conclusions

Our study demonstrates that schools have made commendable efforts in integrating the cultural values of ethnic minorities into their curriculum. Teachers have incorporated traditions, while students have engaged in cultural activities that are closely tied to their heritage. Clear educational goals need to be established: Teaching traditional cultural values helps ethnic minority students understand their community's cultural heritage, enhancing cognitive abilities, communication skills, collaboration, equity awareness, cultural respect, and social action skills. We must translate ideas into actions: Educating on traditional cultural values in multicultural environments has significantly influenced students' thoughts and emotions, helping them appreciate cultural values, adopt appropriate attitudes, and develop awareness in preserving and promoting their ethnic cultural heritage. Educating on the traditional cultural values of ethnic minority students is crucial for preserving the rich cultural heritage of these communities. Our study underscores the importance of sustaining and enhancing these educational efforts, especially amid increasing globalization. We hope our findings and recommendations contribute to ongoing efforts in this field.

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Contact email: quyntt@tnue.edu.vn

***The Psychological Cost of Academic Excellence:
Shadow Education and Student Well-being***

Deeksha Sharma, Panjab University, India
Satvinderpal Kaur, Panjab University, India

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Abstract

In the evolving landscape of education, the shift towards an industry model fueled by commercial interests has diminished the traditional status of education as a public good (UNESCO, 2016). Exacerbating this situation is the recent rise of shadow education, an emerging billion-dollar coaching industry, originating in Asian countries and subsequently spreading worldwide. Shadow education, defined as private supplementary tutoring running parallel to regular school hours, has become a prominent force. The objective of the paper is to understand the impact of shadow education on students' psychological and emotional well-being. Conducting empirical research in Chandigarh City, India, the study focuses on 200 students of 12th-grade concurrently preparing for All-India level entrance examinations in Medicine and Engineering streams. Utilizing stratified random sampling and descriptive survey methods, the findings reveal alarming trends, with shadow education institutes enrolling students in two-year programs, by collecting huge fees for tuition and hostel/transportation facilities. Consequently, a significant number of students skip regular school and attend coaching centers, The study witnessed that majority of the students had heightened levels of anxiety, stress, isolation, and diminished emotional resilience. This study underscores the critical need to address the intricate dynamics between shadow education, student well-being and the evolving educational system where profit becomes the topic priority for educational institutions. The implications are far-reaching, compromising key indicators of sustainable development such as quality education, reduced inequalities, and social justice.

Keywords: Shadow Education, Coaching, Commercialisation, Quality Education, Student Well-being

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Introduction

Education is a fundamental human right that empowers individuals and offers a powerful means for economically and socially marginalized children and communities to overcome poverty. It serves as a cornerstone of human rights, essential for the realization of other rights and the promotion of sustainable development. Education enhances personal well-being and drives societal progress. Nevertheless, the landscape of education has undergone significant changes in recent years, characterized by the proliferation of for-profit educational institutions. Globally, the ascent of neoliberal ideologies has played a crucial role in shaping socio-economic policies, exerting a significant influence across various sectors, including education. According to David Harvey, neoliberal ideologies have profoundly impacted diverse aspects of society, including education. The neoliberal agenda, which advocates for free-market principles and minimal governmental intervention, has strongly influenced education policies worldwide (Harvey, 2005).

Since the advent of economic reforms in India, the country has witnessed significant growth in both its education system and economy. A notable development has been the rise of private education in the form of coaching classes, initially conceived as supplementary aids like private tuitions to enhance students' performance in schools. What started as one-on-one tutoring has evolved into one-to-many interactions, expanding into coaching classes aimed at improving academic outcomes in school subjects. Over time, these centers broadened their focus to prepare students for national-level entrance exams in fields such as engineering, management, and medicine (Bray and Silova, 2006). This phenomenon, where private tutoring and coaching occur outside the formal schooling system, is known as shadow education. Defined as "educational activities, such as tutoring and extra classes, occurring outside of the formal channels of an educational system designed to improve a student's chances of successfully moving through all the allocation processes" (Buchmann, Condrón, & Roscigno, 2010), shadow education has emerged as a substantial industry in recent years, surpassing expectations with its widespread franchises across India (Zhang W., 2023). The proliferation of this "Shadow Education System" has quietly influenced the academic paths of countless students, promising academic success but often concealing hidden costs that challenge the integrity of India's educational framework. As more Indian students turn to private coaching, supplementary classes, and intensive exam preparation, the ramifications of this trend are increasingly evident, impacting not only individual learners but also broader socio-economic and cultural dynamics within the nation.

In India, the prevalence of private coaching among high school students is strikingly high, with 83% enrolled in coaching classes according to the Asian Development Bank (2012). This statistic is reinforced by recent findings from the National Statistical Office (NSO, 2020), which indicate that one in three high school students receives private coaching. The NSO report, based on the 75th round of the National Sample Survey, reveals that across all educational levels, from pre-primary to graduate studies, 19.8% of students engage in some form of private coaching. For students in Classes 9 and 10, preparing for critical board exams and admissions tests, this figure rises to over 30%. Urban upper-class students notably have greater access to private coaching, with more than half of boys from urban upper-class backgrounds attending coaching, compared to only 13.7% of rural boys and girls from minority communities. Private coaching comes at a significant financial cost, constituting over 18% of the average annual education expenditure for secondary school students, a pattern similarly observed among higher secondary school students. In states like West Bengal, students allocate a substantial portion, around 27%, of their education expenditure to

private coaching (NSO, 2020). The phenomenon of private tutoring is increasingly recognized as integral to India's education landscape, addressing educational needs across the achievement spectrum—from high-achieving students aiming for top marks to struggling students seeking support (Majumdar, 2014). These coaching centers operate with varied service packages tailored to student needs and parents' financial capacities, often including accommodation options. Fees range significantly, from ₹50,000 to ₹1 lakh annually for year-long coaching, underscoring concerns about the commercialization and potential exploitation within the education sector.

These coaching institutes, now operating as corporate entities, participate actively in educational policy advocacy, influencing policies that align with their commercial interests. Their clientele spans not only the middle class but also economically disadvantaged families who invest heavily in coaching fees to fulfill their children's educational aspirations (Spren & Kamat, 2018). This scenario highlights emerging disparities in access to quality education and underscores the need for reforms that promote a more inclusive and equitable education system. Addressing these issues requires shedding light on hidden disparities and advocating for policies that ensure all students, regardless of socio-economic background, have equal access to high-quality educational opportunities. This approach is crucial for fostering a more just educational landscape in India. This study seeks to illuminate the concealed tolls on students' well-being linked to the relentless pursuit of academic excellence. Its aim is to initiate a critical discourse on the future direction of education in India, urging stakeholders to confront these challenges and establish a more inclusive and sustainable learning environment for future generations. Central to this investigation is the exploration of shadow education and its ramifications for equity within India's educational framework, with particular attention to how it affects disadvantaged students who lack the financial means to access supplementary educational support.

Research Questions

1. What are the hidden psychological costs associated with shadow education among students in India, and how do these impact their overall well-being?
2. How does the prevalence of shadow education in India contribute to the psychological stress and well-being of students striving for academic excellence?

Objectives

1. To identify and analyze the hidden psychological costs associated with engaging in shadow education among students in India.
2. To assess the impact of participating in shadow education on the overall psychological well-being of students in India, focusing on stress levels, anxiety, and other related factors.

Methodology

The study comprised 200 12th-grade students preparing for national entrance exams in Medicine and Engineering streams in Chandigarh, India, focusing on the unique challenges and opportunities faced by this specific demographic. The research unfolded in two distinct phases to offer a comprehensive insight into their experiences.

Phase 1 – Quantitative

In the initial phase, a quantitative approach was employed. A structured questionnaire was crafted to gather data from the sample, encompassing various dimensions to delve into the challenges and opportunities encountered during the students' educational journey. These dimensions included:

- i) Socioeconomic Background: Gathering information on the economic status, occupation, and household conditions of the students' families.
- ii) Access to Education: Investigating factors such as school proximity, availability of educational resources, and transportation access.
- iii) Parental Involvement: Assessing the level of parental engagement in their child's education and their aspirations for their children.
- iv) Educational Challenges: Identifying specific academic hurdles, socio-economic barriers, psychosocial challenges, gender disparities, and access issues faced by students.

Phase 2 – Qualitative

The second phase adopted a qualitative approach, involving in-depth interviews with a subset of the sample. This approach facilitated a deeper exploration of the students' and their parents' experiences and perspectives. Open-ended questions were used to encourage participants to share personal experiences, challenges, and aspirations.

This dual-phase methodology aimed to provide a nuanced understanding of the educational landscape and socio-economic dynamics impacting students preparing for competitive exams in Chandigarh.

Results

1. Demographic Details of the Sample

S. No.	Demographic details	
1	Age range	16-19 years
2	Subject for which shadow education is pursued	Medicine and Engineering
3	Average coaching institute fee (for 2 years combined)	INR 8 Lakh
4	Annual parental income	INR 8-9 Lakh
5	Average number of siblings	3

Table 1: Demographic details of the sample

The demographic profile of the sample offers valuable insights into the characteristics of students engaged in shadow education, particularly those focusing on subjects like Medicine and Engineering. The chosen age range of 16-19 years reflects the typical use of shadow

education among students preparing for crucial entrance exams or seeking to enhance their academic performance in their final years of high school. The selection of subjects, specifically Medicine and Engineering, underscores the competitive nature of shadow education, as these fields often require intensive preparation and high academic standards for admission to prestigious institutions. Students aspiring to careers in these fields frequently opt for coaching to improve their chances of success in entrance exams. The significant average fee paid to coaching institutes, totaling INR 8 Lakh over a two-year period, highlights the substantial financial commitment associated with accessing shadow education services. This investment reflects the importance parents and students place on achieving academic excellence in competitive domains. The annual income range of parents, between INR 8-9 Lakh, provides context regarding the economic background of the sample. While moderate, this income level indicates a significant allocation of household resources towards coaching fees, emphasizing the prioritization of education within these families. The average number of siblings, at 3, suggests additional financial responsibilities and competition for resources within the household. This aspect underscores the socio-economic dynamics influencing students' participation in shadow education. Understanding these demographics is crucial for developing targeted interventions and support mechanisms to ensure equitable access to educational opportunities for all students, regardless of their socio-economic background.

2. Psychological Costs Associated With Shadow Education Among Students in India and Their Impact on Students' Overall Well-being

While shadow education is often praised for its role in supplementing academic learning and improving students' performance, it is imperative to scrutinize its hidden costs, particularly regarding the psychological and cognitive well-being of students. This discussion seeks to delve into the complex relationship between shadow education practices and their potential effects on the psychological and cognitive aspects of students in India. By exploring these hidden costs, we aim to develop a deeper understanding of the broader implications of shadow education and its influence on the holistic development of students.

Domain	Sub-domain	Percentage of students	Factors
Burnout	Emotional exhaustion	88%	Academic demands, workload, or peer expectations
	Unhealthy competition	59%	Pressure to excel beyond peers, or a hypercompetitive academic atmosphere
Self-esteem	Social comparison	82%	Peer influence, digital platforms, and the academic milieu
	Fear of failure	61%	Perfectionism and anxiety related to assessment
Attention	Selective attention amidst distractions	73%	Clarity of purpose and mindfulness

	Attentional bias towards exam scores	76%	Preexisting expectations and the significance of coaching
Memory	Short term memory and rote learning	82%	Insufficient comprehension and focus on curriculum
	Long term memory encoding and sustainable learning	69%	Engaged learning and active participation

Table 2: Psychological costs associated with shadow education

Burnout is a prevalent consequence, marked by emotional exhaustion due to academic demands, workload, and unhealthy competition. Chen and Kuan's (2021) findings indicate that consistent engagement in private supplementary education (PSE) correlates with increased symptoms of depression, particularly among students deeply involved in such activities. This suggests that while regular participation in PSE may enhance academic performance during high school transitions, it also heightens the risk of depression compared to peers. Memory becomes a critical aspect influenced by shadow education, where there is often a focus on short-term memory and rote learning, sometimes at the expense of meaningful and sustainable learning approaches. This observation aligns with the literature which highlights that excessive after-school tutoring and parental intervention can have detrimental effects on students' physical and mental well-being.

Interview With Candidate I: Academic Struggles and Resilience

"I've been preparing for the NEET exam for the past two years, aiming to secure admission to a top medical college. It's been a rollercoaster journey filled with highs and lows. Initially, I felt overwhelmed by the vast syllabus and the pressure to excel. There were times when I doubted if I could ever achieve my dream of becoming a doctor. I've made significant sacrifices along the way. I spend most of my waking hours studying, often skipping social events and family gatherings. It's isolating at times, but I remind myself of the long-term goal. The pressure is intense, especially as the exam date approaches. There are days when I feel confident after performing well in practice tests, but then there are moments of anxiety and self-doubt. My family has been supportive but they too understand the importance of this exam for my future. They encourage me to stay focused and maintain a healthy balance despite the challenges. I've learned to prioritize self-care and manage stress through meditation and exercise. What keeps me going is the determination to make a difference in people's lives through medicine. The thought of helping others motivates me to push through the tough times. I know success isn't guaranteed, but I'm willing to give my best effort and persevere. Each setback is a learning opportunity, and I'm committed to staying resilient on this journey to achieving my dream."

Interview With Candidate II: Pursuing Excellence in Competitive Exams

"I've been preparing for the NEET exam for the past 2 years, aiming to secure admission to a prestigious MBBS program. It's been a challenging yet rewarding journey so far. Every day is filled with intense study sessions, mock tests, and strategic planning. The pressure is palpable. I've had to make significant adjustments in my lifestyle. I've cut down on social outings and personal hobbies to dedicate more time to preparation. It's isolating at times, but I remind myself that short-term sacrifices are necessary for long-term success. The fear of failure is

always lingering in the background. The NEET exam is highly competitive, and the stakes are high. There are days when I feel confident after scoring well in mock exams, but there are also moments of self-doubt and anxiety, especially when I encounter challenging topics. My family reminds me that setbacks are part of the process and that resilience is key to achieving my goals. The thought of gaining admission to a top college motivates me to keep pushing forward."

3. Contribution of Shadow Education to the Psychological Stress and Well-being of Students Striving for Academic Excellence

Domain	Sub-domain	Percentage of students	Factors
Academic stress	Coursework and assignments	85%	Stringent timelines, intricate assignments, or challenges in juggling multiple requirements
	Exam preparation	96%	Pressure to excel, anxiety about failure, or the extensive content to cover within tight deadlines
Academic anxiety	Career goals	68%	Ambiguity regarding future career opportunities, societal pressures, or apprehension about not reaching desired career goals
	Educational attainment	72%	Achieving academic benchmarks and securing admission to preferred educational institutions
Nervousness	Fidgety	52%	Pressure to perform, feelings of self-doubt, and time constraints
	Restlessness	58%	Hyperactivity, difficulty maintaining focus
Emotional resilience	Positive attitude towards academic setbacks	32%	Mindset focused on growth, self-confidence, and mindfulness
	Sustaining motivation and perseverance	58%	Well-defined goals and self-driven motivation

Table 3: Contribution of shadow education to psychological stress and well-being of students

Academic stress is a predominant issue among students, exacerbated by tight deadlines, complex assignments, and the pressure to juggle multiple responsibilities simultaneously. Alam and Zhu (2022) highlight that in Bangladesh, shadow education intensifies competition and stress, placing a heavy emphasis on exams. Students also face intense pressure related to

exam preparation, including fears of failure and the daunting task of reviewing extensive material within limited time frames. These academic pressures are compounded by concerns about future career prospects, societal expectations, and the pursuit of desired professional outcomes. The drive to meet academic standards and secure admission to preferred institutions significantly impacts students' emotional well-being and self-esteem. Moreover, the hypercompetitive academic environment fosters a culture of comparison and perfectionism, contributing to students' self-doubt and fear of failure. Emotional resilience emerges as pivotal in mitigating the adverse impacts of academic stress and anxiety. Cultivating a positive attitude towards setbacks, maintaining motivation, and persevering through challenges are crucial factors enabling students to cope effectively with academic pressures. Students commonly exhibit nervousness and restlessness as outward signs of the psychological strain they experience. These symptoms often stem from the pressure to perform, feelings of self-doubt, and difficulties in maintaining focus and attention.

Interview With Candidate III: Academic Pressure and Societal Expectations

"I opted for Non-Medical in college under immense societal pressure, despite my passion for the arts. Now, I find myself overwhelmed by the demands of competitive exams and the expectations placed upon me. My family lives in a small town in Himachal Pradesh, and they've sacrificed a lot to send me to a coaching center in Chandigarh, nearly 180 kilometers away. The pressure to perform is immense, and I feel trapped between my own aspirations and societal expectations. Every day is a struggle to keep up with the rigorous study schedule and maintain my mental health. I can't admit to my family that I'm struggling; they've invested so much in my education, and I fear disappointing them. The thought of failing after all their sacrifices is daunting. The coaching environment is competitive, and there's a constant fear of not measuring up to my peers. It's isolating to be so far from home, navigating this journey alone without the emotional support I need. I often feel suffocated by these expectations and unsure how to break free from this cycle of stress."

Conclusion

In conclusion, the examination of shadow education in India unveils a landscape characterized by both promise and challenge. As students pursue academic excellence through shadow education, they navigate a terrain fraught with hidden costs and obstacles. While shadow education offers opportunities for academic enrichment and supplementary learning, it also exposes systemic issues and disparities embedded within the formal education system. The unseen costs and challenges associated with shadow education underscore the urgent need for comprehensive reforms aimed at ensuring equitable access to high-quality education for all students. Furthermore, our exploration into the psychological well-being of students engaged in shadow education practices underscores the critical importance of prioritizing student welfare and holistic development. Implementing strategies to mitigate the adverse effects of shadow education on mental health—such as promoting a balanced approach to study, nurturing critical thinking abilities, and addressing academic pressures—is crucial for fostering a supportive and inclusive educational environment. Ultimately, addressing the complexities of shadow education demands collaborative efforts from policymakers, educators, and stakeholders alike. By working together to cultivate an educational system that values equity, excellence, and student well-being, we can create a more inclusive and sustainable framework for academic achievement in India.

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Contact email: deekshasharma23.11@gmail.com

Reliability Criteria of Standardized Test as a Form of Practical Assessment Created From the Entelechy Perspective Integrated Into Innovative Teaching

Geanina Havârneanu, Alexandru Ioan Cuza University, Romania

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Abstract

This study aims to present essential ways to determine the reliability of a standardized test. To this goal, we explain the most widely used essential criteria for the accreditation of reliability qualities of a standardized test. Standardized testing is integral to innovative teaching that captures essential elements, including offering a safe, inclusive, and beneficial competitive environment, which creates an operational cognitive background that promotes ethical intelligence, resilience, and the ability to make correct and quick decisions under challenging conditions. In a previous study (2022), we explained the relevance of using as many methods as possible to study a standardized test's validity. In this paper, we aim to analyze reliability estimation in different ways: test-retest reliability (stability coefficient); reliability estimated by alternative forms (equivalence coefficient); reliability calculated by the internal consistency/homogeneity of a test (internal consistency coefficient); inter-rater reliability (intra-class correlation coefficient); reliability estimated by item analysis. This analytical study concludes that the accreditation of the reliability of a standardized test necessarily supposes the calculation of the coefficients studied in this article.

Keywords: Reliability, Validity, Standardized Test

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Introduction

Innovative learning has broad perspectives. It is based on the education of values, attitudes, and behaviors and on pedagogical paradigm changes that envisage a real correspondence between society's future needs and the current ways of achieving the desired perspectives.

High-stakes standardized assessments are blamed because they can negatively impact how teachers provide and students learn (Kempf, 2016). Two factors cause this type of mentality. There is a tendency to practice teaching-learning only types of objective items with a single correct answer variant, items specific to a standardized test with low difficulty. It is also essential to design standardized tests that assume only items that activate critical thinking and access the higher cognitive levels (Bloom, 1968; Anderson, Krathwohl, et al., 2001).

A conceptual teaching-learning, which has as its central teleological perspective personal entelechy, viewed from intra- and inter-individual perspectives, involves the learning of human values, behaviors, and attitudes that determine the understanding of the concept of lifelong learning to ensure reaching the area of maximal development (Vygotsky, 1978).

Innovative teaching captures essential elements such as providing a safe, inclusive, and beneficial competitive environment for the child, creating an operational cognitive background that promotes ethical intelligence and resilience, and building the ability to make correct and quick decisions in unpredictable, novel, and complex conditions.

I believe the main problem is not the standardized tests themselves but how they are designed (Havârneanu, 2022c). The main element that must be taken into account is the type of evaluation, formative (structuring of the curriculum) or for certification (educational policies) (Nitko, Brookhart, 2011).

Literature Review

Recent studies indicate that examiners make unintentional errors when designing or administering tests, resulting in irrelevant test scores, which affects test reliability (Reed, Cummings, Schaper, Biancarosa, 2014).

The assessment tool should be based on competency criteria (Scallon, 2004), which must be requested and assessed. In designing the test instrument, the evaluator must emphasize the evaluation process, not the final result of the evaluation (Nitko, 1996). In the design of the items, there must be a match between the curriculum competencies requisite, the appropriate context through organized educational situations, and what is intended to be assessed. For this purpose, we follow the stages: contextualization and operationalization of objectives; planning the contents and their degree of difficulty depending on the cognitive level of the tested students; determining the types of items and their construction; the test administration and the analyses of the results, which determines adjustments regarding the difficulty of the verified contents, the number of items or how the statements of the items were designed (Gilles, Detroz, Crahay, Tinnirello, Bonnet, 2011).

Designing a test involves going through several stages: selecting the evaluation contents according to the curricular vision of the test; structuring the skills embodied in performance categories, well operationalized according to the teleological configuration of the test. The goals of evaluation are continuity, coherence, and interdisciplinarity; personal and relational

responsibility through peer and self-assessment (Burger, 2000); assessment for certification, progress, and transfer), as well as the creation of the specification matrix and the correction/rating scale of the proposed items (Havârneanu, 2022b).

The objective items test only lower cognitive levels (recognition, comprehension, application). The value of these item types increases by estimating superior cognitive levels if the multiple-choice item also has answer options, such as "no answer is correct", "all answers are correct", "not all answers are correct", "there are other correct possibilities" or "it is absurd" (Gilles, Lovinfosse, 2004). Using items as a teaching methodology is appropriate because today's students need an active learning process rather than traditional lectures (Twigg, Stoll, 2005).

Methodology

Different reliability measures vary due to their sensitivity to error sources and, therefore, need not be equal. Also, reliability is a property of the test results and is, thus, said to depend on the target group (Dawis, 1987).

Reliability is evaluated in five different ways (Gliner, Morgan, 2000):

1. Test reliability – repeated test (stability coefficient);
2. Reliability estimated by alternative forms (equivalence coefficient);
3. Reliability estimated by internal consistency/homogeneity of a test (internal consistency coefficient);
4. Reliability estimated by item analysis.

1. Test-Retest Reliability (Stability Coefficient)

Test-retest reliability evaluates the stability over time and the precision of the intended tool for assessing a construct. The magnitude of this type of reliability is miscalculated when repeated testing results are due to students' memorization of questions and answers and not to the qualities of the assessment tool, caused by students' familiarity with the questions. Therefore, the evaluator must ensure that the interval between two tests is reasonable (two to six weeks) to avoid this error. It is also essential that the target group is relatively homogeneous in terms of demographic, psycho-physiological, and prognostic characteristics. The empirical method of establishing the test-retest reliability coefficient is measured by calculating the stability coefficient, whose statistical indicator is the Pearson correlation coefficient between the scores obtained by the same target group on the same test at two different times, and must have at least 0.7 when the significance threshold is below 0.05 (Polit, 2014).

2. Reliability Estimated by Alternative Forms (Equivalence Coefficient)

Reliability estimated by alternative forms assumes that the subjects' results after applying a test are comparable to those obtained by the same subjects after applying another parallel test with similar items. Estimating this type of reliability requires the researcher to state the same items differently or change the order of the items within the same instrument randomly. The shortcomings of this method are that the two tests should administered simultaneously, one after the other, on the same day, and the conditions for administering the second test can be modified, demotivating and changing the students' physical-psychological state. The parallel form method is usually the most satisfactory way to determine reliability for well-conducted

tests because it indicates content equivalence and performance stability (Guilford, 1956). The statistical indicator of the equivalence coefficient is the Pearson correlation coefficient, with values between 0.80-0.90 (Anastasi, 1976).

3. Reliability Estimated by the Internal Consistency or Homogeneity of a Test (Internal Consistency Coefficient)

This type of reliability refers, on the one hand, to the extent to which all the items of the evaluation instrument relate to each other (have the same content and referential). On the other hand, to the extent to which each item refers to the score obtained by each individual, and here we mean both absolute consistency (the value of the individual's score) (Safrit, 1976) and relative consistency (the value of the individual's rank in the group) (Weir, 2005).

The empirical method of establishing the homogeneity magnitude involves calculating the internal consistency coefficient, which increases not only with the number of items but also with the number of response categories (Lozano et al., 2008). Several methods have been developed and are used to calculate the internal consistency coefficient, the most well-known of which are (Gliner, Morgan, 2000):

- 3.1. Subdivided Test Method;
- 3.2. The Kuder-Richardson method;
- 3.3. The method of calculating the coefficient α – Cronbach;
- 3.4. Inter-rater reliability.

3.1. Subdivided/ Split Test Method

The split test method has three variants:

- 3.1.1. Parallel Bisection Method;
- 3.1.2. Method of halving τ – equivalents;
- 3.1.3. The method of congeneric division.

3.1.1. Parallel Bisection Method

This method is a variant of split testing methods used when there is no alternative assessment tool or when the test step is repeated, but the results have not been completed. The technique consists of dividing the results of a test into comparable variances halves and obtaining their correlation coefficient. There are four ways of splitting into two equivalent halves the evaluative instrument designed with the items in the increasing order of their difficulties: by the first item/last item selection rule; by the even rank/odd rank item selection rule; by the permutation or by the rule of random selection of items.

However, the assumption of segregation into strictly parallel elements is too restrictive (Webb, Shavelson, Haertel, 2006). There could be more than one way to divide a test. Each split-half date gives a different reliability value. The complete reliability report is a summary on a synoptic table, such as:

Result per item	Total number of items	α – Cronbach coefficient	SEM Standard error of measurement	Division in halves random	First / last split	Even / odd division	Spearman-Brown random	Spearman-Brown first / last	Spearman-Brown even /odd
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Table 1. Correlation between the three rules of application of halving methods and the coefficient α – Cronbach

The table can be automatically generated using the Iteman system.¹

The method does not throw errors if the items are classified in order of their difficulty; the items are segregated into two parts by bringing together similar items (targeting the same competence and the same content) in one half and singular items in the other half.

The correlation coefficient of the halves of the test is used in the calculation of the internal consistency coefficient, corrected by the Spearman-Brown (1910) formula (Anastasi, 1976, pp. 115-116; Gliner and Morgan, 2000, pp. 314-315):

$$(1) \quad \rho_{total} = \frac{2\rho_{12}}{1+\rho_{12}},$$

where ρ_{12} is the Pearson correlation coefficient between the two halves chosen from among the items of the evaluative instrument.

Cho (2016) criticizes the fact that it is not specified in the assumptions of the calculation of the Spearman-Brown formula that it is assumed that the halves are chosen so that their variances are equal (so-called parallel halving). Parallel-item tests have means, variances, and inter-correlations between equal items (Gulliksen 1950). Cho suggests the use of the following systematic formula, equivalent to the Spearman-Brown type, for calculating the internal consistency coefficient by the split-halves in parallel (SP) method:

$$(2) \quad \rho_{SP} = \frac{4\rho_{12}}{4\rho_{12}+2(1-\rho_{12})}.$$

This is still useful, although it is less often used after developing the formula for calculating the internal consistency coefficient by the method into τ -equivalent halves used when the variances of the split halves are not equal.

3.1.2. Method of Halving τ – Equivalent

Cho (2016) proposes the calculation of reliability by the method of halving with unequal variations of the parts, using the systematic formula of the coefficient of internal consistency by the technique of halving τ - equivalents (split-halves and total - ST):

$$(3) \quad \rho_{ST} = \frac{4\rho_{12}}{\sigma^2},$$

where σ^2 is the variance of the integral test.

It is noted that the methods of calculating the internal consistency coefficient by the parallel halving method and the equivalent halving method have the hypothesis that the segregations of the test items are made so that each part has the same number of items (Cho, 2016).

3.1.3. The Method of Congeneric Division

Calculating the internal consistency coefficient by the congeneric division method mitigates the assumption that the test items are segregated so that each part has the same number of

¹ <https://assess.com/iteman/>

items. Raju (1970) devised a formula in which he took into account the fact that the length of each part of the test is known, while Angoff (1953) and Feldt (1975) took into account the fact that the length of each part of the test is proportional to the sum of variances, respectively, with the sum of the covariances (the products of the scores obtained on the homologous items of the two correlated test parts).

The Angoff - Feldt formula for calculating the internal consistency coefficient by the congeneric division method is:

$$(4) \quad r_{AF} = \frac{4\sigma_{12}}{\sigma^2 - \frac{(\sigma_1^2 - \sigma_2^2)^2}{\sigma^2}}$$

where σ_1^2 is the variance of the first part of the test, σ_2^2 is the variance of the second part of the test, σ_{12} is the covariance between the two parts of the test, and σ^2 is the variance of the entire test.

3.2. The Kuder-Richardson or Rational Equivalence Method

The Kuder-Richardson method of calculating internal consistency estimates the homogeneity of the items used in the test.

Homogeneity between items can be affected by two types of errors:

- content sampling (all items are chosen from an extended item base related to the content to be evaluated, therefore, they are too homogenous);
- the heterogeneity of the competencies the items refer to is too high.

The more homogeneous the range of skills the items test, the greater the inter-item consistency. If the researcher is aware that the scope of the competencies studied is heterogeneous, the heterogeneity of the test should not be considered significant. Instead, the items describing the same competence should be homogeneous. In other words, the inter-item consistency of a skill tested by the instrument must be high.

We use the Kuder-Richardson formula (apud Gliner, Morgan, 2000) to calculate inter-item consistency:

$$(5) \quad r = \frac{n}{n-1} \left(1 - \frac{\sum p_i q_i}{\sigma^2} \right),$$

where n is the number of test items, $\sum p_i q_i$ is the correct sum of the products of the proportion of answers to item i in the test (p_i), and the proportion of wrong answers to item i in the test (q_i) (i is from 1 to n - the total number of test items), and σ^2 is the total variance of the test results (Ebel, 1967).

The Kuder-Richardson formula uses the error variance of a respondent with an average score from the sample, and this fact overestimates the error variance of respondents with high or low scores (Colledani, Anselmi, Robusto, 2019).

Instruments containing multiple-choice items do not lend themselves to this type of internal consistency analysis.

The rational equivalence method has the advantage of not retesting the target group, thus eliminating the transfer effect (fluctuations in individual abilities caused by environmental or physical conditions that are minimized) and the practice effect (the difficulty of constructing parallel test forms). The disadvantages are that the division can be done in several ways, and the correlation coefficient in each case can be different. Furthermore, since the test is administered only once, chance errors may affect the two subgroups of items similarly and thus tend to make the reliability coefficient too high.

3.3. The Method of Calculating the Internal Consistency Coefficient α – Cronbach

Internal consistency assesses the consistency of results between items in a test. The most common measure of internal consistency is the α – Cronbach coefficient (a generalization of the Kuder – Richardson method), which is usually interpreted as the average of all possible partition coefficients of test items (Cortina, 1993).

The formula for calculating the internal consistency coefficient α – Cronbach is:

$$(6) \quad \alpha = \frac{n}{n-1} \left(1 - \frac{\sum \sigma_i^2}{\sigma^2} \right),$$

where n is the total number of items, σ_i^2 is the variance associated with item i , and σ^2 is the total variance of the results obtained following the application of the evaluation tool.

In the analysis of the variance of an item, if it does not fit, it can be removed, which can follow the reliability but sometimes leads to the reporting of the reliability at the group level as higher than the reliability at the population level (Kopalle, Lehmann, 1997). Eliminating less reliable items must be done according to statistical studies (in which the entire target group is divided and then cross-validated) and on theoretical and logical grounds (Kopalle, Lehmann, 1997). Suppose it is desired to increase the reliability of the test by adding items. In that case, you must consider maintaining the homogeneity of the test, which means that new items refer to the same target competence as the existing ones and order the items according to the difficulty level.

The values of the α - Cronbach coefficient recommended for an optimal level of reliability must comply with the George - Mallery grid (2003). It would be best if you also considered stadium research when calculating the value of Cronbach's α coefficient, which should be 0.5-0.7 at the early stage of research, around 0.8 at the stage of applied research, and a minimum of 0.9, when you have to make an important decision (Nunnally, 1978).

3.4. Inter-rater Reliability

Inter-rater reliability refers to the agreement between ratings by two or more researchers applying the same instrument to the same students. Evaluators can be randomly selected, but it is also recommended to involve experts by using experts simultaneously with randomly selected evaluators. Inter-rater reliability can be determined by calculating the following coefficients:

- 3.4.1. Intra-class correlation coefficient;
- 3.4.2. The concordance correlation coefficient.

3.4.1. The Intra-class Correlation Coefficient

The intraclass correlation coefficient assesses the consistency or reproducibility of quantitative measurements made by different raters using the instrument applied to the same students.

We suppose that we know a set of data related to the values obtained by a student in tests evaluated by two experts when applying a test format of N items. Thus, N unordered data values of pair type (x_n, y_n) are obtained, where x_n represents the student's grade in an evaluation of item n given by the first evaluator, and y_n is the student's grade on item n given by the second evaluator for $n = 1, \dots, N$. The intra-class correlation coefficient r proposed initially by Fisher (1954) is:

$$(7) \quad r = \frac{1}{Ns^2} \sum_{n=1}^N (x_n - \bar{x})(y_n - \bar{y}),$$

where

$$(8) \quad \bar{x} = \frac{1}{2N} \sum_{n=1}^N x_n$$

$$(9) \quad \bar{y} = \frac{1}{2N} \sum_{n=1}^N y_n$$

$$(10) \quad s^2 = \frac{1}{2N} \{ \sum_{n=1}^N (x_n - \bar{x})^2 + \sum_{n=1}^N (y_n - \bar{y})^2 \}$$

Since in the denominator for the calculation of s^2 , the number of degrees of freedom is $2N - 1$, the calculation of the value of s^2 becomes unbiased and objective. Also, since in the denominator for the calculation of r , the number of degrees of freedom is $N - 1$, the calculation of the value of r becomes fair and unbiased if it is known. The intraclass correlation coefficient for unordered pairwise data takes values in the range $[-1, +1]$.

When the number of correctors increases, the following formula is applied to calculate the intra-class correlation coefficient (Harris, 1913).

$$(11) \quad r = \frac{K}{K-1} \cdot \frac{N^{-1} \sum_{n=1}^N (\bar{x}_n - \bar{x})^2}{s^2} - \frac{1}{K-1},$$

where K is the number of evaluators, N is the number of items, and \bar{x}_n is the average of the marks given by the K evaluators obtained by the student on the n^{th} item.

3.4.2. The Concordance Correlation Coefficient

The concordance correlation coefficient assesses reproducibility (the degree of agreement between a series of measurements made with the same assessment tool when individual measurements are made by changing one or more conditions) or inter-rater reliability.

We know a set of data related to the values obtained by a student in tests evaluated by two experts when applying a test format of N items. The concordance correlation coefficient is calculated using the formula:

$$(12) \quad \widehat{\rho}_c = \frac{2s_{xy}}{s_x^2 + s_y^2 + (\bar{x} - \bar{y})^2}$$

where

$$(13) \quad \bar{x} = \frac{1}{N} \sum_{n=1}^N x_n$$

$$(14) \quad \bar{y} = \frac{1}{N} \sum_{n=1}^N y_n$$

the variance is:

$$(15) \quad s_x^2 = \frac{1}{N} \sum_{n=1}^N (x_n - \bar{x})^2$$

The covariance is:

$$(16) \quad s_{xy} = \frac{1}{N} \sum_{n=1}^N (x_n - \bar{x})(y_n - \bar{y}).$$

It was observed that the concordance correlation coefficient values are almost identical to the intra-class correlation coefficient values. Comparisons of these two coefficients on different data sets found only minor differences between the two correlations, most often at the third decimal place (Nickerson, 1997).

4. Reliability Estimated by Item Analysis

Clarifying item announcements, repeated measures (Cortina, 1993), and complex item analysis can establish reliability.

Several methods can do the complex analysis of the items:

- 4.1. Formal item analysis;
- 4.2. Rasch analysis to identify non-representative items;
- 4.3. Informal methods of item analysis;
- 4.4. The relationship between reliability and test length.

4.1. Formal Item Analysis

Formal item analysis, which involves calculating item difficulty and discrimination indices, is considered the most effective way to increase reliability.

The difficulty coefficient of an item (Anastasi, 1976) is calculated as the percentage of subjects who solve an item correctly. Items that are too easy or too difficult from the perspective of the skills involved in formulating an answer do not provide relevant information about the students and are eliminated in the test review stage. From a strictly statistical point of view, the ideal item would be the one that is solved correctly by 50% of the subjects.

The discrimination coefficient (Anastasi, 1976) indicates how an item differentiates high and low performers. It is calculated as the difference between the percentage of subjects who correctly solved the analyzed item in the top fifth of the ranking (the first 20% of subjects) and the percentage of subjects who correctly solved the analyzed item in the bottom fifth. The value of the discrimination coefficient must meet the condition of being at least 25%.

4.2. Rasch Analysis to Identify Non-representative Items

In a Rasch analysis (Lans et al. 2018), items that do not usefully contribute to a measurement can be identified by reviewing the so-called representativeness statistics², which apply to each item separately. If an item clearly does not fit after many tests, it is most effective to remove it from the test and replace it with another representative item.

² MNSQ Item Outfit, MNSQ Item Infit

Because measurements with perfect reliability are invalid (Cho, Kim, 2015), sacrificing validity to increase reliability results in the validity attenuation paradox (Loevinger, 1954). For high content validity, each item should be constructed to represent the content to be measured comprehensively. However, repeatedly asking the same question in different ways is often used just to increase reliability (Streiner, 2003).

4.3. Informal Methods of Item Analysis

Methods to increase reliability before data collection include removing ambiguity from the wording of the items being measured, constructing items only from curriculum known to the students, increasing the number of items (without destroying measurement effectiveness), using a scale that is known to be highly reliable, pretesting, excluding or modifying items that proved unreliable in the pretest. Methods to increase reliability after data collection are eliminating unreliable items (accompanied by a theoretical justification) and using a reliability coefficient as accurately as possible.

4.4. The Relationship Between Reliability and Test Length

Considering that following the pretest, it is indicated to make changes not only in the restructuring of the wording of some items to eliminate ambiguities and make them more coherent and easier for students to understand, but also in the structure of the evaluation tool by removing or introducing new items, it was necessary to analyze the reliability of the new instrument obtained, depending on the new number of items.

In this sense, the Spearman-Brown formula indicating the relationship between reliability and test length is used to estimate the possible change in reliability/precision when changing the size of the test by removing or adding items for different reasons:

$$(17) \quad r_{xx} = \frac{nr}{1+(n-1)r^2}$$

where r_{xx} is the reliability estimate coefficient after changing the length of the test, in this new number of items, from the revised version of the test, and is the correlation coefficient calculated between the original and the revised form of the test. In this case, the formula for calculating the standard error of measurements (SEM) is:

$$(18) \quad SEM = \sigma \sqrt{1 - r_{xx}},$$

where SEM is the standard error of the measurements, σ is the standard deviation of the results obtained following the administration of the test. In addition, the formula for calculating the 95% confidence interval for obtaining the actual T-test result is:

$$(19) \quad 95\%CI = X \pm 1.96 \cdot SEM,$$

where 95%CI is the 95% confidence interval for obtaining an actual test result, T , X is the estimated value of a student's actual test result, ± 1.96 the two points on the standard curve that include 95% of the values obtained by students on the test and SEM is the standard error of the measurements. After calculating the coefficient, we can say that there is a 95% chance that the accurate T result obtained by the targeted student is between the values $X - 1.96 \cdot SEM$ and $X + 1.96 \cdot SEM$.

Conclusions

Calculating reliability requires considering complex factors that can change and, depending on them, choosing the correct method(s).

It is also important not to confuse the reliability with reliability or the validity of a test. The fidelity of a test refers to the degree to which a research study accurately reflects or captures the conditions and procedures of the real-world phenomenon being studied. The reliability of a standardized test assumes that this test produces the same accurate, reproducible, and consistent results when administered multiple times, diachronically, longitudinally, to the same group of students. Validity predicts that an instrument measures the characteristic it is supposed to measure. Reliability is a necessary condition for its validity, meaning that if repeated measurements made by applying an assessment instrument are consistent, the instrument will likely be valid. Validity is a sufficient condition for reliability, meaning a valid test is also reliable. In other words, while a reliable test may provide helpful information from a validity perspective, an unreliable test is certainly not valid (Murphy, Davidshofer, 2005).

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A Comparative Analysis of Public Policies for Vocational Education: Brazil and France

Angela Valéria de Amorim, Universidade Lusófona, Portugal
Patricia Carly de Farias Campos, Universidade Lusófona, Portugal
Karoline de Amorim Santos, Universidade Guararapes, Brasil
André Lucas Santos Silva, Universidade Maurício de Nassau, Brasil

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Abstract

The objective of the article is to compare professional education policies, the structuring of the professional training system and the restructuring of the educational environment in Brazil and France. Macrosocial changes and globalized scientific-technological innovations developed over the years in both countries have strengthened education in an integrated manner. To develop this scientific work, we adopted a bibliographic, exploratory and qualitative research on scientific research websites. In the bibliographical research, French authors were found such as: Bodé (1995), Bodé and Rico Gómes (2014), Brucy (2005), Brucy and Troger (2000), Lembré (2016), Léon (1968), Tanguy (2000, 2013), Troger and Pelpel (1993). Regarding education professional in Brazil, the following authors were found Fonseca (1961), Ciavatta (2009), Cunha (2005a; 2005b; 2005c), Manfredi (2002) and Santos (2011). In addition to these, there are other authors who deal with the topic of training and school environment. The educational system in both countries has undergone changes to meet the constant innovation of the job market, the economic process and social inclusion. When comparing the two countries, it is clear that France contributed to professional educational training in Brazil and also the existence of an educational duality between theorists, that is, technical training exclusively for the needs of the job market; on the other, comprehensive training based on learning about health, culture, dignity, family life, development conditions in society and work. Both countries seek improvements in public policies aimed at professional education, among the forms of impact assessment.

Keywords: History of Education France and Brazil, Educational Policies, Professional Qualification, School Environment

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Introduction

Professional education has undergone changes throughout its history worldwide due to the need for labor in different work environments (Silva, 2021; Cunha, 2005a; 2005b; 2000). The development of capitalism and scientific-technological advances led to changes in public education and professional training policies in France and Brazil, with prospects of expanding the primary, secondary and undergraduate educational network (Medeiros, 2020).

Educational policies in both countries presented an educational duality by some theorists who defended general training education and other currents, vocational educational training (Cunha, 2005). Thus, the existence of educational duality among theorists, that is, technical training exclusive to the needs of the labor market; on the other, comprehensive training based on learning about health, culture, dignity, family life, conditions for development in society and for work (Manfredi, 2002; Santos, 2000; Brucy, 2005).

The processes of implementing a national professional training policy in Brazil had a contribution from the French educational system. Educational policies were developed due to social and economic needs (Fleury & Matos, 1991). Workers were dissatisfied with the working conditions and because they did not have adequate knowledge for the activities they carried out, which was imposed on them by economic expansion (Manfredi, 2002). In the meantime, unions intervened between workers and companies along with the creation of laws to promote labor regulation and professional training. Educational political projects were developed with the purpose of growing educational and labor policies to build new possibilities and expand the educational system in Brazil (Medeiros, 2020). For this purpose, this scientific work aimed to compare professional educational policies, the structuring of the system for professional training and the restructuring of the educational environment in Brazil and France (Kuenzer, 1987; 2007). Macrosocial changes and globalized scientific-technological innovations, developed over the years in both countries, strengthened education in an integrated way (Martin, 2017).

To develop this scientific work, we adopted bibliographical, exploratory qualitative research on scientific research websites (Marconi & Lakatos, 2017). In the bibliographical research, French and Brazilian authors were found who deal with education, professional training and the school environment. Currently, we have public policies that contribute to the training of workers in a comprehensive manner, enabling professional and personal growth (Gil, 2019; Marconi & Lakatos, 2017). Corroborating this thought, in 2017, the OECD carried out a survey that dealt with education and professional qualifications in all countries. In France, 81% of adults aged 25 to 64 have completed secondary education. Related to the quality of the educational system, the average student obtained a score of 494 in the domains of reading, mathematics and science, in the OECD International Student Assessment Program – PISA, which exceeds the OECD average score of 488. As for Brazil, the Education and qualifications are important requirements for getting a job as 57% of adults aged 25 to 64 have completed high school. Regarding the quality of the educational system, the average student scored 412 in reading, mathematics and science in the International Student Assessment Program. This score is lower than the OECD average of 488. Therefore, there is a difference in school performance between France and Brazil (OECD, 2017).

In this same research, social vulnerability, unemployment and student housing were noted, which culminate in situations of cognitive development. Education has the purpose of expanding, directing, transmitting knowledge and skills that directly impact the way of

thinking, feeling and acting consciously or unconsciously (Mezirow, 2003). Furthermore, education is a cultural heritage that passes between generations to develop critical thinking in humans, basic and complex skills to live in social environments (Dantas, 2020). Vocational educational policies, the structuring of the system for professional training and the restructuring of the educational environment in Brazil and France have expanded to achieve the objective of providing equity at all levels of education (Bencosta, 2021; Fidalgo, 1988).

Contextualization of French and Brazilian Professional Education: A Brief History of Professional Education in France and Brazil

When analyzing the history of professional education and work that emerged with social relationships and the population's vulnerable conditions, this has been happening for many years. Work is a necessity that man needs to develop and live in a society different from slavery. Work has been a fundamental activity for man for a long time. Ecclesiastes 3:13 highlights that “every man must eat and drink and enjoy the good of all his work” (Saviani, 1994; Biblia, 2018). In this context, we will remember a little about the work and professional training that emerged in Prehistory. Humanity begins to develop skills and knowledge since it was known as hominids and later as homo sapiens, which went through a process of changing habits, food, conservation and created stone tools for use in their work such as hunting, agriculture, among others and ended with written language (Diefenthaler, 2013).

In this context, the influence of French education in Brazil is notable in several aspects, from the structure of the educational system to pedagogical philosophies. Professional education was already perceived empirically, and work began to be divided and civilization also by class divisions and the elite held power over the popular classes. Work in ancient society was slave-based, which over the years underwent a process of social restructuring in modern and contemporary capitalist times (Frigotto et al, 2012).

According to Ciavatta (2009), in this process, the worker was alienated by the idea that work produces social wealth. The industrial revolution began in England in 1760, stimulating inventors, engineers and researchers to develop an advancement in the improvement of industrial machines, steam engines, technological innovations, social changes having a historical and economic landmark (Freddo, 2016). The industrial revolution arrived in France in the 19th century with the development of railways, technological advances, urban development, transformations in the general educational and professional areas related to work, which also impacted the country's economy. On the other hand, this advance brought suffering and physical and mental exhaustion to workers and their families due to the capitalist demands of production in several countries (Frigotto, 2007; Lembré, 2016). However, each country has developed its own distinct approaches to education, reflecting their specific histories, cultures and needs.

Table 1 demonstrates the development of France's professional education system that has developed over the centuries, with roots dating back to the Middle Ages. Table 2 demonstrates the development of professional education in Brazil, which had a different trajectory.

Middle Ages: V to XV (476 – 1453)	Training of apprentices in different trades. Young apprentices worked under the tutelage of master craftsmen, acquiring practical skills.
XIX century (1801 -1900)	Industrial Revolution- demand for technical and professional skills. The Apprenticeship Act of 1851 formalized the apprenticeship system in France, establishing rules and regulations for the training of apprentices.
20th century (1901 to 2000)	After the Second World War – expansion and modernization of professional education in France with the creation of technical and professional schools, known as “lycées professionnels”.
XXI century (20001....)	The vocational education system continues to develop, with an increasing focus on combining practical and theoretical learning.
Learning System	The apprenticeship system, where young people work in companies while attending school. This model allows students to gain practical experience in the workplace.

Table 1: French Professional Education System

Colonial Age (16th to 19th century between 1501–1800)	Formal education was aimed at the elite, technical and professional training was limited. Some professions, such as medicine and law, required specific practical learning training from masters.
Imperial Age (19th century between 1822 -1889)	In 1808, arts and crafts schools were established to meet the needs of qualified labor for the construction and development of the country. Schools were not for everyone.
Old Republic (19th to 20th century between 1889–1930)	Discreet expansion of technical and professional education, with the creation of technical and industrial schools in various regions of the country. Education was still restricted for the children of the elite.
Vargas era (20th century)	The government of Getúlio Vargas (1930-1945) expanded professional education in Brazil and industrialization and modernization policies. Created the Industrial Learning System (SENAI) in 1942.
XXI century (recent decades)	Vocational education expanded and created new technical education institutions, the implementation of apprenticeship programs and the promotion of partnerships between the government, the private sector and educational institutions.

Table 2: Development of Professional Education From Brazil

France and Brazil had in common for their development the political, economic and social interests of dominant groups and less favored groups, as both countries have a history of slavery (Siqueira, 2018; Alonso, 2014). The post-war world gains prominence with the new division with the multipolar issue, neoliberalism, globalization and the economic system (capitalism) (Rego et al., 2013). On this assumption, economic policies emerged that aimed to reduce unemployment and social policies with the aim of reducing social inequalities (Cury, 2008).

Given this fact, human beings in their historical context have the nature of using goods through work (Manfredi, 2017). Therefore, its survival and knowledge are developed through social means and domination by the dominant classes, and thus, it is subject to ambivalence. Furthermore, empirical knowledge was passed from father to son, who started in agriculture and evolved into the industry enslaved by capitalism (Cerqueira, 2011). Due to the necessity

of capitalism, education began to be developed for the less favored classes, but it was also exclusionary (Manfredi, 2017).

In both France and Brazil, aspects of infrastructure and superstructure are related to the beginning, such as capitalism that encouraged changes and the creation of professional education. With the advancement of modernization, professional schools were created with the aim of covering knowledge in different areas and to this end, educational policies with organizational, economic, labor and social aspects of teaching (Neta et al., 2020) However, in Brazil there is still no it was aimed at everyone and with the intention of economic development and education was for work (Manfredi, 2017).

For Marx (2010), professional education at the time of the development of capitalism only portrays the interest of teaching for the profession and not forming citizenship. The worker was also excluded from society, as the class division prevented the cultural and social growth of the most vulnerable who were enslaved with the evolution of capitalism (Netto, 2011). Therefore, it is extremely important that human beings are critical to knowledge and develop skills, especially when they are imposed in a necessary way, such as:

a modification of its human nature so that it can acquire skill and aptitude in a certain branch of work and become a developed and specific workforce, specific training or training is necessary, which, in turn, costs a greater or lesser sum of merchandise equivalents. These training costs vary according to the more or less complex nature of the workforce. Thus, the costs of this education, which are extremely small in the case of the common workforce, are included in the total value spent on its production. (Marx, 1996. p. 289)

In this context, professional education must have skills with characteristics based on 4pillars of education developed in a holistic context in which students receive their training focused on theoretical and practical knowledge that enables social and work coexistence (Delors et al., 2010; Dore et al., 2014).

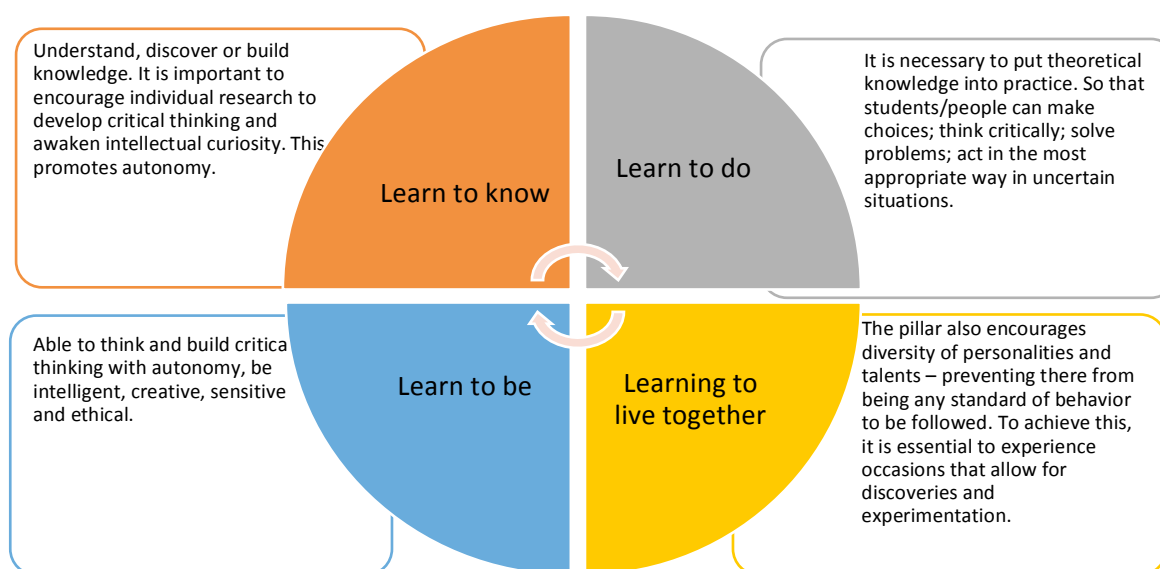


Figure 1: Characterization of the 4 Stages of Education (Vocational Training)

According to Delors et al. (2010, p. 14) education must be a process that achieves knowledge beyond knowing how to read and write, but “constantly adapt to these changes in society,

without neglecting the experiences, basic knowledge and results of human experience”. Education and work developed through society that was linked to capitalism, therefore the population had an erroneous view that work brought better living conditions (Cerqueira, 2011; Porto, 2015).

Thus, education and work are simultaneously ontological and humanized processes of a socialist nature that have been emphasized by the pedagogical system in the authors' research (Manacorda, 2010; Saviani, 2011).

the historical and non-natural character of the relationship between workers and their activity is emphasized. Because it has a historical character, work thus creates the material elements for the development of a rich individuality, which is both unilateral in its production and in its consumption, and work does not appear as work but rather as the full development of the activity itself, in which natural necessity in its immediate form disappears, because in its place a historically developed form has been placed. (Manacorda, 2010, p. 68)

In this process, professional education gained space through educational policies with the aim of serving all levels of social classes (Saviani, 1994; Manacorda, 2010). The fight for equal education is still a distant reality for many students who live on the margins of society (Cury, 2008; Martin et al., 2017). Professional education has evolved historically since the evolution of man and has undergone many achievements in several countries and in Brazil.

France	Brazil
Lycée Professionnel (Professional High School): Bac Pro (Baccalauréat Professionnel): Three-year program CAP (Certificat d'Aptitude Professionnelle): Two-year program.	Secondary Technical Education: Integrated Concomitant - regular secondary education with technical training. Three-year program. Subsequent: Technical courses after high school. Two-year program.
CFA (Centre de Formation d'Apprentis): continuous professional qualification for young people and adults	System S - SENAI, SENAC, SENAR and SENAT: Technical courses and professional qualifications. Professional Learning Programs: Training programs for young apprentices.
BTS (Brevet de Technicien Supérieur): offered by technical higher education institutions and equivalent to a technical course in Brazil	Youth and Adult Education (EJA) with Professional Qualification: Programs aimed at young people and adults who have not completed basic education at a regular age.
IUT (Institut Universitaire de Technologie): two-year degrees in various technical and technological fields.	Continuing Training update or expand your qualifications and Professional Qualification: Short-term courses
Formation Continue: continuing training aimed at adults	Higher Level Professional Education: Higher Technology Courses: Short-term courses (2 to 3 years) that lead to a technologist diploma.

Table 3: Structure of Professional Education in France and Brazil

Professional education is associated with activities that integrate theoretical and practical knowledge to develop skills and appropriate procedures in professional practice. In this sense, professional education is a form of integral student training involving management strategies that provide qualification, flexibility and organizations for professional and social activities. The modalities are offered in educational institutions in secondary and higher education, in addition, there is a continuous learning process with professional qualification (Resolution 1/21 of the CNE/CP).

The history of professional education in Brazil there was a milestone in 1906 with Decree nº 787, signed by Nilo Peçanha who founded three trade schools in Niterói, Petrópolis and Campos and an agricultural learning school. Soon after, in 1909, Nilo Peçanha assumed the Presidency of the Republic and established professional education in a federal network, through Decree No. 7,566, which created Federal schools in several states in Brazil (Ramos, 2014). Furthermore, education needed to be restructured, as there was a duality of education that was broken in 71 with law 5,692/71, which modified the structure and regardless of social class, one could be qualified and after the 90s, professional education also went through a process of change (Kuenzer, 1991). Controversies continue for education to be equal and universal and with the aim of combining secondary education with professional education. Decree no. 5,154/04 revoked Decree 2,208/97 with the purpose of “integrated training between general training and secondary-level professional, technical and technological education”.

Permeating this theme, the educational policy of President Luiz Inácio Lula da Silva's administration stands out, which continued social programs for the needy population. President Lula's proposal also differed from other mandates. The policy was focused on social issues and thus, vocational education made great progress. Among these changes, Law No. 11,892/2008 was created, which increased the number of schools and colleges and the number of vacancies to include all citizens in the institutionalization of the Federal Network of Professional, Scientific and Technological Education (Law No. 11,892/2008).

Social vulnerability was a factor as a starting point that permeated the less favored seek education and qualifications for work, enabling them to enter the job market and develop a quality life. Every population needs to have mastery of different cultures, writing, politics and economics. Knowledge is diverse in political, sociological and philosophical areas that bring very significant contributions based on the social and economic problems experienced. Capitalism still has great influence on various political and economic segments in Brazil, among other countries. (Firestone & Mangin, 2014; Sarason, 2004). Human beings need to be respected above production and consumer goods. For this reason, education needs to be seen as a potential of free access and be egalitarian so that they can have the right to express themselves and think based on democracy and not slavery. Therefore, educational policies were improved to meet the demands of population growth and class changes social (Allington, 2009).

The principle of educational systems and guidelines determine the criteria, forms of organization, planning, evaluation, validation of competence and certification that must be considered by all educational networks and institutions when offering this modality. The new reorganization and approval of the educational system and the new guidelines brought an innovation in a single document. Guidelines for professional qualifications, secondary, higher and postgraduate courses. With Law No. 13,415/17, Professional and Technological Education - EPT at secondary level became part of basic education in Brazil. The flexibility

of the high school curriculum provides for five training itineraries, one of which is technical and professional training (Ramos, 2017). Therefore, the offer of secondary level EPT must consider the General National curricular guidelines for Professional and Technological Education, defined by Resolution CNE/CP 1/21 (2021) and the Resolution CNE/CEB 3/18 (2018) of the National Curricular Guidelines for Secondary Education as standards specific of professional teaching and learning (Piolli & Sala, 2021; Lopes, 2024).

In this context, it is necessary to join forces between the State, families and society to support the construction and implementation of public policies that fulfill the social function for which they are intended: guaranteeing the full development of people, the exercise of citizenship and the professional qualification (Martin et al., 2017).

The School Environment and Learning

Professional education is a form of integral student training involving management strategies that provide qualification, flexibility and organizations for professional and social activities. In this aspect, to develop teaching and learning, educational institutions have a physical structure that accommodates students in different environments, providing a humanized and social place (Macedo & Borges, 2019). An analysis of school architecture in Brazil and France will be more of a technical analysis of the construction of innovative buildings and programs (Kowaltowski, 2011). As a result of the intersections and interactions between the history of education and school architecture, we understand that an academic analysis of school architecture involves examining a variety of cultural and educational values. These values are approached through conversations that provide different fields and offer references, relevance and interpretations. Understanding school culture material as a broad research investigation that requires conceptual and theoretical depth in the use of artifacts, in the case of school buildings, as a source of historical analysis (Souza, 2007).

Many authors emphasize the importance of adequate environments for the development of consistent learning. At France, a circular was developed on June 17, 1880, signed by Jules Ferry through a committee of members who consisted in architects, engineers and educators, who examined the conditions that should be used in the construction of school buildings. In this regulation, we examine the French school architecture of the 19th century, which were called “Jules Ferry schools”, built during the height of the civilizational and rationalist rhetoric of the Third Republic, approaching the semantics of political discourse to school architecture (Bencostta, 2021). As a result, a new architecture and system school was adopted. However, when the school prototype was established and the objectives of standardization in the French Republic were achieved through the common features of school buildings in all metropolitan areas, where the national architectural grammar guided by state legislation was used (Frago, 2004).

In this context, a school building committee was formed to establish school building standards and design furniture with purpose to adapt the new environments projects. This commission was responsible for controlling and guiding school construction projects towards the adoption of the general standards established by the circular that has since become known as the Building and Construction Regulations. Equipment School children of France, 1880. In the 1870s, with the publication “construction and equipment of the first school” by school projects by architect Félix Narjoux. According to Narjou himself, French schools were simpler and less luxurious in appearance compared to European schools. Switzerland.

Furthermore, it makes a comparison between schools and palaces, theaters in France due to luxuries and declares that schools should be treated in the same way and the importance that:

the school, the Swiss say, is the people's palace. It is here that children are educated and trained who, as future citizens, will be the material strength of a nation, its hope and support. Who can argue that a building, whose purpose is so noble and grand, deserves less care and attention, less investment and shine than a prince's residence or a dance academy? (Narjoux, 1879, p. 2)

Félix Narjoux understood and recommended in his dissertation its publication in the “Dictionnaire de pédagogie et d'instruction primaire”, in 1887, that the design of any school building should have characteristics and commitment to the main purpose, which is studies. School should be a pleasant, happy and wanted by students, even if a small dose of luxury was used in its construction. Regardless of the location, urban and rural or small or large, the school should be attractive to children and capable of initially awakening in everyone the idea of a building dedicated to the education of young people (Bencostta & Braga, 2011). In 1879, school financing was established by the Law of March 30, 1879, establishing a special commission to investigate issues related to school buildings and materials (Narjoux, 1879).

From the second half of the 19th century, especially with Louis Pasteur's discoveries about the danger of infectious diseases, also studied by Salomon-Bayet. This discovery influenced educators, doctors and inspectors to see more clearly the serious danger of lack of hygiene in school environments (Cobin, 1988). School environments must offer conditions health for students. Corroborating studies doctors like A. Riant (1874), describes the influence of the school environment on children's health It is the importance of luminosity, ventilation, temperature and open living spaces for students and education professionals (Elali & Pinheiro, 2003). Thus, French architecture continues to inspire the design and functionality of Brazilian educational institutions.

The following Figures (2a and 2b) demonstrate the ancient and modern evolution of school designs in Brazil.

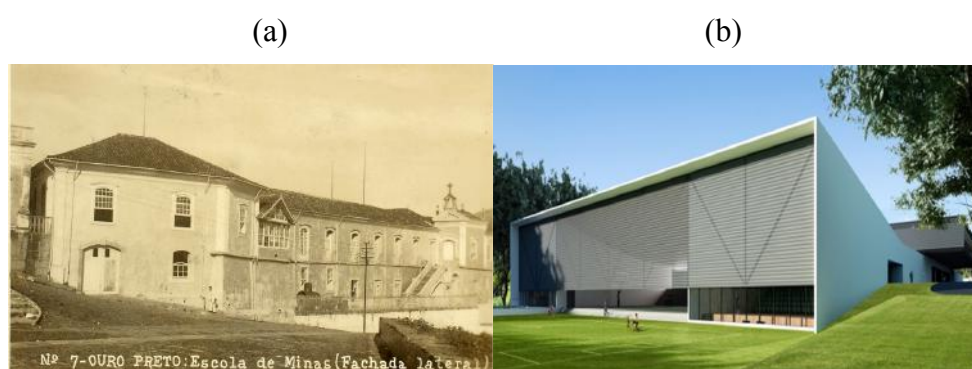


Figure 2: Brazilian Schools with Architecture Inspired by France 2(a) and 2(b). French Lyceum of Brasília – UNA (2009):

<https://mundodosinconfidentes.com.br/escola-de-minas-comemora-143-anos-conheca-um-pouco- dessa-cunha/>

Given this context, there was a need to creation in policy that defined architectural programs for school spaces. We approach with the example of the construction regulations for school buildings approved in the state of Minas Gerais in the southeast region of Brazil (Kowaltowski, 2011).

In the case of school groups, depending on the types of buildings to be built, they would have the following accommodations:

entrance rooms where changing rooms would be placed to store children's hats and capes; wide porches to facilitate independent entrances to the different rooms; very spacious, bright and well-ventilated classrooms, with the number and dimensions calculated at the rate of 40 children in each room, and with an environment of more than 5m³ for each boy; a vast museum hall; office for management and teachers; dependencies for the installation of reservations and, finally, warehouses for physical exercise and manual work. (Minas Gerais, 1910, p. 13)

The architecture of Brazilian schools is evident in several educational institutions, especially those founded or reformed during periods in which Brazil sought to modernize its educational system based on European models (Queiroz, 2023). We highlight some Brazilian schools whose architecture was inspired by France, such as: Escola de Minas de Ouro Preto (1876), school Pedro II Rio de Janeiro, RJ (1837), Lyceum of Arts and Crafts São Paulo e Rio de Janeiro (end of the 19th century), Institute of Education of Rio de Janeiro (1932), Faculty of Medicine of Bahia (1808), Mauá Institute of Technology São Paulo (1961), Federal Institutes of Education, Sciences and Technology (IF,s), French Lyceum of Brasília – UNA (2009).

School environments provide quality education, which goes beyond academic content. They should be designed to develop active learning, encourage innovation and creativity, social interaction, and student health and well-being. The influence of French models, which continues to inspire the design and functionality of Brazilian educational institutions (Queiroz, 2023). In Figure 3 we have areas of collusion in school space.

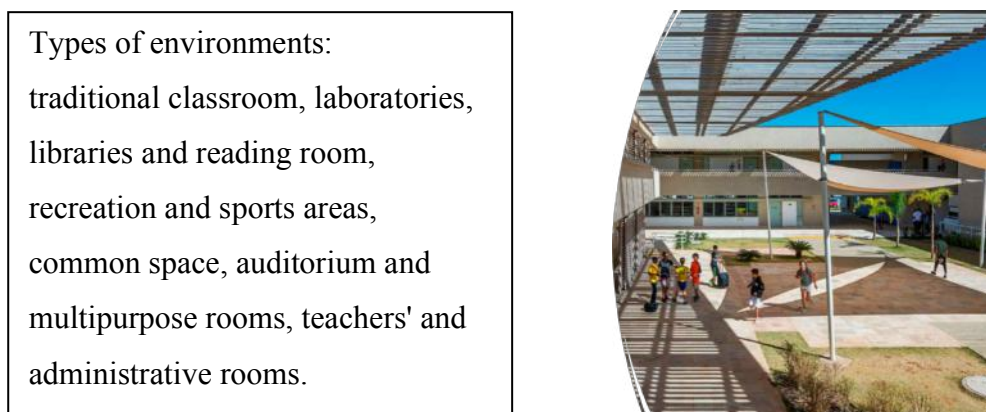


Figure 3: Living area in school space. JT Arquitetura and Jean Dubus: Liceu François - François Mitterrand, Brasília - Magazine Project

https://www.archdaily.com.br/br/919735/liceu-frances-francois-mitterrand-jt-arquitetura-plus-jean-dubus/5d121319284dd19ebb000626-liceu-frances-francois-mitterrand-jt-arquitetura-plus-jean-dubus-foto?next_project=no

When mentioning the criteria of construction, it is said that the location of schools should be chosen with location pleasant with natural and artificial lighting, avoid industrial areas and large areas to avoid noise, environmental pollution and concern for hygiene of the environment and students. (Queiroz, 2023). This way, teaching and learning from the new educational policy reforms favored a new field of study through the model of a different nature and perspective from those used during the start of urban, educational and economic development in Brazil. Your language architectural and space was adapted with the aim of

contributing to one social space and allow you to integrate different aspects residential, business, churches, among others (Souza, 2013; Kowaltowski, 2011).

Results and Impact in Brazil

The results found in this research showed us that the influence of French and Brazilian education is notable in several aspects, from the structure of the educational and pedagogical system.

The expansion of professional education followed the French educational model in Brazil, which contributed to the country opportunities for technical training and qualifications such as the higher education model, pedagogical teaching methodology based on philosophical ideas by educators such as Jean Piaget and Lev Vygotsky, promoting cognitive development and socio-emotional status of students. In addition, technical and professional education with the combined practical and theoretical learning model. One example was the creation of SENAI (National Industrial Learning Service) and studied in secondary schools and universities.

- **Qualified Professionals:** Resulted in the training of highly qualified professionals in various areas due to their competence and technical skills in the Brazilian and international job market.
- **Development of Specific Sectors:** From the Brazilian economy, gastronomy, fashion and design contributed to the development of a creative and innovative industry and market in Brazil.
- **Modernization and Innovation:** The adoption of professional education practices and methodologies, the modernization and innovation of the educational system, encouraging the use of advanced technologies, pedagogical practices and curricula aligned with the job market.
- **Insertion into the Global Market:** Brazilian professionals trained in the Franco-Brazilian educational model with international certificates and diplomas.
- **Partnerships and Continuous Cooperation:** The influence is not limited to the past but continues to be a source of partnerships and cooperation between educational institutions, promoting the exchange of knowledge, experiences and educational development.

Conclusion

The influence of French professional education in Brazil represents more than a simple transfer of educational models and practices; It is a dynamic process of cultural exchange and collaboration that has profoundly impacted the development of education and the job market in the country. Over the years, the adoption of elements of the French educational model in Brazil has provided significant opportunities for professional qualification, educational innovation and development. However, these advances are not without challenges, such as the need for cultural and structural adaptation, equitable access to education and articulation with the demands of the job market. Despite the challenges faced, it is important to recognize the transformative potential of this influence and the opportunities it brings with it. International cooperation between France and Brazil in the area of professional education will continue to play a fundamental role in promoting the quality and relevance of professional training, in building strategic partnerships and in promoting inclusion and equal opportunities in access to education. Therefore, as we look to the future of professional education in Brazil,

it is essential to continue exploring and strengthening this collaboration, seeking innovative and sustainable solutions to the challenges faced and taking advantage of the opportunities for learning and mutual growth that this partnership offers.

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Contact emails: angela_samu@hotmail.com
patriciacarly@gmail.com
karoliineamorim@gmail.com
andreluastic@gmail.com

Challenges and Prospects of Technology-Enhanced Teaching and Learning in Georgian Higher Education Institutions

Izabella Petriashvili, Ivane Javakhishvili Tbilisi State University, Georgia

Tina Gelashvili, Samtskhe Javakheti State University, Georgia

Ina Baratashvili, Ivane Javakhishvili Tbilisi State University, Georgia

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Abstract

The study is based on the analysis of outcomes of the Erasmus+ Project DITECH: Developing and Implementing Technology-Enhanced Teaching and Learning at Georgian HEIs (2021-2024). 7 state universities of Georgia were involved in the project, the start of which coincided with Covid-19, thus making its objectives even more pressing and topical. The challenges that Georgian HEIs faced included: lack of students' technological skills in using digital tools in learning; lack of skills and competences of academic staff in designing online courses; lack of appropriate infrastructure and software to design and implement online teaching and learning; lack of appropriate professional development trainings in technology-enhanced teaching approaches and methods. The aim of this study is to explore the impact of applying various digital tools and online resources on learning and teaching, as well as to learn about students' and teachers' perceptions of the challenges and prospects of using educational technology in academic environment. The research data is based on the analysis of students' and teachers' feedback on course pilots within the DITECH project. 297 students (BA-209; MA-88) and 137 professors/teachers from 7 universities participated in the survey. The survey with online semi-structured questionnaires and teachers' self-assessment questionnaires have been used as research tools. The findings have revealed significant changes in teaching and learning practices. The study offers a number of recommendations that, potentially, can support higher education institutions in Georgia in enhancing the quality of education at large.

Keywords: Technology-Enhanced Teaching and Learning, Higher Education Institutions (HEIs), Educational Technology

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Introduction: Research Background

Skills needed to be successful in the contemporary world have changed. In this context, the use of technology is fundamental in each of the 21st-century skills frameworks (González-Salamanca, et al., 2020).

Access to technological devices is not enough for students to develop their skills or improve their learning, or to lead teachers to change their practices (Roig-Vila, R., et al., 2015; Ruggiero, D. et al., 2015; Pineida, F. et al., 2011). It needs to be used with purpose, however, there are obstacles that prevent it, such as lack of resources, training, or support, and teachers' beliefs and attitudes (Ruggiero, D. et al., 2015).

The issue of integrating technology into education in general, and into teacher education programs in particular, is still pressing and much debatable worldwide (Petriashili, I., 2012). Why is a special emphasis placed on teacher education programs? The answer is simple: the success of any educational system greatly depends on the degree of qualification of future teachers (Petriashili, I., 2012).

Training of teachers in using ICT becomes really important, in order to increase their skills and knowledge, leading them to use emerging pedagogical models, to understand the importance of ICT in education, and to acquire the confidence and skills to create interactive, engaging, and personalized learning environments (Willis, R. et al., 2019).

The current study is based on the analysis of outcomes of the Erasmus+ Project DITECH: Developing and Implementing Technology-Enhanced Teaching and Learning at Georgian HEIs, 2021-2024 (<https://www.ditech-erasmus.eu>), the start of which coincided with Covid-19, thus making its objectives even more pressing and topical. The global COVID-19 pandemic has increased the demand for remote working technologies in the education sector, especially due to the emergence of new viable virtual and hybrid learning models that combine in-person classroom learning with remote learning from home (Davey, 2021; Keller et al., 2021; Khadri, 2021). Next to the more common forms like video and audio conference calls, Telepresence Robots (TPRs) are becoming more popular (Davey, 2021; Keller et al., 2021). The study "*Higher Education Personnel's Perceptions about Telepresence Robots*" (Leoste, J. et al., 2022) was also conducted within the Erasmus+ Project DITECH.

Implementing emerging technologies effectively is a difficult task when people lack related knowledge, skills and readiness to apply them, or have sceptical and negative attitudes towards technology (Leoste et al., 2021a). Convincing teachers to accept and adopt novel technologies requires good understanding about introduction of technologies to teachers, teachers' technological frames, gathering their feedback, and constructing an implementation plan that considers their needs (Leoste et al., 2021b; Spieth et al., 2021).

Prior to preparing the proposal for Erasmus+ CBHE project the needs analysis was conducted on the use of educational technology in 7 state universities of Georgia which offer teacher education programs. The challenges that Georgian HEIs faced included: a lack of students' technological skills in using digital tools in learning; a lack of skills and competencies of academic staff in designing online courses; a lack of appropriate infrastructure and software to design and implement online teaching and learning; lack of appropriate professional development trainings in technology-enhanced teaching approaches and methods.

Research Design: Methods and Instruments

This study aims to explore the impact of applying various digital tools and online resources on learning and teaching, as well as to learn about students' and teachers' perceptions of the challenges and prospects of using educational technology in an academic environment.

Within the framework of the DITECH project, two courses were piloted during the 2022-2023 academic year:

- BA course - Basics of Applying Digital Instructional Tools in New Learning Environment;
- MA course - Applying Educational Technology in Learning and Teaching.

The main target groups are the students of the Integrated (BA+MA) Educational Program of Primary Education Teacher Preparation (300 ECTS); Teacher Preparation Certificate Program (60 ECTS); MA Program in Education Sciences; and faculty members (professors/teachers) in 7 Georgian partner universities.

Both courses were delivered in a hybrid/blended mode: in the classroom and online on the MOODLE platform.

Methods of quantitative and qualitative data analysis were used within the research:

- Students' survey with closed and open-ended online Google forms questionnaires (6 sections with N=30 close and N=10 open questions);
- Teachers' feedback on the piloted courses with online Google forms questionnaires (N=8 close and N=10 open);
- Analysis of teachers' self-assessment questionnaires (General information and N=4 open questions).

Data Analysis

7 state universities of Georgia were involved in the project (Ivane Javakhishvili Tbilisi State University (TSU), Ilia State University (ISU), Samtskhe-Javakheti State University (SJSU), Sokhumi State University (SSU), Batumi Shota Rustaveli State University (BSU), Akaki Tsereteli State University (ATSU), Iakob Gogebashvili Telavi State University (TeSaU).

The universities piloted two innovative courses prepared within the framework of the project with the help of European partners. The students of the integrated (BA+MA) Educational Program of Primary Education Teacher Preparation (N=297) from the above seven universities participated in the research, including BA students (N=209) and MA students (N=88).

The survey was also conducted with the faculty members of the above universities (N=137), who participated in the professional development training workshops on Educational technologies, and with the professors/teachers (N=17), who piloted these courses (See Figure1).

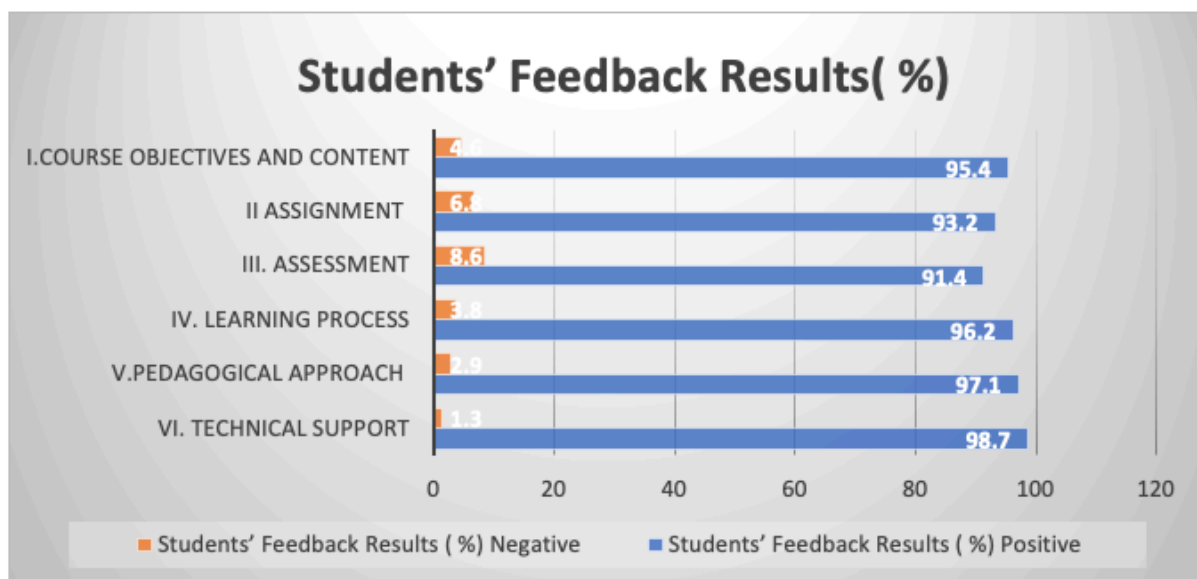


Figure 1: Number of Participants in the Survey

The research data was analyzed within the quantitative and qualitative methods framework: the surveys with closed questions were analyzed by using a 5-component Likert scale and analysis of teachers' self-assessments with selected respondents have been used as research tools.

a) Analysis of Students' Feedback

The questionnaire consisted of six sections: Course objectives and content, Assignments, Assessment, Learning process, Pedagogical approach, and Technical support (see Figure 2).

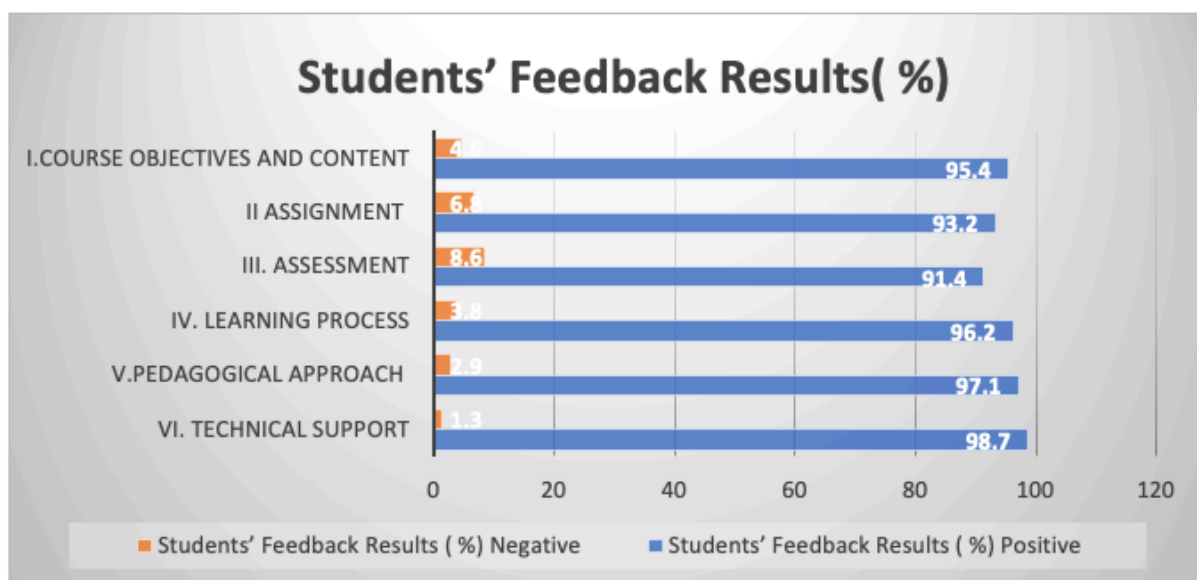


Figure 2: Students' Feedback Results

In each section, in the process of analysis, thematically similar, positive and negative responses were grouped. When summarizing, it was found that in the Course objectives and content section, 95.4% of the participants agree and 4.6% disagree with the following statements:

The Course objectives were clearly stated; The topics presented were relevant; The Course materials were accurate, containing no mistakes; The course materials were developed at a high level; The course was interesting and fun and easy to follow; The course study guide was clear, well structured, and contained sufficient information and support for learning; My expectations were met.

Students expressed the following opinion in the part of the assessment of the tasks given within the course: 93.2% of the participants agreed and 6.8% disagreed with the following statements: *The assignments were of moderate difficulty, corresponding to the course; The assignments matched the content of the course, the number of assignments in the course was acceptable; The time allocated for the assignments was reasonable.*

Also, a high positive evaluation was reported by students in terms of student evaluation during the course. 91.4% of the participants agree and 8.6% disagree with the following statements: *There was enough assessment during the course; The assessment was a useful learning experience.* The Students particularly singled out formative assessment tools and noted that their use in the learning process developed interpersonal skills.

Interesting feedback was provided by students on the learning process and pedagogical approaches:

Communication and collaboration were intensive during the course; Learning activities were engaging and meaningful; Listeners were encouraged to actively participate in the learning process during the Course; The deadlines were set reasonably, The timeframe was appropriate for the Course The pedagogical goals of the Course were clearly defined; The learning activities were designed to make use of different ways of learning; The different learning styles were supported; The learning activities were designed to make use of the prior experiences of learners; The virtual learning environment was well-structured; The learning environment was aesthetically pleasant and environment was user-friendly.

97.1% of 297 students (N=288) gave positive feedback on these questions, while only 2.9% (N=9) of students gave negative feedback.

It should be noted that within the framework of the Erasmus+ project DITECH, the most up-to-date technical equipment, online software and platforms were purchased for each partner university, which had a positive impact on conducting interactive lectures. Satisfaction with technical support is confirmed by the fact that 98.7% of the participants agree with the following statements: *I did not need any technical support during the course; Technical support was fast and professional.*

b) Analysis of the Faculty Members' Feedback

Based on the needs analysis, professional development training workshops were held for the academic staff of the partner universities (N=137) on: Technology-Enhanced Teaching and Learning. The analysis is based on the evaluation of professors'/teachers' feedback survey with open and closed questions (Figure 3).

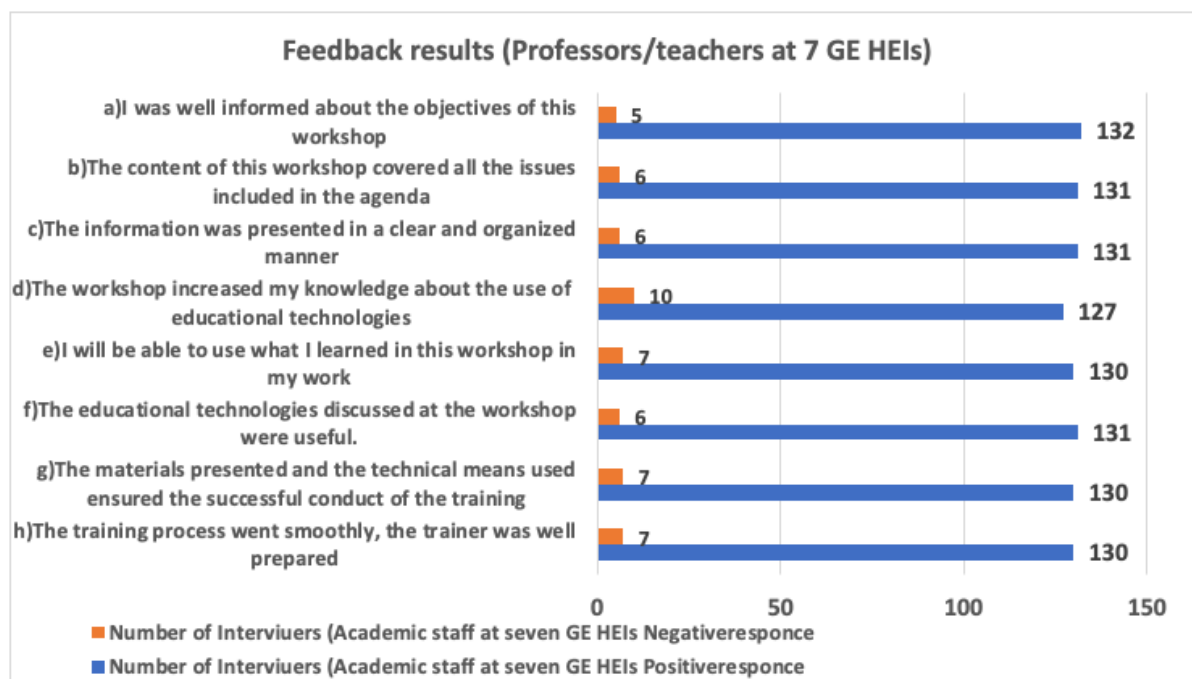


Figure 3: Professors'/Teachers' Feedback Results

8 closed and 12 open questions were prepared to assess the academic staff's evaluation of the training workshops. Likert scale was used for the analysis of the closed questions, where positive and negative responses were grouped. As can be seen from the diagram, in almost all the answers to the closed questions, positive evaluations are higher than negative ones and it is on average 95% (N=130), while negative evaluations are only 5% (N=7).

Open-ended questions also revealed that the training workshop had a positive impact on improving staff skills. Here are some citations from the professors'/teachers' responses to the question: "What had a positive effect on the change of your attitude towards the use of educational technologies after completing the course?":

The training modules have equipped me with diverse strategies for motivating students, a valuable asset that I intend to apply in my future classes; The workshops proved to be both engaging and enlightening, with learning materials that were readily accessible and comprehensible; The training modules significantly influenced my professional trajectory by enabling me to introduce modern educational web portals to my fellow teachers. This initiative has contributed to diversifying our teaching approaches and enhancing the overall learning experience.

Among the new digital tools learned during the workshops, teachers mentioned: Camtasia, Snagit, ThingLink, Mindomo, H5P, Padlet, Panopto, Canva, Jamboard, Quizizz.

The participants' responses to the question: „What was the main value of the training modules? “ were also noteworthy. Most of them positively evaluated topics selected for the training modules. They were particularly impressed by the variety and usefulness of modern platforms and software to be used in the learning process, which they got familiar with through the training; the need for more training workshops and accessibility to modern resources was also highlighted.

c) Analysis of Professors'/Teachers' Self-Assessments

Apart from the survey of feedback of teachers piloting the BA and MA courses, their self-assessments were analyzed covering the period of the academic year 2022-2023. Self-assessment was provided by 17 teachers from 7 Georgian universities (TSU, ISU, SJSU, TeSaU, SSU, BSU, ATSU).

In addition to general questions (the names of the piloted courses, the time of the pilots, target population of the courses), the self-assessment questionnaire included 6 questions. Responses to the following questions were considered relevant for the analyses in the current study:

- Why is this course relevant for the target population?
- Describe possible limitations and obstacles found and how you are going to address them in the next phase;
- Describe modifications or upgrades you will perform;
- Summarize the main results of the student assessment of your course.

Reflecting on the relevance of the courses for the target population, i.e., BA and MA students, teachers mentioned, that:

“They learn about online learning, using digital skills for their specific professional needs in their future careers; they have ability to use the new tools in learning and teaching process, ... analyze the challenges of online learning and search for appropriate solutions.” (TSU)

“It responded to “what”, “why” and “how” questions of online learning and introduced digital tools for fulfilling this mode of teaching; as future teachers they enhance their skills and knowledge to implement the elements of online learning in their practice.” (ISU)

“The use of modern interactive virtual content tools and new methods of engaging students and pupils in the learning process; as mostly our graduates are employed in schools, colleges, and universities, the course is directly related to the modern challenges of online education; the target group acquires valuable knowledge and skills needed to effectively integrate technology into their teaching practice so that students have the opportunity to share interesting and interactive learning experiences.” (SJSU)

“Exposure to e-learning technologies, digital tools, and innovative assessment mechanisms; the electronic platforms and e-learning tools extensively studied within the course equip these aspiring teachers with resources for the seamless implementation of diverse teaching activities.” (SSU)

“...It is of great importance to get to know various ways of incorporating collaborative digital platforms into lessons to make teaching/learning interactive, engaging, and motivating for learners.” (BSU)

“This course will prepare current teachers with required competencies in educational technology.” (TeSaU)

Another question answered by teachers was to describe possible limitations and obstacles found and the ways of addressing them. The following common limitations and challenges were emphasized by almost all the teachers:

- Attendance problem for working students: they would rather have the fully online course, but according to the Georgian Law, it is not allowed to have fully online courses;
- Not all students have the same learning needs: some students may have some knowledge of the topic, while others may be completely new to it;
- Technical issues, e.g., availability of the fully-equipped classroom with sufficient number of computers connected to the internet, and a projector/smartboard;
- challenges with online platforms or tools used for course delivery;
- Inability of students to install paid platforms on their personal devices: due to a limited number of paid platform licenses within the program students were not able to have individual licenses;
- Some teachers (SJSU, SSU, BSU, TeSaU) mention the limited lecture time, which is insufficient to cover the material and do the practical tasks.

The above limitations mostly can be dealt with at an institutional level. However, students' different learning needs and different levels of digital competence can be addressed by teachers themselves by offering diverse material, using peer-teaching, etc.

Teachers were also asked to reflect on modifications or upgrades they would perform. One of the teachers (TSU) indicated that *“she would update the reading material - to increase the practical part and edit the Reader so that its content and volume of weekly reading material was more learnable/comprehensible by students.”*

Several teachers (BSU, TeSaU) would increase the practical part in their syllabi. They wrote that *“it would be better to generalize the theoretical part according to the specific lecture topic.”* *“More lecture time should be devoted to practical tasks to work on adapting the syllabus to increase the timing for teaching each e-tool.”*

Lastly, the teachers were asked to summarize the main results of the students' evaluation of the course. Based on their students' feedback, all of the teachers mentioned that students' assessments were generally positive. Here are some highlights from teachers' responses:

“The majority of students noted that they deepened their knowledge about educational technologies, the course was well structured and organized, the objectives of the course were clear, and the learning materials were relevant and useful. Students also mentioned that after completing the course, they became interested in digital tools and resources, and the course provided them with important skills.” (TSU)

“As the technology advances, new digital tools and applications emerge rapidly. So, the course needs to be continuously updated to keep track of the most recent tools and their application in education. As an immediate example, AI and chat GPT need to be addressed in the upcoming years.” (ISU)

“The majority of students identified the main merits of the course as a novelty and a discovery for them; the students deepened their already existing knowledge about educational technologies and got a lot of new information, developed new skills. They

think that the course was relevant, necessary, well organized, and, most importantly, the latest trends were transferred from the practice of European universities.” (SJSU)
The course is considerably time-intensive, yet highly informative, though accompanied by certain challenges primarily stemming from the relatively modest proficiency in computer skills among some participants; their interest in digital tools and resources increased; the objectives of the course were clear and the assignments reflected the topics presented in the syllabus; the course helped them develop important skills.” (SSU)

“The course appeared relevant, up-to-date, and valuable experience for future teachers; The studied educational tools are already successfully used by students (or are going to be used) in the educational field.” (BSU)

“The course enhanced the knowledge about educational technologies, increased the interest in digital tools and resources and encouraged them for the active participation in all offered activities.” (TeSaU)

Research Findings and Conclusions

As a result of the research, the following findings became evident:

- Evaluation of Training Workshops and Course Pilots by professors/teachers and students respectively were extremely positive. Clear goals, relevant content, and good organization were pointed out as significant strengths. According to the research participants, tutorials offered within the course provided an excellent opportunity to familiarize and be exposed to various educational technology tools, learning resources, mechanisms and techniques of their usage.
- The research participants' responses underline their enthusiasm to embrace technology-enhanced teaching and learning methods. This collective commitment to leveraging electronic resources promises to enrich the teaching and learning landscape with innovation and interactivity.
- As a result of the study were also identified challenges which were mainly related to the academic staff's lack of technology-enhanced teaching skills, especially in regional universities, thus prompting the need for more practical work and activities. Some challenges were associated with technical problems. Consequently, in their feedback, the participants asked for additional training workshops with more time allocated for individual practice.

Overall, the results of the study revealed the importance of enhancing digital competencies among students and teachers in Georgian universities. However, the training modules and piloted courses considerably improved their digital skills and the level of academic performance both the staff and the students. The professors/teachers began to actively integrate digital instruments in the teaching process, which ultimately leads to a better quality of teaching and learning.

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Contact email: izabela.petriashvili@tsu.ge

Read Like an Expert: Preservice Teachers Use of Place-Based Literacy to Ground Students Disciplinary Learning Experiences

Leah A. McKeeman, Kansas State University, United States

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Abstract

Effective learning, literacy and knowledge are framed within contextualized, real-world, place-based situations, not just within silos of expertise. Waite (2013) posits that “knowing” a place means being sensitive to, and aware of its nuances, similarities, differences, and complexity from one location/situation to another. There are four components of place-based education (PBE), learning in the place, learning of or about the place, learning from the place, and learning for the sake of the place (Granit-Dgani, 2021). Literacy is fundamental to everyday life, in everyday situations. Place-based literacy combines innovative pedagogy of PBE with the dynamics of disciplinary literacy offering relevant, meaningful, and student-centered learning opportunities. As part of their professional pedagogical coursework, preservice teachers discover the value of PBE while developing content area literacy strategies to support disciplinary literacy skills. Professionals approach reading and literacy tasks uniquely based upon what they do and where they are. Preservice teachers are challenged to take on the perspective of one who is a professional within their chosen content area and observe through that lens. Analyze the purpose, products, and perspectives of that place and those who interact in it. Examine how experts within that content read, write, listen, view, and speak. Grounded in that perspective preservice teachers construct learning experiences for students that focus on literacy, language, and content development that are requisite in the chosen place, for the chosen professionals.

Keywords: Place-Based Literacy, Disciplinary Literacy, Interdisciplinary Projects

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Introduction

Education in the United States stresses that teachers need to be highly qualified in the contents within which they plan to teach. Expertise is often gained through academic studies, yet there are multiple ways in which knowledge can be disseminated. Place-based education is one way in which learning, and knowledge can be interwoven. Place-based education (PBE) occurs when students, teachers, and relevant stakeholders within the community come together to create live inquiry-based learning opportunities that infuse social, cultural, and natural elements along with K-12 curricular knowledge and skills into a relevant, real-world learning environment (Sobel, 2005). While PBE has been around for the past few decades, this approach gained a renewed place within curricular design during COVID-19.

It was during COVID, after schools were shut down that many educators took a fresh look at how teaching and learning can be accomplished to be most efficient and impactful in its temporary modified format. While still experts in their independent disciplines, many educators began to explore ways in which they could break out of their silos of expertise and incorporate interdisciplinary opportunities within relevant and real-world settings. In addition to K-12 classrooms, this re-envisioning occurred within higher education too. Therefore, instead of taking a perspective of hardship and limitation as it related to COVID's disruption of schooling, this project's stance was one of benefit and value afforded by the unique constraints within educational settings. Within education preparation coursework, place-based education was paired with disciplinary literacy to create learning opportunities that were beneficial, enriching, and sometimes unexpected for all. "Something unexpected happens when you explore a community for the first time. Your worldview shifts with each question, each interaction, and the more you realize you have to learn. This is the power of place - it's an infinite mystery that continually leads to awe and wonder," (Vander Ark, Liebttag & McClennen, 2020, p. xiii). COVID's interference of life and education offered the chance to view local and global environments differently, exposing opportunities to learn and grow beyond traditional classrooms.

Theoretical Grounding

"Place-based education is nothing new. This approach, with its focus on the incorporation of local knowledge, skills and issues into the curriculum, involves an effort to restore learning experiences that were once the basis of children's acculturation and socialization prior to the invention of formal schools," (Smith, 2016). Waite (2013) posits that "knowing" a place means being sensitive to, and aware of its nuances, similarities, differences, and complexity from one location/situation to another. There are four components of place-based education (PBE), learning in the place, learning of or about the place, learning from the place, and learning for the sake of the place (Granit-Dgani, 2021). Place-based education is rooted in the theoretical frameworks of Dewey's pragmatism (1916), focusing on student-centered instruction versus teacher-fronted learning. The emphasis for students is learning through doing rather than from listening or memorizing. Research shows that you remember 10% of what one reads, 20% of what one sees, 30% of what one hears, 50% of what one sees and hears, but 80% is retained if one is doing it (Chi, Bassok, Lewis, Reimann, & Glaser, 1989). Aligned with a student-centered pragmatic stance within education, the autonomous learning model (ALM) aims for learners to be independent and self-directed. An autonomous learner by definition, "is one who solves problems through a combination of divergent and convergent thinking, and functions with minimal external guidance in selected areas of endeavor" (Betts & Kercher, 1999, p. 14). This sense of student-centered autonomously

fueled learning, coupled with Piaget's constructivism theory, creates the foundational environment of these place-based learning projects. Constructivism encourages students to actively construct meaning through interactions with their environments rather than acquiring knowledge passively (Piaget, 1971). Grounded in these theoretical perspectives, place-based literacy (PBL) projects were created.

Paradigms of literacy within content areas has shifted over the years. Rather than the notion that "every teacher is a reading teacher," the new concept goes beyond just reading and writing to focus on disciplinary literacy. Disciplinary literacy emphasizes how content is understood and knowledge applied (Lent, 2015). Disciplinary literacy while unique to each discipline require many of the same underlying skills; however, what those skills look like in practice varies drastically across discipline. Historians, mathematicians, scientists, writers, musicians, and artists all use literacy in their respective fields/professions, but how it is used is distinctive to their professional world view. Disciplinary literacy practices while unique often overlap and encourage authenticity (Gabriel, 2023). For instance, a scientist might be exploring the impact of water quality in a previously industrial city. They are exploring the water quality and reading data that would be something a mathmagician would also be skilled and need to proficiently do. In this same scenario, a historian might explore primary source documents from the industry that helped to develop the community and the impact it had on jobs and economic prosperity of the community. A journalist might take this same scenario and research about the different perspectives to report to the local community about the benefits created and challenges posed. This multi-disciplinary approach to literacy is the direction teaching and learning is taking in our post-COVID world. Teaching and learning are not discrete concepts but rather interconnected ideas, skills, and situations that create a more complete understanding of our culture and world.

Culture cannot be extrapolated from one's place or experiences. Culture is interwoven into everything. According to Betancourt (2004), culture is a pattern of learned beliefs, values, and behaviors that are shared within a group. This expands the original notion that culture is not only products or practices but also the perspectives of a group (Cutshall, 2012). Cultural products include things that a culture produces such as books, tools, foods, laws, music, and games. Cultural practices are the patters of social interactions within a cultural community such as how individuals greet one another, how people queue within a community, where and how people go shopping within a community, or how people take breaks for work. Arguably the most impactful element of culture are cultural perspectives, the meanings, attitudes, values, and ideas of a group; cultural perspectives answer the question why. Why does a group of people act the way they do, why do they interact the way they do, or why they have the government and traditions that they do. This is a simple question yet at the heart of interactions between groups of people and places.

It is with these theoretical underpinnings, place-based education based in pragmatism, constructivism, and autonomous learning, aligned with disciplinary literacy paradigms and cultural competence, that interdisciplinary place-based literacy projects were developed. The interdisciplinary place-based literacy projects sought to explore how they could strengthen collaboration with community, promote disciplinary connections, and foster cross-cultural interdisciplinary skills.

Pedagogy Into Practice: Interdisciplinary Place-Based Literacy Projects

Pedagogy is the study of teaching, putting educational theory into practice through methods and strategies that influence students and learning (Main, 2021). The pedagogy used within this assignment was the interdisciplinary place-based literacy projects. A case study approach was used to explore the design and impact of interdisciplinary place-based literacy projects on teaching and learning (Yin, 2009). Participants were a convenience sampling of preservice teaching candidates enrolled within content area literacy courses as part of their professional education degree. They were planning to teach a variety of subjects ranging from humanities like music and theater to English language arts (ELA), agricultural, to hard sciences. Informed consent was given by the participants prior to data collection. Data included researcher observations, classroom discussions and field notes, and participant artifacts related to their interdisciplinary place-based literacy projects. Data was triangulated and content analysis (Prior, 2014) was performed to examine patterns.

Participants unpacked the various theoretical underpinnings of the interdisciplinary place-based literacy projects as previously discussed over several class periods, reviewing concepts, and creating solid schema for the upcoming project. Prior to creating their PBL projects, participants were guided through a thought exercise during class in which they had to think about what made a positive learning environment. They brainstormed a list of attributes and from those they chose a word to expound upon, listing how the term could be used as a noun and as a verb. From there, they had to envision a place that would encompass these attributes of a positive learning environment, describing both the positive and negative aspects of the place. Finally, they were asked to use all their senses and glean as much data as they could about their given place that embodied a positive learning environment. This activity allowed participants to take an initial deep dive in exploring the various elements of place and the impact it can have. From here participants were ready to get underway and create their own PBL projects.

Participants were asked to partner and work together as a cross disciplinary pair. They were to take the mindset of a professional or an expert within their chosen discipline they plan to teach. For instance, if they wanted to teach social sciences, they would explore a profession such as a historian, social worker, geographer, or psychologist. Based upon the professional expert chosen, participants sought out a location in which that expert would interact and engage within their professional life. From there, participants were sent to spend time at this location making observations of the place, noticing who was there, what they were doing, how they were interacting with it, engaging in informal interviews with key people associated with the place when appropriate (ideally the expert/professional that was originally identified as the catalyst for choosing the place), collecting artifacts from the place when feasible (ideally artifacts related to disciplinary literacy practices), and recording personal reflections from experiences and interactions within the chosen place. Again, the rationale for creating such a deep understanding of this place and the goings on of this place was so that participants, future teachers, could use these insights to help support and foster their students understanding of their chosen discipline, engaging with this discipline as if they were to become an expert in that field. Once participants collected data from their place, they were to take the perspective of a professional expert within their chosen discipline to analyze the purpose, products, and perspectives of that place and those who interacted in it. Examining how experts within the discipline read, write, listen, view, and speak. Based upon participants analysis, they synthesized and evaluated the information into a reflective paper that explained how literacy is used by experts within the discipline at the chosen place, what is important

about the place, what can be learned from the place, and what literacy skills and/or characteristics are commonly employed by experts within the discipline. The Partnership for 21st century learning encourages, “teacher not just teach students how to understand content; they must also teach students how to think and how to learn” (P21, 2015, p. 1). As a result, participants must plan for how to support their students’ development as 21st century citizens through PBL practices. Then to make the PBL project come alive participants choose quality artifact(s) or text from their place and incorporated it into an interdisciplinary instructional plan/experience.

Findings and Discussion

The interdisciplinary PBL projects explored how collaboration with community was supported, disciplinary connections were promoted, and cross-cultural interdisciplinary skills were fostered. During classroom discussions and based upon participant artifacts, it was evident that regardless of the chosen place, interdisciplinary connections were made that demonstrated substance and relevance. For example, a preservice music teacher and theater teacher paired to explore a local concert hall. They explored the interconnections between how the orchestra and production cast interacted to put on a musical. The score and script became integral elements combining the literacy of both disciplines for a seamless and successful musical production. Interviews with the conductor of the orchestra and director of the play reinforced the collaboration that went into the productions.

Another participant pair of biology and social studies investigated a local dam where the lesson came to life. Biology chose to explore the ecology, diving into visible concepts like energy flows and habitats while the social scientist took an anthropologic stance to understand how humans need and interact with the dam. The disciplinary texts within this place were multidimensional and not always found at the dam site. The social studies teacher did research to pull primary source documents from local agencies as they related to the dam. While the biology preservice teacher was exploring the actual dam, the lakebed and water flows. Drastically different artifacts were collected, yet a more thorough and authentic picture was created about the place. The learning experience they created was a project-based learning task using disciplinary literacy artifacts to get students to find solutions to the questions; a) how has the construction of the dam impacted the ecosystem, biodiversity, and the local human community over time? b) what have been the ecological changes, including effects on aquatic life, water quality, and vegetation, as well as the social and cultural implications for the indigenous communities living in the area?

The interdisciplinary PBL project developed by an ELA and history preservice teacher took them back to their hometown in a rural part of the state. Their local town was doing some economic development along their main street. An old bank was being repurposed into a museum to document the town’s history and documenting the families and their stories that founded the town (many of the families still have ancestors that live locally today). This collection of pictures, newspaper clippings, interviews, stories, and artifacts created an anthology for the town resident’s past and present. A sense of pride for place was fostered as a result.

Each of the interdisciplinary PBL projects created were unique which highlights the value and charm of these projects within the learning process. Learning through interdisciplinary PBL projects can be personalized based on the needs and the interests of the learners, relevant based on the dynamics of the chosen place, and long-lasting in both the task completed and

learning accomplished. Participants unanimously believed that they would choose to use integrated PBL projects in their future classrooms. One participant stated, “this took more time to create than a normal lesson plan would’ve, but it was actually pretty fun to make, and I think my students would enjoy it and learn and I think I would have more fun teaching it too!” Another noted, “I learn best from doing and being hands on, I know if I was in my class as a student that something like this would have really stuck with me.” When it comes to long-term retention of essential learning, interdisciplinary PBL projects are effective and valuable.

Conclusions

Unlike more traditional classroom learning, place-based learning allows for “infinitely more opportunities to bring elements of learners’ identity to their learning and experiences, to help unleash their potential in a way that taps into their strengths and is authentic and more equitable,” (Vander Ark, Liebttag, & McClennen, 2020, p. 42). The interdisciplinary PBL projects demonstrated their instructional worth. However, as participants discussed the implications, it became evident that modifications could be made to expand the scope of the interdisciplinary PBL projects. For example, in our rural areas, there are limitations in physical places that can be used. However, due to COVID-19 many museums and venues created opportunities for virtual visits. Virtual or digital visits could open prospects of place to be used within instruction. So just because students are still physically within the brick-and-mortar classrooms, they can explore venues that are beyond their classroom walls, where distance, time and money do not pose constraints to learning. Personalized learning could be continued through digital gallery walks within the classroom using QR codes that students generate embedding resources and documenting their learning for others to benefit from too.

When it comes to creating interdisciplinary place-based literacy projects, it is important to keep in mind that the learning experiences are not just field trips, isolated events or one-time adventures that lead to short-term outcomes and brief interactions. Interdisciplinary PBL projects supports long-lasting learning. Long-term impacts from integrated projects yields long-term learning and connections to community.

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Development of a Virtual Reality-Based Forehand Smash Training Model for Table Tennis Athletes

Novita Wulandari, Universitas Negeri Yogyakarta, Indonesia
Siswantoyo, Universitas Negeri Yogyakarta, Indonesia
Handaru Jati, Universitas Negeri Yogyakarta, Indonesia
Jusrianto As, Universitas Negeri Jakarta, Indonesia

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Abstract

The aim of this research is to analyze the effectiveness of the forehand smash training model in table tennis using virtual reality (VR) technology, especially for athletes aged 13–17 years. This model consists of four components aimed at increasing motivation: concentration, hand movement technique, waist rotation, and standing position. Performance in VR-based forehand smash training was assessed using mixed model analysis of variance. This analysis involved between-subject factors (VR training group and control group) and within-subject factors (pre- and post-training). This study involved 60 participants, who were divided into a VR training group (n = 30) and a control group without training (n = 30). During VR training sessions, participants engage in competitive table tennis matches against artificial intelligence-based players. An expert table tennis coach evaluates the participant's performance in real table tennis before and after the training phase. Expert coaches assess participants' forehand smashes in terms of quantitative aspects (number of rallies without errors) and quality aspects of skills (technique and consistency). The results of the research prove that the application of the VR-based forehand smash training model significantly improved the performance of table tennis athletes compared to the control group without VR-based forehand smash training, both in terms of quantitative assessment ($p < 0.001$, Cohen's $d = 1.08$) and assessment of skill quality ($p < 0.001$, Cohen's $d = 1.10$). It was concluded that the implementation of a VR-based smash forehand training model significantly improved the performance of table tennis athletes.

Keywords: Skills, Table Tennis, Virtual Reality, Physical Education

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Introduction

Virtual Reality (VR) technology becomes a vital tool to help in a variety of daily activities and has enormous potential for future development (Putranto et al., 2022; Zhou, 2020). In order to bring about further benefits, including FDA-approved pain medications, several commercial sectors, like the EaseVRx health industry, have already embraced VR (Putranto et al., 2022). VR was originally applied in sports science, where it was utilized to simulate situations and enhance athlete performance (Neumann et al., 2018). Even if a lot of sports organizations invest in virtual reality, there isn't enough scientific data to support its efficacy (Neumann et al., 2018).

Virtual reality (VR) use in sports is thought to be a method to lower injury risk and increase accessibility and mobility while training (Cotterill, 2018). At first, limitations like bad weather, a lack of training facilities, and specific seasonal barriers hindered sports teaching and training. VR is therefore viewed as a way to get around these limitations and increase training effectiveness using extra digital tools (Stone et al., 2018).

Training in a natural setting using VR technology also has the benefit of lowering the chance of damage. Virtual reality (VR) training may be appropriate for athletes with particular medical histories. VR training systems also assist injured athletes in lessening their discomfort, maintaining better health, and maintaining peak performance (Nambi et al., 2020). VR training has proven to be very significant in the sporting world to improve motor behavior and train specific situations in standard conditions (Witte et al., 2022). Some studies analyze the effects of VR training in some sports, such as table tennis (Michalski et al., 2019).

Table tennis, as a racket sport, is heavily influenced by technology that supports performance. (He & Fekete, 2021; Fuchs et al., 2018). High-level players require technical skills such as forehand, backhand, smash, and push. (Wu et al., 2021). Forehand drive training became the main focus of the trainer for beginners, but the challenge arose due to the lack of variation in the training model and the difficulty of the athlete in mastering basic techniques (Pane et al., 2021).

Effective training methods for forehand beats can include multiball training, skill tests, and the use of VR technology. (Budi & Arwand, 2020; Sari & Antoni, 2020; Zhu et al., 2023). Although VR has been applied in sports including table tennis, its effectiveness requires further evaluation, including measurement through test and situation simulation (Pagé et al., 2019; Witte et al. 2022).

In addition to improving technical skills, the use of VR in sports can help in decision-making, tactical training, and even minimize the risk of injury. (Tsai et al., 2022; Nambi et al., 2020). With the growing popularity of VR, it is seen that this technology can be an effective and versatile training tool in sports such as table tennis. (Michalski et al., 2019).

Numerous earlier studies have indicated that the forehand kick is crucial to table tennis (Johor & Rahmadiky, 2020; Safari et al., 2018). An athlete's hand can be coordinated to hit the ball appropriately with the use of proper training techniques. Tests, such as those administered to table tennis players to gauge their forehand skill, can be used to assess forehand ability (Sari & Antoni, 2020). Besides, in order to the accuracy of the forehand stroke, one should try to implement the form of exercise using two tables (Herliana, 2019).

In recent years, table tennis technology has been evolving, including a change in the ball diameter from 38 mm to 40+ mm (Zhu et al., 2023). Professional table tennis athletes face difficulties in scoring live in one round of matches (Yu, 2022; Zhang et al., 2018). In order to test the variations in forehand loop skills amongst beginners, the study (Wu et al., 2021) constructed an intelligent table tennis e-training system based on a neural network model that detects data from sensors built into the arm tire device.

Proficient table tennis players should focus closely on honing this kicking technique in order to maintain its quality and stability and bolster its application in actual matches. (Zhu et al., 2023). Table tennis is a sport that requires open skills. Sports with open skills are sports in which players have to respond in an environment that is constantly changing, unpredictable, and influenced by external factors (Wang et al., 2018), usually involving the presence of opponents.

In particular, table tennis demands quick decision-making, flexibility in visual attention, and quick interceptive action in reaction to opponents engaging. (Michalski et al., 2019). There is some research that supports the idea that basic closed skills can be transferred from VR to the real world (Gray, 2017), It is unknown if more sophisticated open skills which are essential in games like table tennis can be developed with VR.

This approach is also in line with the spirit of Makassar State University in providing an education that is adaptive and relevant to the development of the times. This article will explain the steps and process of VR development aimed at improving the table tennis skills of students of Jasmani Education at Makassar State University, digging the potential of the application of this technology in the context of sports education.

Literature Review

A. Virtual Reality

Virtual Reality (VR) technology is one of the promising technologies with great potential for future development (Putranto et al., 2022). Virtual reality (VR) technology is one of the fields with the most promising potential for future development (Zhou, 2020). Computer experts in several industries are integrating VR technology to boost their bottom line. One such field is the health sector, where EaseVRx is used.

Since the advent of virtual reality (VR), people have been able to behave and interact in more realistic settings with relative ease and affordability because to the technology's rapid expansion and emergence (Düking et al., 2018). VR is the first technology to be used in sports research. VR involves the creation of computer-simulated environments with the aim of immersing individuals in a way that makes them feel mentally or physically present in different locations (Neumann et al., 2018).

Virtual reality (VR) technology is marketed to athletes as a way to lower their risk of injury during training. VR systems' enhanced mobility and accessibility in sports have sparked interest in using them to improve athlete performance (Cotterill, 2018). However, there is currently little scientific data to guide and support the VR system's application, despite the fact that many sports organizations have invested in it (Neumann et al., 2018).

The majority of sports instruction and training takes place in wide areas with lots of obstacles. Unpredictable weather, intense or specialized training facilities that are only appropriate for select individuals, and additional challenges unique to a given season. (Arndt et al., 2018). These obstacles influenced the concept of virtual reality training and sports education. Using virtual technology in training sessions can help overcome numerous challenges associated with routine training and increase the effectiveness of training with extra digital tools (Stone et al., 2018).

B. Table Tennis

Table tennis is a racket sport (He & Fekete, 2021) whose technology is considered an important factor in performance (Fuchs et al., 2018; Yang et al., 2021). Table tennis requires a variety of technical skills, including push, smash, forehand, and backhand (Wu et al., 2021). A proficient table tennis player can hit the ball quickly and is prepared to beat the subsequent ball (Qian et al., 2018). One of the most crucial table tennis techniques is kicking because if players don't get the hang of it, they risk losing the game (Pane et al., 2021).

The development of a virtual table tennis environment is a key step in creating an effective and realistic learning experience. In this environment, planning should pay attention to the details of the table tennis court, the characteristics of the player, and other elements that support learning. Attractive and accurate graphic design choices will enhance immersion, creating nuances similar to real fields. In addition, authentic sound integration and ball sound effects can enrich the user experience, help in movement detection and provide realistic feedback. Development continuity also includes training difficulty level adjustments, challenge scenarios, and variation of game conditions to improve player flexibility and adaptability. By detailing each of these aspects, developing a virtual table tennis environment can create a platform that supports the development of physical education students' skills at state universities in an innovative and fun way.

Developing Virtual Reality (VR) to enhance table tennis skills involves several key steps to ensure an effective and engaging learning experience. Initially, the development phase focuses on designing the virtual environment, including modeling the table tennis court, player characteristics, and relevant visual elements. Integrating motion tracking technology is crucial to accurately reproduce player movements. Once the VR prototype is developed, the evaluation phase begins, with physical education students participating as test subjects. This phase includes a detailed analysis of the virtual environment's realism, motion tracking accuracy, and feedback effectiveness. The findings from these evaluations guide improvement measures.

Improvements are made based on evaluation results, including upgrading graphics for enhanced realism, adjusting training difficulty to align with student skill levels, and optimizing feedback mechanisms for better guidance. Involving students and table tennis instructors in the process is crucial for obtaining valuable insights from key stakeholders. This iterative approach ensures that the VR environment not only provides a realistic experience but also effectively helps physical education students improve their table tennis skills.

Method

A total of 60 table tennis athletes aged between 13 and 17 took part in the investigation and were taken into account in the analysis ($Mage = 21.81$, $SD = 3.58$). Thirty participants each

were assigned to a VR training group and a control group. Table 1 shows the primary attributes of the individuals in the VR training group and control group.

Table 1. Main characteristics of participants in VR training groups and control groups

Variable	VR Training	Control
<i>n</i>	30	30
Mean age (\pm SD)	22.07 (4.27)	21.54 (2.75)
Gender	Male = 18 Female = 11	Male = 16 Female = 12
Hand preference (Nicholls et al., 2013)*	Right (<i>n</i> = 29)	Right (<i>n</i> = 28)
Average days from pre-test to post-test (\pm SD)**	25.17 (6.86)	23.25 (3.58)

There were no participant injuries, limitations, or other issues that would have precluded them from participating in this study. The Snellen Eye Chart, RAF Rule, and Fonda Anderson Reading Chart were among the tests used to examine the participants in order to determine whether they had normal or corrected visual acuity to normal vision. By using the Butterfly Stereo Accuracy Test, participants in the VR training group have normal or corrected stereo acuity to normal (Vision Assessment Corporation, 2007). There was not a single player that played table tennis competitively.

Materials and Equipment

VR Equipment. The screen that comes with the HTC Vive head (produced by HTC in April 2016 using technologies from Valve Corporation) is utilized. With head-mounted stereoscopic displays (HMDs) such as the Vive, users experience a 360-degree virtual world that moves in real time in response to their motions (Steuer, 1992). In order to interact in a virtual world, users must wear a head-mounted display (HMD) and carry two controllers, one of which simulates the spread of the ball and the other a table tennis punch.

By enabling users to wear glasses and contact lenses while using the device, HMD welcomes users who are visually impaired. Two base stations positioned at different angles are utilized with VR equipment in a room measuring 1930 x 3300 mm to provide room scale tracking.

VR Table Tennis Game. The VR game "Table Tennis" by Fun Labs involves players reacting to external inputs and competing against AI, following official table tennis rules. AI difficulty ranges from amateur to legendary, with increased service/return placements, speeds, and ball rounds. The game simulates a real environment using audio, performance, and haptic feedback, including vibrations and genuine sounds when hitting the ball. Scoreboards display points, and voice feedback is available.

Real-World Table Tennis Setup. A real-world setup includes a STIGA table tennis table, Dawei paddles, and Schildkrot 40mm balls. Service targets are ten standard-size soft drink containers.

Assessment and Measurement of Real-World Table Tennis Performance

Evaluation. A skilled table tennis trainer with over 40 years of experience and multiple international medals assesses the participants. The judge is unaware of the participants' tasks

during the study. The real-world challenge is based on exercises used by trainers and is designed with significant input from the judge, using an established assessment system for quantitative and qualitative evaluation.

Quantitative Assessment. Participants receive numerical scores based on their execution of table tennis tasks. Scores are calculated from successful returns in backhand, forehand, and alternating stroke rallies. A successful return occurs when the ball lands on the player's side, touches the striker, and lands on the other side. Each participant has three chances to complete a rally, with the best two results used for scoring. Scores range from 0 to 100 for each task, with higher scores indicating more successful returns. A score of 100 signifies the completion of 100 returns.

Target precision is also assessed. Ten soft drink containers are spaced 100 millimeters apart around the table's edge, serving as targets for serving accuracy. Scores range from 0 (no targets hit) to 10 (all targets hit), with each target worth five points. The total possible score is 350, comprising serving (50), backhand (100), forehand (100), and alternating beats (100). Participants with a pre-test score above 90% are excluded from the study due to insufficient potential for improvement.

Quality of Skills Assessment. The quality of the skill assessment in the table tennis task is based on the assessor's observations, focusing on five criteria: ball height, strength, consistency, technique, and coordination. A baseline record is created for each participant during pre-tests, and the same method is used for external training assessments. The evaluator scores each category as 0 (no improvement), 1 (modest improvement), or 2 (considerable improvement). The total score, ranging from 0 to 10, reflects the overall skill quality.

Since skill quality and quantitative assessments evaluate different aspects of table tennis skills, it is expected that improvement might be seen in one evaluation but not the other. Therefore, the two evaluations are analyzed separately.

Planning

Before and after the intervention phase, real-world table tennis performance is evaluated in both the VR training and control groups. For overlays of the research design, see Figure 1.

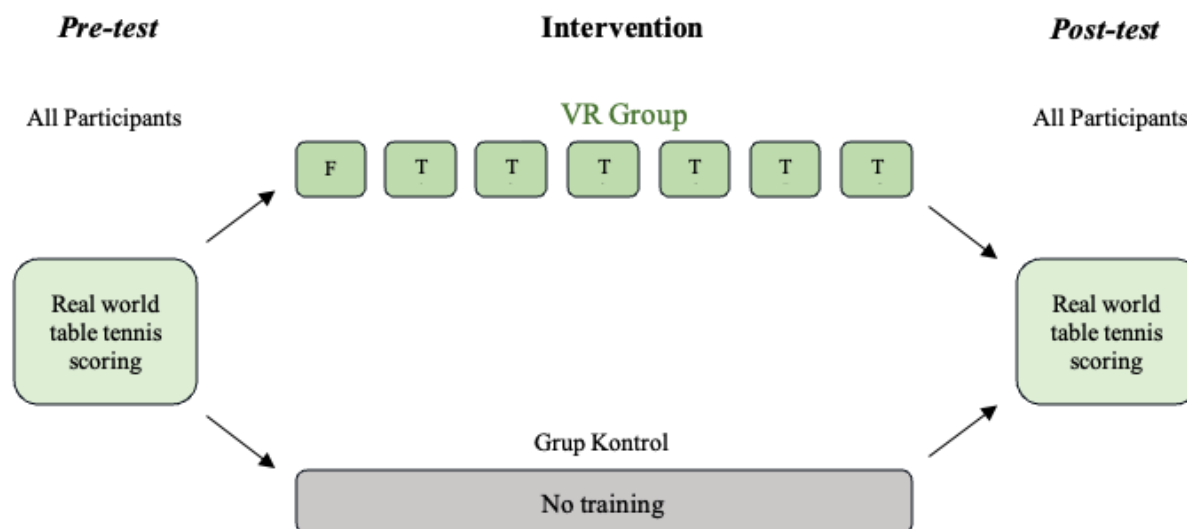


Figure 1. Wide research design lines. Participants were divided into two groups: the VR group and the control group. Every participant underwent pre- and post-assessments. After completing an orientation (F) session, participants in the VR group go through six VR training sessions (T1-T6).

The study hypothesis is examined by a mixed model's variance analysis. The analysis includes in subjects (before and after training) as well as intersubjects (VR training group vs. control group). The real-world table tennis performance evaluated by a specialist in the quantitative and quality components of abilities is the dependent variable.

Procedure

Participants first received guidance on the approval procedure and completed questionnaires on demographic information (age, gender, handedness). They then underwent a visual check to ensure normal eyesight, visual acuity, and stereo vision.

An experienced table tennis trainer evaluated participants' abilities in a real table tennis environment both before and after the intervention (VR training or no training). The expert assessed the quantitative and qualitative aspects of their performance without knowing the group assignments. Figure 1 summarizes the study design for both groups. Participants were instructed not to play table tennis outside the specified sessions during the trial. In the introduction session, participants also received cognitive evaluations and additional visual assessments, but these data are not included in this research as they are not relevant to the study's goals. (Szpak et al., 2019).

Pre-test. The participants began with five-minute rally exercises with judges, who provided brief instructions on proper table tennis regulations. No additional guidance was given on improving their skills. Following the initial instruction, participants completed alternate forehand, backhand, and rally activities from the Real World Table Tennis Assessment and Measurement section. Each task was performed in three trials, with the goal of returning as many balls to the judge as possible. Scoring points was not the objective of this task.

During the forehand duty, the player's punch should use the palm facing the punch. The assessment ends if a different technique is used to hit the ball. Players alternate hitting the ball

with their backhand and forehand, and a rally ends if the player misses a return or fails to touch the judge's table. If the judge does not return the ball, a new rally begins.

After the rally, participants start a service project involving hitting a target. They have ten attempts to hit the target. Unauthorized serves that move the target do not count towards the score but still count as one of the ten tries. Participants are given three minutes to practice hitting the target before the assignment begins, with no instructions or feedback provided during or after the task.

Intervention

VR Group Training: The Eleven VR Table Tennis App and HTC Vive HMD are used for all VR training. Participants engage in tasks like service, backhand, and forehand, evaluated in pre- and post-tests. Over seven sessions, each participant spends a total of three hours and thirty minutes in VR, with the recommendation to complete two sessions per week. Only one training session is allowed per day.

Training begins with an orientation meeting where participants receive instructions on using the VR equipment and the table tennis game. During this initial session, there is no assessment of scores, and participants are given time to practice. This introduction ensures that participants understand the tasks and can comfortably use the VR equipment.

The goal of the six VR training sessions is to win a table tennis match against an AI opponent. The game is won by the first player to score 11 points, with the requirement of leading by at least two points. After a game ends, a new one begins, and the top five series are used for training. If a player wins three out of five matches in a series, the training difficulty level is increased using adaptive methods. Conversely, if a player loses three out of five matches in a series, they either drop one difficulty level or remain at the lowest level if already there. Each session lasts about thirty minutes, and any unfinished series are carried over to the next session.

Control Group: During the intervention phase, there is no training provided to the control group.

Post-test. Every participant finished a post-test consisting of table tennis tasks that were the same as those in the pre-test. Following the post-test, the participants were asked if they had played table tennis at any other point since the study began. If they had, they were excluded from the study if their total playtime had exceeded an hour.

Result

Quantitative Assessment

Time (pre- and post-test) is used as a factor in the subject and group (VR training and control) is used as an inter-subject factor in an ANOVA mix. This test passes the condition of homogeneity of variance because Levene's Test is insignificant. As a result, it is expected that the same variance exists. Time and group had significant primary effects ($F(1, 55) = 86.47$, $p < .001$, partial $\eta^2 = .611$) and $p = .003$. Additionally, there is a significant interaction effect ($F(1, 55) = 23.66$, $p < .001$) between group and time. See Figure 2 for partial $\eta^2 = .301$.

A series of post-hoc corrected Bonferroni post hoc corrected by Bon Ferroni was conducted in order to further explore significant interactions. For certain comparisons involving four variables, bon ferroni adjustments ($\alpha = .0125$) were used. The test-t sample pairings showed that both the control groups' and VR training's real-world table tennis performance improved dramatically both before and after the test. The post-test score for the VR training group was $M = 189.93$ ($SD = 80.68$) compared to $M = 92.46$ ($SD = 42.25$) on the pre-test ($t(28) = -7.8$, $p < .001$). Cohen's d came out at 1.70. $T(27) = -5.6$, $p < .001$) The control group's score increased from $M = 80.62$ ($SD = 53.93$) on the pre-test to $M = 111.14$ ($SD = 63.47$) on the post-test.

The VR training group ($M = 92.46$, $SD = 42.25$) and the control group ($M = 80.62$, $SD = 53.93$) did not differ significantly on the pre-test of the quantitative assessment, according to an independent sample t-test ($t(55) = .92$, $p = .359$).

An independent sample t-test revealed that during the post-test, individuals in the VR training group ($M = 189.93$, $SD = 80.68$) scored considerably higher than participants in the control group ($M = 111.14$, $SD = 63.47$) on the quantitative evaluation, $t(55) = 4.08$, $p < .001$. Cohen's d came to 1.08.

Test-Retest Reliability. Test-retest reliability was assessed by correlating the pre-test and post-test scores of the control group. Based on (Hopkins, 2015), the intraclass correlation coefficient (ICC 3.1) is 0.89. Thus, ICC shows good test-retest reliability.

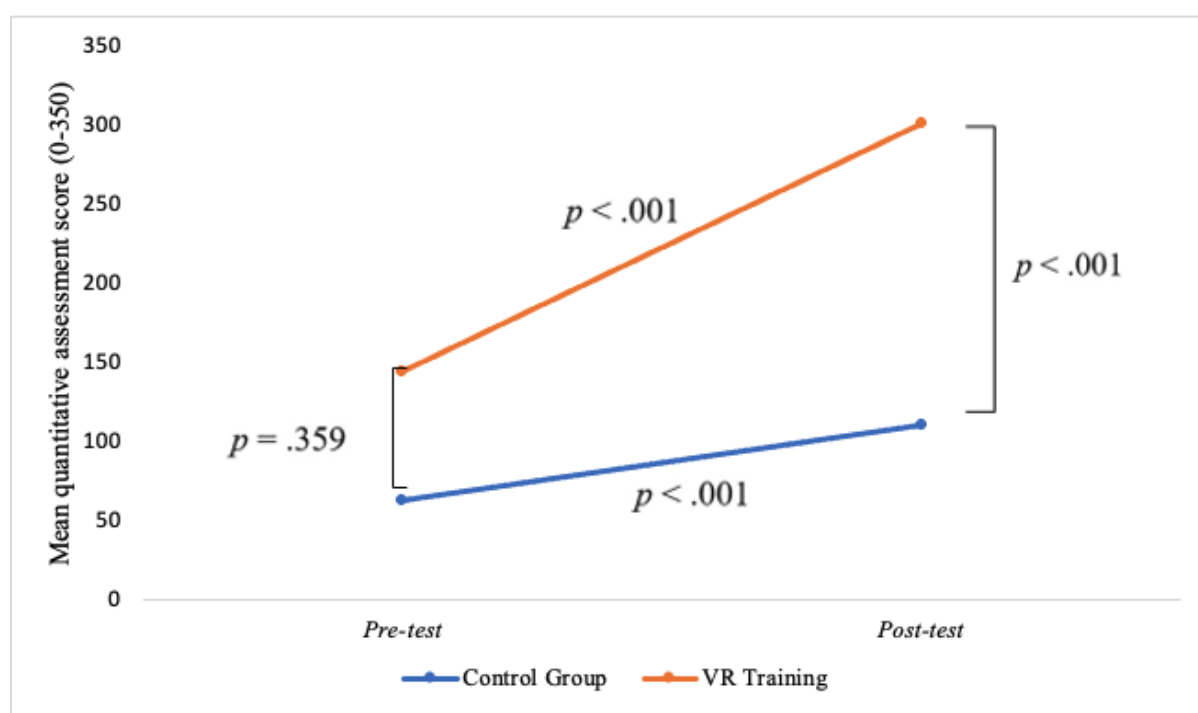


Figure 2. Quantitative assessment Mean Total Score (\pm standard error) for the VR training group (dark grey) and control group (light grey) at the pre-and post-test on quantitative assessments.

Quality of Skills Assessment

On the quality of skills assessment, an independent sample t-test showed that participants in the VR training group had change scores on the quality of skills assessment ($M = 7.37$, $SD = 2.24$)

that were substantially higher than those of participants in the control group ($M = 4.46$, $SD = 2.97$), $t(55) = 4.18$, $p < .001$. Cohen's $d = 1.10$.

A one-sample t-test reveals that the VR training group's scores ($M = 7.37$, $SD = 2.24$, $t(28) = 17.71$, $p < .001$), as well as the control group's ($M = 4.46$, $SD = 2.97$, $t(27) = 7.94$, $p < .001$), are significantly different from zero, indicating no change from pre-test to post-test.

Figure 3 displays the average change in participants' scores from the pre-test to the post-test depending on groups and the overall variations in skill assessment quality between groups.

The quality of skills evaluation and the changes in participant scores in the quantitative assessment had a substantial positive link, according to Pearson correlation analysis ($r(55) = .74$, $p < .001$). Of the variance, 54.6% was explained by the connection.

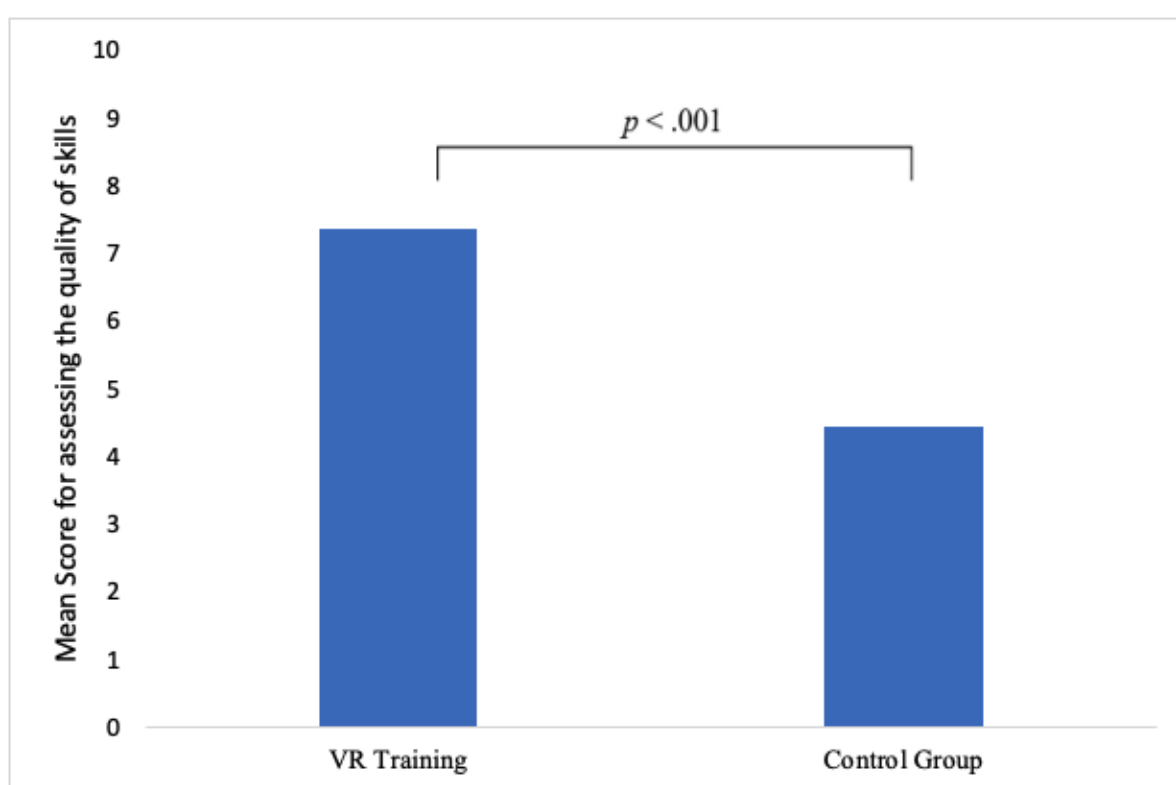


Figure 3. Quality of skill assessment. Total average (\pm standard error) change in the skill assessment quality scores between the pre-test and post-test for the VR training group (dark gray) and the control group (young grey).

Discussion

One noteworthy finding was that from the pre-test to the post-test, participants in both groups showed improvement. Quantitative tests showed gains for 93.1% (27/29) of the VR training group's participants, but there were also improvements for 85.7% (24/28) of the control group's participants who did not receive the training. Based on self-report, the control group did not get any training in table tennis. The control group may have improved greatly because they were given the evaluation more than once, got to know the instructions better, and had more time to consider how to do the job. Given that it is unknown why individuals improved in spite of not receiving formal instruction, this emphasizes the value of having a control group.

The participants in this study were not competitive table tennis players and did not receive any advice or suggestions for improvement. Future research could benefit from providing one-on-one skill-improvement instruction from an appraiser. Some experts suggest that virtual reality (VR) may be most effective as an additional training tool for individuals who are already knowledgeable and experienced in sports (Miles et al., 2012). VR might be particularly valuable when users can apply proper forms and tactics within a realistic gaming environment. Future studies examining individuals with varying levels of experience could provide insights into who benefits the most from training in a virtual environment.

Therefore, the question of whether VR training will be beneficial for competitive and advanced players is unanswered by this study. It is possible that an experienced player will detect a subtle distinction in stroke times, reflections, rounds, and ball connections between virtual reality games and traditional games, even though novices may find the game physics to be realistic. If this is the issue, competitive players may even have negative or poor efficiency transfer from training to the actual world (Baldwin & Ford, 1988; Rose et al., 2000). Additionally, it would be highly beneficial to research the traits of other people that are known to influence transfer, like motivation, personality, and cognitive ability (Sackett et al., 1998).

Since both adaptive training (Gray, 2017) and open skill training (Wang et al., 2018) have been shown to improve performance outcomes, combining these two methods in virtual reality could significantly influence skill development. Given that table tennis is an open-ended skill sport, it is important for players to refine their abilities in VR. Exploring whether VR training leads to improved performance as competitive players against AI is valuable but outside the scope of this investigation.

Our study is among the first to examine the transfer of sports training using VR with a head-mounted display (HMD). We demonstrated transfer effects by comparing VR training groups with control groups that received no training. However, future research should consider additional factors. These include evaluating skill quality and quantitative assessments using a variety of table tennis skills to measure changes in participants' abilities. Nonetheless, some techniques like drives, flicks, and smashes are not assessed, and the study lacks objective measurements such as eye movement tracking or video-based motion analysis. (Streuber et al., 2012; Piras et al., 2016).

Due to the absence of real-world training groups, this study was unable to evaluate the efficacy of VR sports training to traditional training methods. While these issues can be addressed to provide more thorough evaluations in subsequent studies, the metrics included in this analysis enable the conclusion that VR training can be utilized to help novices improve their fundamental table tennis abilities.

This exam was created recently to evaluate transfer. Validity and dependability need to be considered in this investigation. To guarantee the legitimacy of the material, the creators of the table tennis exam conferred with specialists from Table Tennis Indonesia. The fact that these assessments evaluate what they are supposed to measure real-world table tennis skills gives them additional face validity. This test's quantitative measurements show strong test-retest reliability, as seen by its 0.89 intraclass correlation coefficient.

A limitation of this study is the lack of intrinsic trustworthiness in the qualitative assessments. We used a single, highly skilled table tennis coach to ensure consistency in evaluating players' skills, which means we cannot gauge how other raters might agree with our skill evaluations.

While quantitative results show high reliability, the qualitative findings may not be as widely applicable.

Although the VR training group showed positive transfer effects, the exact cause of these benefits remains unclear. It is uncertain whether the improvements were due to the VR training itself or to general cognitive abilities like better hand-eye coordination and faster reaction times. Future research should include a control group participating in VR training with a similar tabletop sport, such as VR air hockey, to isolate the effects specific to sports activities while controlling for other variables.

Comparing VR table tennis with other VR table sports can help determine whether the gains in abilities are due to the simulation of table tennis or broader skills learned in the VR environment. Identifying the elements linked to improved real-world table tennis skills may provide insights into the benefits of developing sports-specific VR training programs.

Conclusion

The study's findings highlight the effectiveness of VR-based smash forehand training, showing significant improvements in table tennis performance among participants who received VR training compared to the untrained group. This research contributes to the emerging field of VR-based sports training, particularly in table tennis, and may inspire further investigation into VR's potential for transferring skills to real-world sports.

Future research should explore several deeper aspects. First, it is important to determine if skill improvements in VR environments correlate significantly with real-world enhancements. Additionally, researchers should evaluate whether VR training can be as effective or more effective than traditional training methods. Investigating how VR training benefits individuals across various skill levels and understanding the factors driving its positive effects are crucial.

Further studies could also examine whether the transfer of skills is specific to table tennis or if fast-paced VR training can benefit other sports disciplines as well. This exploration suggests that VR technology, rather than being merely a novelty, has the potential to significantly enhance skill development and performance in real-world settings.

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Contact emails: novitawulandari.2021@student.uny.ac.id
splc_fikuny@yahoo.com
handaru@uny.ac.id
jusriantoas_9904921019@mhs.unj.ac.id

Students' Perceptions of the Bachelor of Technology (BTech) Program in Hospitality Education: A Study of Kumasi Technical University, Ghana

Gloria Owusu Sarpong, Kumasi Technical University, Ghana

John Ayuekanbey Awaab, Kumasi Technical University, Ghana

Irene Ashley, Kumasi Technical University, Ghana

Abena Sekyere, Akenten Appiah-Menka University of Skills Training and Entrepreneurial Development, Ghana

Priscilla Osae-Akonnor, Kumasi Technical University, Ghana

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Abstract

Over time, the long-standing challenge of closing the gap between academics and industry has considerably impacted both parties involved. Some Technical Universities began offering Bachelor of Technology (BTech) programs in Hospitality Education to address this issue. This study sought to evaluate students' awareness of the BTech program, its benefits, and the difficulties of enrolment. A quantitative study utilizing an online survey was conducted with 300 hospitality students in Diploma and Higher National Diploma (HND) classes in the Hotel Catering and Institutional Management department at Kumasi Technical University (KsTU), Ghana. The collected data were analyzed using SPSS version 26 and Eviews software. To achieve the research objectives, cross-tabulations, Granger causality tests, and multiple linear regression. The study's findings revealed that the majority (97%) of the students were aware of the BTech degree in Hospitality Education. Students acknowledged the program's practical approach, viewing it as a good avenue to gaining significant competency and increasing their competitiveness in the labour market. However, many students suffered a huge financial burden because of the program, making enrolment difficult. Considering these findings, the study recommends that hospitality educators and industry partners work together to incorporate a comprehensive practical component into the program while addressing cost restrictions. This strategy attempts to enhance the overall effectiveness of the BTech programs and allow greater participation by students.

Keywords: Hospitality Education, BTech, Students, Enrolment, Career Aspirations, Challenges

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Introduction

Tertiary education has been a cornerstone in the education of people in various fields. However, the trajectory of education continues after school, when students seek to be employed to utilize the knowledge acquired in their respective fields (Le et al., 2018). Thus, the selection of programmes at tertiary education schools is mainly based on prospective career opportunities after completion (Gokuladas, 2010; Ineson & Kempa, 1996; Wabwoba & Mwakondo, 2011). The rates of unemployment in Ghana have led to the careful selection and appropriation of prospective employment before the selection of tertiary education programmes. Mostly when students enrol in the Diploma and HND hospitality programs they are excited and hopeful about the industry. However, upon getting to their final year, they often have divided thoughts about hospitality education and career prospects as to further their education in the hospitality field or not (Chavan, 2019). This study seeks to assess the perception of Diploma and Higher National Diploma (HND) Students Enrolment in BTech Hospitality Programs after Completion.

The main objective is to assess the perception of Diploma and Higher National Diploma (HND) Students Enrolment into BTech Hospitality Programs after Completion. A study of Kumasi Technical University, (KsTU) Ghana. Specific objectives: (1) To evaluate students' awareness of Hospitality Management and Catering Technology as a BTech programme in KsTU. (2) To examine the benefits in enrolling into the programme. (3) To examine the challenges in enrolling into the programme. (4) To explore the career aspirations of these students.

Literature Review

The self-efficacy theory (Bandura, 1977), career self-efficacy theory (Hackett & Betz, 1981), and social cognitive theory (Bandura, 1986) are the three main theoretical frameworks upon which the social cognitive career theory (SCCT) developed by Lent, Brown, and Hackett's (1994) foundations. Bandura's (1977) self-efficacy theory explains how an individual believe/confidence in capabilities affect result expectations. Hackett and Betz (1981) developed career self-efficacy theory to study the impact of self-efficacy on the career advancement of women in scientific and engineering degrees. Bandura's (1986) social cognitive theory investigated the ongoing connection between personal variables, contextual influences, and behaviour. The Theory of Planned Behaviour (TPB) developed by (Ajzen's (1991) was also reviewed. Applying these models to the study setting, students' perceptions of hospitality education are influenced by intentions, which are defined by their attitude, subjective norm, and behavioural control. In terms of attitudes, it considers the student's belief and interest in pursuing hospitality education. The outcome of his or her aim will be reviewed, and it could be positive or negative. Subjective norms consider external pressures that influence students' intentions to pursue hospitality education. These external influences could include pressure from family, peers, alumnus, teachers, industry practitioners, and anyone who believe they have influence over his or her decision to pursue hospitality education. Perceived behavioural control explains students' freedom to pursue hospitality education. Students' ambition to study and work in hospitality is influenced by variables such as self-efficacy as well as external factors such as the learning environment and working conditions (Zahari, 2004).

Methodology

This study was a multilevel study that involved the creation of surveys to collect data on interest, classroom performance, and teacher quality. In the study, 300 students were sampled, and self-administered questionnaires were distributed on their WhatsApp platform for them to answer. The random sampling technique ensures representation of educational attainment and data is collected electronically to ensure anonymity. Data analysis includes various techniques such as statistical analysis. The collected data were analyzed using SPSS and Eviews software. Cross-tabulations, frequencies, analysis, Granger causality tests, and multiple linear regression were used to achieve the research objectives. Ethical considerations, including informed consent and confidentiality, were strictly adhered to. Limitations such as sample bias and resource limitations are acknowledged. Finally, this study is intended to provide valuable information to inform the evaluation and development process of BTech in Hospitality and Catering Management at Kumasi Technical University.

Findings

The collected data were imported into SPSS for quantitative analysis and subsequent analysis to achieve the research objectives. This involves cleaning up elements, coding variables appropriately, and running various tests and models to find important patterns and relationships. The information obtained from this analysis is important for solving research questions and drawing conclusions. The resulting details are as follows:

		Age:				Total
		18-25	26-35	26-35	35+ years	
Demographic Information	Female	253	24	2	4	283
	Male	14	3	0	0	17
Total		267	27	2	4	300

Table 1: Demographic Information

The results in Table 1 show that this study mainly included young women, especially women aged 18-25. The very small number of participants in the older age group and males indicates that the findings may better represent the views of younger women. This means that the majority of students taking hospitality management course are female, indicating the possibility of gender bias in this study.

		Are you aware of the availability of BTech programs?		
		No	Yes	Total
If yes, how did you become aware of BTech programs?	Friends or family	0	33	33
	Internet research	2	50	52
	School	4	158	162
	School; Internet research; Friends or family	0	53	53
	Total	6(2.7%)	292(97.3%)	300

Table 2: Students' Awareness of Hospitality Education as a BTech Program in KsTU

Table 2 shows that majority of the respondents (292 out of 300) were aware of the BTech programme. The students' main source of information was their school (158). Respondents had access to information on the programme from different sources (school, online research and friends or family), which shows its effectiveness in many aspects. Additionally, 52 participants received information from online research about the role of online resources, while 33 participants obtained information from friends or family, noting the impact of personal collaboration. These findings show that schools are crucial in creating awareness about BTech courses based on online resources and personal networks. To raise awareness, emphasis needs to be placed on promoting media in schools, developing online information, and using personal connections through deals and word-of-mouth recommendations.

To Examine the Benefits of Enrolling in Hospitality Education Programme

Item	Mean	SD
To work in the hospitality industry	2.83	.454
To secure a good job in the future	2.82	.492
To become a self-employed graduate	2.79	.495
To earn a higher salary	2.79	.485
To become a hospitality Tutor	2.57	.688
To be able to run and manage my family business	2.50	.711
To secure a government job	2.49	.662

Scale of interpretation: 1.0-1.49- Disagree 1.50-2.49 neutral 2.5-3.0 agree.

Table 3: Perceived Benefits

The results in Table 3 show that most respondents agree on the benefits from enrolling in the hospitality industry, finding a good job in the future, becoming self-employed, or earning a high salary again. However, respondents remained neutral (2.49) on the benefit securing a government job), indicating that participants have different views on this job. Nevertheless, the majority of the respondents have positive views on the benefits of pursuing a degree in hospitality.

To Examine the Challenges in Enrolling in Hospitality Education Programme

Item	Mean	SD
High Tuition fees	2.53	.744
High practical fees	2.52	.752
The unwillingness of industry operators to accept students for internship	2.12	.821
Irregular work schedules	2.08	.812
Lower salaries in the industry	2.06	.786
Negative perception about working in the industry	2.04	.839
Inadequate modern equipment for training	2.02	.865
Negative attitude of Tutors towards students	1.86	.867
Course not relevant for this modern generation	1.83	.887

Scale of interpretation: 1.0-1.49- Disagree 1.50-2.49 neutral, 2.5-3.0 agree

Table 4: Challenges/Barriers in Enrolment

The results in Table 4 show some of the challenges and problems perceived by participants in pursuing their studies. The most frequently cited problems include high education and

training fees, irregular working hours, low wages in the sector, negative perceptions of employment in the region, operators' reluctance to accept workers and the lack of modern training equipment. Similar findings were found by Peshave et al. 2016 and Wang & Huang, 2014 all identified lower salaries, high busy schedules, and family issues as challenge facing hospitality education enrolment. However, opinions differ regarding teachers' poor attitude towards students and the impact of the classroom on today's generation. These findings highlight many of the issues faced by individuals working in the hospitality industry and highlight areas for improvement in education and the industry.

To Explore the Causal Relationship Between Career Aspirations and Student Enrolment Into the BTech Program

Null Hypothesis:	Obs	F-Statistic	Prob.
Career Intention Does Not Granger Cause Enrolment	292	2.01973	0.0346
Enrolment Does Not Granger Cause Career Intention		0.03728	0.9634
Learning Environment Does Not Granger Cause Enrolment	297	2.83297	0.0605
Enrolment Does Not Granger Cause Learning Environment		13.8039	0.0000
Social pressure factors Does Not Granger Cause Enrolment	298	1.19207	0.3051
Enrolment Does Not Granger Cause Social factors		5.90413	0.0031
Industry experience Does Not Granger Cause Career Intention	292	1.81767	0.1643
Career Intention Does Not Granger Cause Industry experience		4.07130	0.0180
Learning Environment Does Not Granger Cause Career Intention	291	0.65433	0.5206
Career Intention Does Not Granger Cause Learning Environment		7.49952	0.0007
Personal factors Does Not Granger Cause Career Intention	292	1.71806	0.1813
Career Intention Does Not Granger Cause Personal factors		4.32851	0.0141
Learning Environment Does Not Granger Cause Industry experience	297	0.84593	0.4302
Industry experience Does Not Granger Cause Learning Environment		22.6104	0.0000
Personal factors Does Not Granger Cause Industry experience	298	1.00898	0.3659
Industry experience Does Not Granger Cause Personal factors		3.26878	0.0394
Personal factors Does Not Granger Cause Learning Environment	297	145.078	0.0000
Learning Environment Does Not Granger Cause Personal factors		1.17280	0.3110
Social pressure factors Does Not Granger Cause Learning Environment	297	9.83785	0.0000
Learning Environment Does Not Granger Cause Social factors		1.87550	0.1551
Social pressure factors Does Not Granger Cause Personal factors	298	2.77541	0.0640
Personal factors Does Not Granger Cause Social pressure factors		2.93485	0.0547

Table 5: Pairwise Granger Causality Tests

Table 5 shows the Granger causality test results showing the relationship between different topics. Career motivation had a significant impact on enrolment, indicating that one's career motivation influences the decision to enrol in a program. Enrolment, in turn, highlights differences between these relationships, influencing changes in the educational and social environment. This confirms studies supported by Amisshah et al., 2019, who found out that students pursuing hospitality programs intend to choose a career in the hospitality industry. In

addition, work motivation reveals its role in the creation of personal work in the business by leading to changes in experiences in the business. However, there is no significant relationship between job knowledge and job intention. In addition, although the individual is related to the learning environment, there is no significant Granger causality between the relationship and the learning environment. These findings provide insight into the interplay between factors influencing education and career decisions in the hospitality industry.

Further Analysis

In addition to the pre-test, additional analyzes were conducted to understand the impact of the identified factors on student admission to the BTech Hospitality program. This detailed study aims to gain a deeper understanding of the enrolment decision-making process. Table 6 below shows a detailed summary of this analysis showing the relationship between the identified factors and the sample enrolled in the program.

Model	Coefficient	Std. Error	t-Statistic	Prob.
Career_Intention	0.047852	0.014932	3.204640	0.0015
Industryexperience	0.015719	0.006095	2.578794	0.0104
Personalfactors	0.007659	0.005125	1.494486	0.1361
Socialpressure factors	-0.005478	0.003464	-1.581353	0.1149
Learning_Environment	0.012873	0.002231	5.770919	0.0000

Table 6: Effect of Independent Variables on Student Enrolment to BTech Program

Table 6 shows the effects of various independent variables on student enrolment in BTech programme. The coefficient of 0.047852 indicates that an increase in career intention is associated with an increase in student enrolment of approximately 0.048 units. This relationship is significant at the 0.05 level ($p = 0.0015$), indicating that strong career goals have a positive impact on enrolment. Industry experience has a positive impact on student enrolment with a coefficient of 0.015719. Each unit increase in the industry increases schooling by approximately 0.016 units. This relationship is significant at the 0.05 level ($p = 0.0104$), indicating that students with more industry experience are more likely to enrol in BTech programme. The coefficient of 0.007659 indicates that there is a relationship between personal factors and student enrolment, but it is not significant ($p = 0.1361$). This shows that personal factors may have a slight impact on school enrolment, but it did not reach significance in this sample. The coefficient of -0.005478 indicates a positive, although not significant, relationship between the relationship and student enrolment ($p = 0.1149$). This suggests that social pressure factors may have a moderating effect on enrolment, but further research is needed. The coefficient of the Learning Environment variable is 0.012873 and has a positive effect on student enrolment ($p < 0.0001$). Learning Environment for each additional credit hour, enrolment in the program increases by 0.013 credit hours, highlighting the importance of the learning environment in attracting students to BTech programs assistantship program. The results showed that career goals, job knowledge, and learning environment influence students enrolled in BTech courses, while personal and social pressure factors influence show weakness or ineffectiveness. These findings provide valuable information for program managers and policymakers to improve enrolment strategies and increase program attractiveness.

Discussion

Reliability analysis verifies the consistency and reliability of the research instrument and ensures the validity and stability of the results obtained. This demonstrates the reliability of the findings and gives confidence in making inferences about students' perceptions of the BTech program in hospitality education. Demographic analysis revealed the possibility of gender bias in study participants; The majority of participants were young women. Understanding the vulnerability of this population is important to correctly interpret the results of the study and address potential weaknesses in assessment and evaluation development. As shown in Table 3, respondents' good knowledge of BTech programs cited the usefulness of various sources such as school and online research. Using these channels for advertising and promotion can increase visibility and attract potential students. Analytical results confirm the adequacy of the sample size and the robustness of the research methodology in capturing dimensions that influence students' enrolment decisions. This provides a solid foundation for understanding the complex issues that lead students to select and receive targeted interventions. The analysis highlighted three factors that influence enrolment decisions: personal factors, learning environment, and business dynamics. Knowing the relationship between these factors is important for developing a holistic strategy to make programs attractive and retain students. The benefits and challenges perceived by the participants gave a good insight into the strengths and weaknesses of the BTech program. Addressing issues such as high tuition costs and related economic issues is critical to increasing access and ensuring student success. The Granger Causality Test reveals the interactions that influence students' choices by showing the relationship between employment, enrolment decisions, and the environment. Understanding these relationships can inform intervention plans to support students' career development and academic success. Further analysis highlighted the significant impact of career goals, job knowledge, and learning environment on student enrolments. This highlights the importance of addressing these factors in recruitment and retention strategies to attract and retain high-quality students.

Implications

Understanding student attitudes, knowledge levels, and decisions can guide leaders in adjusting recruitment and retention strategies, curriculum design, and instructional efforts to meet students' needs and expectations. Recognizing the possibility of gender bias in participants highlights the importance of promoting diversity and inclusion in projects. Efforts should be made to ensure that all students, regardless of gender or origin, receive fair treatment and support. Knowledge of useful information can guide advertising campaigns to raise awareness of BTech programs. Using competitions such as schools, online resources, and personal collaborations can increase the visibility of your project and attract potential students. Teachers can adapt instruction to meet students' interests and expectations, address real-world opportunities, develop appropriate skills, and support learning. Lawmakers can use research studies to advocate for policy changes to address issues such as higher education rates, economic barriers, and gender inequality. Collaboration between organizations, business stakeholders, and policymakers can help close these gaps and create positive outcomes. Prospective students can make more informed decisions about joining BTech programs based on the perceived benefits, challenges and career opportunities of study. Those in the hospitality industry can work with schools to ensure graduates are well-prepared for employment. Aligning the curriculum with industry needs, providing internship opportunities, and supporting partnerships can improve graduates' employability and work readiness. To address the issue of gender bias, hospitality educators in KsTU can award

scholarship to males in vocational education. This will encourage their enrolment into hospitality education.

Conclusion

One of the main sources of labour for hospitality companies is higher education. The aim of hospitality education is to provide students with practical knowledge and abilities, and this has led to its increasing popularity. The public awareness of higher education programs in hospitality has expanded among educators in the field. The reduced tuition and practical fees of the hospitality education program is likely to increase students enrol. The learning environment, career aspiration, and industry experience all influence their enrolment.

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Contact email: sarpong.gloria@ymail.com

***Meaningful Learning for Blind Students in Using Audiobooks as a Tool in
Distance Education***

Jaka Warsihna, Universitas Terbuka, Indonesia
Zulmi Ramdani, Bursa Uludağ University, Turkiye
Andi Amri, Universitas Muhammadiyah Prof. Dr. Hamka, Indonesia
Fauzy Rahman Kosasih, Universitas Terbuka, Indonesia

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Abstract

Current technological advancements have introduced a new perspective in facilitating optimal learning for individuals. Audiobooks as a learning medium are anticipated to ease the process for blind students in accessing a greater volume of material and achieving enhanced accessibility. Previous studies have not extensively explored the role of audiobooks for blind students despite the potential of this medium as a driving factor for their success in learning. A descriptive phenomenological study was employed to investigate the experiences of blind students in using audiobooks as a supporting learning media. Two blind students, actively engaged in distance learning programs, participated in this research. Through thematic analysis, the findings revealed that audiobooks can serve as an effective tool for accessing diverse and directed learning resources. However, specific considerations, such as accessible features and the dynamic nature of audiobook narrations, which need to align with the content, must be taken into account during implementation.

Keywords: Audiobooks, Blind Students, Distance Education, Educational Technology, Meaningful Learning

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Introduction

Technological advances have positively impacted information accessibility and educational attainment for everyone (Lai & Bower, 2019). This benefit extends even to those with physical limitations, enabling them to receive proper and optimal education. For individuals with visual impairments, having accessibility to education is a source of joy (Starcic & Bagon, 2014). Throughout history, technology has played a significant role in assisting individuals with visual impairments in their daily activities. Examples include technologies that convert text into audio, making it accessible for them, such as Screen Reader NVDA (Non-Visual Desktop Access) and Job Access with Speech (JAWS), as well as Braille Converter devices that provide tactile writing for individuals to feel when using something (Kapperman et al., 2021; Kisanga & Kisanga, 2022; McCarthy et al., 2013). In general, the presence of various technologies greatly aids blind individuals in fulfilling their life tasks (Lai & Bower, 2019).

Current development of educational technology has increasingly focused on media that can be used in the education of blind students, one of which is the use of audiobooks. Audiobooks serve as a supplementary medium presenting educational material in audio format, allowing blind students to access learning content through listening alone (Warsihna et al., 2022). The breakthrough of audiobooks not only provides a solution for studying specific subjects but can also be utilized flexibly, even when individuals are engaged in multitasking activities (Warsihna et al., 2021). The advantages of using audiobooks further emphasize technology as a tool to assist humanity, clearly demonstrating that education is for everyone (Brauchli et al., 2020; Koskinen & Seppä, 2014).

Previous studies have extensively explored audiobooks in various contexts. These range from their implementation to enhance student motivation and academic performance, their use as an alternative learning medium in remote education contexts, to the manifestation of unique learning materials that can be presented engagingly to students (Marchetti & Valente, 2018; Srivastava et al., 2022). Furthermore, research on audiobooks for blind students has also been conducted by several earlier researchers. For instance, in illustrating visual science and technology materials to make them more vivid and capture the attention of student audiences (Subagya, 2017). Meanwhile, other studies have aimed to uncover the effectiveness of audiobooks for blind students (Alatas & Solehat, 2020; Amalia & Istiqomah, 2020; Fansury et al., 2019). To date, the limited number of studies exploring the experiences and perspectives of blind students in using audiobooks is the main focus of this research. Therefore, the objective of this research is to explore the experiences and perspectives of blind students in using audiobooks.

Literature Review

The Concept of Education for All (EFA)

Education for All (EFA) is a global movement initiated by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) with the primary goal of meeting the learning objectives for all children, adolescents, and adults. The UNESCO-initiated EFA program was intended to be completed by 2015 (GEM Report UNESCO, 2015). However, its success was only evident in 2022, seven years later, for Indonesia (Kuhon, 2020). Education for All (EFA) has been part of the government's policy in Indonesia since it was established in 2000 through the Dakar Declaration. As a result, the government formulated the

implementation plan for the Education for All (EFA) program for the years 2000–2015 (Mulyadi, 2017). The progress of education for all in Indonesia and UNESCO member countries is monitored annually, and the results are reported through the global monitoring report for education for all. According to Manan (2015), there are six programs under education for all, namely the early childhood education program, basic education program, life skills program, equality program, gender mainstreaming program, and education quality improvement program.

The concept of education for all is an idea that has become ingrained in human thinking, suggesting that everyone has an equal opportunity to learn, regardless of their social status or background. Education for all is the notion that education should be seen as a solution or alternative to address educational issues, not merely as a political or national slogan. Education for all can be considered the embodiment of the 1945 Constitution regarding the right to education for all Indonesian citizens (Majid & Fuada, 2020; Nugrahanto & Zuchdi, 2019).

Lukito (2022) in article 31 of the 1945 Constitution, which states that "Every citizen has the right to education," is a manifestation of this concept of education for all. In the initial part of the article, the word "every" indicates that no Indonesian citizen should be deprived of quality education. Therefore, the right of citizens to receive education is the same for all layers of society, both formal and non-formal, without distinction of ethnicity, race, religion, or social class.

The commitment to education for all is to ensure the right of every citizen to education. Learning for all is a type of education that encompasses all ages, whether children, adolescents, or adults, to enhance their understanding of the world (OECD & Asian Development Bank, 2015). Sulistyanto (2014) conclude that fundamentally, education is a learning process intended to engage participants in activities and creativity, fostering interaction so that they can learn knowledge of how everything in the world functions and serves to improve one's life.

Continuous Education for Vision Impaired Students: Expectations and Challenges

Talking about sustainable education is not only about focusing on suitable teaching methods, adequate facilities, and professional teachers. Understanding sustainable education means recognizing the various conditions and needs of students. The provision of education for students is adjusted to their conditions (Mark, 1986). Some students are considered normal both physically and mentally, allowing them to attend regular schools from kindergarten to high school. However, some students require serious attention and benefit from inclusive education. Children with exceptional abilities and gifts may pursue appropriate education in Special Needs Schools. One such student with special needs is a blind student. According to the World Health Organization (WHO), visual impairments in individuals are classified into three categories: 1) Normal, where vision acuity and residual vision range from 6/18 to 6/6; 2) Low vision, with vision acuity and residual vision ranging from 3/60 to 6/18, and finally; 3) Blind, with vision acuity and residual vision less than 3/60.

Based on the WHO classification, this serves as a reference for policymakers in determining the appropriate learning processes tailored to the needs of blind students. Learners with visual impairments do not necessarily have shortcomings in all aspects. While their physical vision may be impaired, their thinking and brain capacity are equivalent to students in general.

Kingsley (1999) points out that the limitations of visual impairment do not necessarily restrict the potential of children with visual impairments from developing optimally. This implies that suitable and functional education is crucial for individuals with visual impairments, considering they are also assets to the nation and the responsibility of the state, deserving of proper education like any other child.

Various approaches have been employed to realize inclusive education that aligns with the needs of blind individuals. One of these approaches, as proposed Hosni (2012), suggests that blind learners can be addressed through visual stimulation, visual efficiency, and teaching approaches utilizing residual vision. All these approaches aim to meet the needs of blind learners, enabling them to receive education effectively. Additionally, these approaches should be accompanied by proficient technology. Technological facilities supporting the learning process for blind students will facilitate educators in comprehending the presented learning materials more easily (Lewis, 2003).

Providing education for blind people poses a challenge for the country and stakeholders, particularly educators. Educators involved in this field should ideally possess knowledge of special education and special services. This is crucial to ensure that the transfer of knowledge is effectively executed and aligns with the set targets (Smith, 2006). However, in reality, many special needs schools face a shortage of teachers, as reported in the news on bangka.tribunnews.com (2022), stating that the Bangka Belitung province lacks special education teachers. Similar situations have been observed in Bengkulu and Papua. It becomes the responsibility of the state to address these shortages. Furthermore, the scarcity is also attributed to the low interest of the younger generation in choosing special education as a major in higher education. It is hoped that policymakers will pay more attention to these special-needs children, especially blind people, ensuring that their educational needs are adequately met.

Methods

Research Design

This research employed a descriptive phenomenological analysis design to explore individual life experiences (Biggerstaff, 2008; Biggerstaff & Thompson, 2008). The selection of this phenomenological design is rooted in the researchers' goal to gain a deeper understanding of the experiences recounted by the participants concerning the values and beliefs they held while undergoing religious education. Unlike an interpretative design, this descriptive phenomenological analysis merely portrays what the participants feel and perceive without providing a more profound interpretation of the underlying dynamics. Hence, this design is well-suited to the objectives of this research.

Participants

Participants in this research are blind students currently undertaking distance education at Universitas Terbuka. Two blind students were involved in the research. They were selected using the snowball sampling technique, where the researchers obtained information about both participants based on academic data search and confirmed by the university regarding their conditions. The selected participants then completed a research consent form, where they consciously agreed and willingly participated in this research. The research activities

received permission and were directly supervised by the Research and Community Service Institute of Universitas Terbuka.

Data Collection and Technique

The data collection process was coordinated in advance with the selected subjects regarding the schedule and location of data collection. Data collection utilized a semi-formal interview technique, as it was believed to provide calmness and openness in this research process. The recorded and transcribed interviews aimed to delve into the participant's experiences, thoughts, feelings, and activities during religious education at school. The interview questions were structured based on a combination of theories described by Karpicke (2012), Karpicke and Grimaldi (2012), and Shuell (1990). The interviews were conducted in the Indonesian language through face-to-face interactions using audio-recorded media, with each session lasting between 39 and 50 minutes. The interviews featured semi-structured, open-ended questions that centered on the perspective of blind students in using the provided audiobook. The audiobook was given to the participants three weeks before the interview process, covering a specific topic from a general course at Universitas Terbuka.

Data Analysis

Data were analyzed, identified, or reported using a thematic analysis because this research focuses on a detailed analysis that provides a more in-depth description (Campbell & Hart, 2018; Creswell & Creswell, 2018). This thematic analysis is suitable for use in phenomenological research designs because it can reveal with certainty the essential components that are inherent and occur in research participants. The steps to be taken in this thematic analysis include understanding the data obtained, coding from existing data, forming themes or patterns from existing coding, and translating them into English. The results provide relevant information about the identified attributes.

Results and Discussion

Participants Characteristics

The first participant is a 35-year-old unmarried man who resides with his sister's family. He holds a degree in music from one of the state universities in Indonesia and is currently in his fourth semester as a communication major at Universitas Terbuka. On the other hand, the second participant is a 22-year-old woman pursuing an English education major at Universitas Terbuka. She lives with her parents and is engaged in daily online clothing sales under the direct guidance of her mother.

Themes Identified in This Research

Based on the analysis of interview data gathered by the researchers, several common points were identified, namely (a) Linearity with learning objectives, (b) Accessibility of use, and (c) Supporting capabilities. The first point pertains to the presence of audiobooks and whether they can optimize learning. The second point focuses on essential physical aspects that can support the optimization of audiobook usage. Meanwhile, the third point concentrates on other supporting capabilities necessary for the optimal use of audiobooks. For further clarification, the researchers elaborate on the indicators for each point as outlined in Table 1.

No	General Theme	Indicators of Theme Achievement
1	Linearity with learning objectives	<ul style="list-style-type: none"> - Supporting learning objectives and processes - Usage process and implementation - Required costs - Student background
2	Accessibility of use	<ul style="list-style-type: none"> - User feelings and comfort - Physical accessibility
3	Supporting capabilities	<ul style="list-style-type: none"> - Special skills - Integration with other media - Learning experiences

Table 1. Description of Themes Formed in the Use of Audiobooks for the Blind Students

This research yields a qualitative description explaining the experiences and perspectives of blind students in using audiobooks as their learning media. As a technology-based learning tool, audiobooks are expected to provide in-depth information suitable for students' needs. Especially for those who are blind, audiobooks are generalized as an effective medium to support the learning process in general. This can be seen from the interview results conveyed by both participants, emphasizing the significance of audiobooks in facilitating their understanding of the materials.

The researchers conducted a thematic analysis, summarising several major themes as seen in Table 1. These themes are inferred based on the behavioral indicators perceived by blind students when using audiobooks. Three major themes that are a significant focus of the researchers in this research are linearity with learning objectives, accessibility for users, and supporting capabilities for using audiobooks. These themes reflect information that blind individuals can indeed use audiobooks in their learning. However, several considerations need to be addressed for more optimal use. Referring to these three themes, previous research on the integration of technology and learning has also been conducted by three different research groups (Alyoussef, 2023; O'Connor et al., 2022; Sailer et al., 2021). Therefore, the research results support previous findings.

In the first theme, linearity with learning objectives is crucial. The presence of audiobooks as an alternative or primary medium is a component that model makers must consider. In this research, participants agree that audiobooks are an alternative medium, as not all materials can be presented continuously in audiobook form. Additionally, participants also concur that the materials presented in audiobooks are only for conceptual and general knowledge information. Therefore, it cannot cover in-depth analytical or research-related content, as expressed by participants in the following quotes.

"This is good for general materials only because routine information can be provided, making it easy to remember. But, if it is for research or writing, it seems difficult."
(Male Participant)

"It seems like this is only for specific materials because, for complex subjects, it cannot be listened to in this way alone." (Female Participant)

Referring to the intended purpose of creating audiobooks, the presence of this medium is indeed specified as an aid to facilitate the understanding of a subject, and blind individuals

can listen to it flexibly. This undoubtedly supports students working in distance education programs because, with their limited time, audiobooks can be present amidst their busy schedules. The predetermined objectives will ultimately determine how audiobooks are shared and utilized by blind students. In other indicators in Table 1, the linearity of audiobook usage will also heavily depend on the learning experience and familiarity with the technology possessed by blind students. Moreover, it will be related to the costs incurred to use the audiobook.

"Even though I am blind, my learning style is dominantly visual. So, if it is full of audiobooks, it would be very boring, so there should also be two-way discussions." (Male Participant)

"I usually listen to Western music because, coincidentally, my major is English. So, it suits my learning style." (Female Participant)

"So far, only the iPhone is adaptive enough to various technologies for us as blind individuals, so using this audiobook should be easy for us." (Male Participant)

Next, looking at the second theme, which is about the accessibility of using audiobooks, this is a crucial aspect. Blind students must be provided with ease in using audiobooks because this is their main gateway to capture learning information. Some essential indicators to be considered include effective steps in starting audiobooks for them, the extent of comfort that can be obtained, and how the quality of the voice actor and intonation in the audiobook must be clear. These findings are also supported by previous studies stating that audiobooks for blind individuals should be made so comfortable that they can focus on the essence of the material and do not need to pay attention to technical aspects (Alatas & Solehat, 2020; Amalia & Istiqomah, 2020; Fansury et al., 2019).

"The website must be user-friendly so that it is easy for us to access. There are not many websites that can integrate sound like this audiobook." (Male Participant)

"I use this iPhone because it can adapt to various stimuli for blind individuals and provides various accessible features. Then the audiobook should be like that, too. Do not make it harder for us to learn." (Female Participant)

"The voice actor must also be considered. It must be pleasant to listen to and suitable for the material." (Female Participant)

The quotes also support the third theme, where there is a significant need for supporting abilities for blind students to use this audiobook. Psychologically, many factors hinder blind individuals from learning and obtaining a good education. Just starting to get motivated is challenging enough, so the existence of this audiobook should create an impression of easing and capturing the attention of blind students. Supporting abilities are required to achieve optimal learning with audiobooks, such as proficiency in using distance learning technology, familiarity with integrating online learning, responsiveness in understanding the material, and flexibility in using audiobooks. These indicators can, of course, be integrated with other media. Existing studies strongly emphasize that audiobooks are more effective in learning when elaborated with other media (Brauchli et al., 2020; Koskinen & Seppä, 2014).

Conclusion

This research provides information about the perspectives and experiences felt by blind students in using audiobooks. To achieve more optimal audiobook learning, every media created must be relevant to the learning objectives. Not only that, but audiobooks must also give the impression of being easy to use and administratively friendly. Audiobooks should also be studied in-depth, requiring regular learning experiences and trials to feel their benefits more significantly.

This research has several limitations, including the limited number of participants, which could potentially strengthen its exploration with a more significant number of participants. This research essentially only examines how they experience using audiobooks. However, it is also essential to consider quantitatively whether audiobooks have a significant impact on the learning of blind individuals.

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Contact emails: jaka-warsihna@ecampus.ut.ac.id
zulmiramdani@uinsgd.ac.id

*The Transformative Role of the English Teacher in Deconstructing
Gender Stereotypes in EFL*

Erika de la Barra, University of Santiago, Chile
Soffia Carbone, Universidad Mayor, Chile

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Abstract

One of the most relevant challenges for Chile is to become a more inclusive country, especially when it comes to gender issues. In fact, the current Chilean government has designed most of its public policies mind the sustainable goals of the United Nations, including achieving greater gender equity by 2030. In fact, the Ministry of Education has highlighted gender equity as one of the cornerstones of teacher training programs nationwide. The objective of this paper is to present the outcomes of a study that examined the graduation theses formulated by 14 English pedagogy students in Santiago, Chile in the years 2021 and 2022 in relation to gender stereotypes. The employed methodology was qualitative, as a thematic analysis was conducted. The results revealed that gender stereotypes such as the following are still prevalent in Chilean schools: female teachers are expected to take on roles as caregivers, which is not required of their male colleagues; female teachers are perceived as less capable and often need to demonstrate their knowledge; male teachers are perceived as more rational and serious, while female teachers appear to be kinder and more emotional. To conclude, the students who took part in the study assumed a critical position regarding gender stereotypes allowing them to perceive themselves as transforming agents called to make changes, through the language and attitudes used in class to deconstruct stereotypes that harm both men and women in their professional development.

Keywords: Inclusion, Gender, Stereotypes, Pedagogical Practice

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Introduction

In Chile, gender stereotypes still prevent girls and women from gaining full academic and professional development. These stereotypes arise from the idea that genders have inherent differences in abilities, interests, and appropriate behaviors. Proof of this is that even today, there are university programs such as mining where the presence of women is low (Salinas et al., 2020). The data provided confirms that although mining is a significant economic activity in Chile, the female workforce only accounts for 7.5%, compared to 19.6% in countries such as Canada and Australia. This uneven ratio is quite visible in other realms too, including the percentage of women enrolled in different academic institutes. As an example, only 22% of these CRUCH universities researchers holding a tenured-track position are female, while male researchers reach 78% of the total real-headcount at the same position. To this we must add that currently women hold only 36% of the leadership positions in the private sector, while men hold 64% (Ministerio de Ciencia y tecnología, 2022).

Research suggests that teachers are the key part of the success of combating stereotypes in order to contribute to the concern of gender equality in terms of advancement in the field of science and business for women. In recent studies in the field of English as a Foreign Language (EFL), female teacher typically tends to provide feedback differently according to the gender of a student and significantly affect girls' motivation to study as well as girls' perception of stereotypes inside the classroom (Gong, et al., 2018). So we also need to think about how textbooks, which, though improved to some extent, are also known to represent gender in ways that typically reinforce more traditional, sex-segregated forms of representation of men and women, insofar as we generally make some association between activities and the sex of the people carrying them out (Aydinoglu, 2014). Therefore, English teachers have the ability to break these patterns and challenge gender stereotypes in the classroom.

The aim of this research is to enhance education in our nation by offering insight into the significance of teacher preparation, within the educational landscape. This involves linking concepts with teaching approaches to equip aspiring educators with the skills needed to navigate the complexities of today's educational environment. This study particularly focuses on the analyze the results, conclusions, discussion as well as pedagogical implications of four graduation dissertations produced by English teacher trainees in their fourth or fifth year of studies. All these works have the particularity of addressing gender issues due to preliminary research carried out during the professional practice in different schools in the Metropolitan area in Chile. The English teacher trainees' positions in their work are crucial as they will have a significant impact on the elimination of gender stereotypes in their future teaching careers, thereby providing hope for children and adolescents to develop in less stereotyped educational settings.

Objectives

To examine the effects of gender representations embodied in 4 graduation papers produced by English pedagogy students.

Specific Objectives

To analyze results, findings, conclusions, discussion and pedagogical implications in four graduation papers produced by English pedagogy students.

To make suggestions as how teachers can become active agents of change from a gender perspective.

Definition of Gender

From a culturalist perspective, gender is understood as a construct that arises from and is shaped by culture, rather than being solely determined by biological factors. This perspective highlights the idea that gender roles, behaviors, and identities are learned and reinforced through cultural norms and practices. De Lauretis (2015) defines gender as a “semiotic construction, a representation or, rather, a composite effect of discursive and visual representations of personal identity, aligning with Millet's (1970) view that there is no necessary direct correspondence between biological sex and gender. Simone De Beauvoir (2019) also emphasizes that one becomes a woman through cultural relationships, distinguishing biological sex from gender, which is culturally attributed. From a similar perspective, Judith Butler (1999) argues that gender is performative, enacted through continuous social performances, and not inherently linked to biological sex. This view opposes essentialist positions based on gender as biological sex that restricts individual freedom by enforcing gender stereotypes. Finally, Anthropologist Gayle Rubin (1986) describes gender as a socially imposed division of sexes, a cultural product meant to establish power asymmetries. In patriarchal societies, masculinity is valued over femininity, leading to expected roles such as men being “strong, independent, and competitive” while women are considered “passive, dependent, and submissive” (Moreno, 2015, para. 8). These stereotypes result in the sexual division of labor, marginalizing those who do not conform.

Gender Stereotypes

A gender stereotype is a widely held but simplified and generalized idea about characteristics, behaviors, and roles that are appropriate for individuals based on their gender. These stereotypes are culturally constructed and perpetuated through socialization processes, media, education family structures, and other cultural institutions. In this sense, we can distinguish at least four aspects that still operate in our culture and can be considered stereotypes. Of course there are many others, but for the purposes of this paper and in line with their impact on education, we will refer to the typology described by Uribe et al. (2008) regarding gender stereotypes in advertising, but which in our view is fully valid in education.

1. **Private versus public:** This stereotype gives the female gender a greater connection to the world of home and family. In other words, women are socially conceived as the nurturers of children and husbands. Public life associated with professional development and leadership are more characteristic of the male world. The reason why the public world is more valued is because for a long time, private and small home life and domestic problems were long associated with slaves and not free citizens (Cadahia, 2022). The home environment also evokes the warm atmosphere of the mother/wife always available to others except herself. This stereotype is associated with the classic "angel of the house" that gives a central role to the woman completely devoted to her home, with a huge capacity to give other comfort and care.
2. **The female gender is subordinate to the male one:** This stereotype suggests that women are often relegated to secondary roles and positions of lesser importance in the workforce, rather than being seen as capable leaders in high-ranking positions such as directors or managers. It implies that roles of significant authority and decision-

making are predominantly occupied by men, thereby reinforcing gender biases and limiting opportunities for women to attain leadership roles in professional environments.

3. **Women are dependent on men:** A rather obvious stereotype is the one that shows women as dependent on men, unable to manage themselves. The reliance here goes beyond professional to emotional as well. The stereotype, in question suggests that women's existence is tied to men. According to Salinas et al. (2020) the subjugation and dependency of women are evident in perceptions of their fragility and inability to operate machinery and, in their perceived insecurity compared to their male counterparts.
4. **Men are more rational and intellectual:** Men are often seen as logical and analytical with the belief that they excel in intelligence and cognitive abilities while women are commonly perceived as being more emotional and caring. Salinas et al. (2020) shed light on this stereotype in their research pointing out that in engineering programs women may not always be considered as knowledgeable or capable conversational partners. This bias can lead to the marginalization of women, in professional environments limiting their impact and perpetuating gender gaps in fields predominantly occupied by men.

The Role of Teachers in Deconstructing Gender Stereotypes

Teachers opinions, about gender and stereotypes have an impact on how students grow and learn. For example, if teachers think that girls are better at languages and boys are better at math it can lead to opportunities for boys and girls in science programs at universities. According to an UNICEF study, from 2022 when teachers support gender roles students are more likely to follow those beliefs. For this reason, language plays a crucial role in deconstructing stereotypes. Maturana (1995) emphasized that language is a mechanism of social interaction that shapes and modifies reality. To transcend gender stereotypes that position women as subordinate, society must start with language, critically addressing statements like "men are more rational" or "women are dependent" (Maturana, 1995, cited by Urrejola, 2021, p. 168).

In alignment with this perspective, Van Dijk (2010) underscores the role of language in reinforcing stereotypes and perpetuating power imbalances, similar to the way racist language can elevate one group at the expense of another. Similarly, gendered language serves to entrench a subordinate perception of women, thereby maintaining their marginalized status. Consequently, educators bear a critical responsibility to employ transformative language within the classroom, as recommended by Oxford (2013) in her research on the language of peace. This approach is essential for deconstructing entrenched stereotypes and fostering an inclusive and equitable educational environment.

Methodology

The method used to carry out this research corresponds to a qualitative textual analysis that uses as a corpus of analysis the results, conclusions, discussion and pedagogical implications of 4 undergraduate English pedagogy students from two universities in the Metropolitan area in Chile. Table 1 below shows the individual graduation papers.

These theses were produced by 14 students (12 women and 2 men) between 2021 and 2022. All of them considered the issues of gender and stereotypes that can be found in the school environment.

Type of university	Name of thesis	Assigned no.	Authors	Year
Private	<i>The Effects of Female teacher's stereotypes on students' classroom performance.</i>	1	Aravena, E., Arraño, I., Ramírez, A.	2022
Public	<i>My Shadow is Pink: Fighting Gender Roles by Using Children's Books</i>	2	Caballero, C., Palma, P., Silva, C.	2022
Private	<i>Gender stereotypes and their influence on career choices at co-educational schools.</i>	3	Concha, N., Godoy, D., Díaz, T., Parra, A	2021
Private	<i>The impact of gender roles in the personal development and social environment in 11th grade students</i>	4	Cuevas, M., Jimenes, M., León, P., Figueroa, R.	2022

Table 1: Corpus of Analysis

Main Findings

Regarding the first stereotype analyzed, private versus public, associating femininity with the private sphere, such as the home and maternal roles, is still deeply ingrained in the school context, particularly in papers 1 and 4. Female teachers are often perceived as calmer and more maternal than their male counterparts. For example, in one survey from thesis 1, 87% of students preferred female teachers, seeing them as motherly figures. Thesis 4 similarly finds that female teachers are viewed as "protectors." Gender stereotypes also influence dress and behavior; one female student felt pressured to wear colors like pink and assume motherly roles. Contrarily, male and non-binary students believe household work is equally distributed, whereas female students see women as bearing the greatest burden (UNICEF, 2022; Maturana, 1995; Van Dijk, 2010).

Regarding the second stereotype, the female gender is subordinate to the male one, all four graduation projects highlight the subalternity of women in relation to men. Thesis 1 reveals that female teachers are considered less capable in leadership and assertiveness, often needing to prove their knowledge, unlike their male counterparts. Thesis 2 critiques the patriarchal system limiting women's opportunities. Thesis 3 echoes these findings, pointing to wage disparities. Thesis 4 discusses how girls are restricted from physical tasks, reflecting the belief that boys are inherently stronger. However, all thesis students adopt a critical stance, advocating for deconstructing these stereotypes in education (Oxford, 2013).

In relation to the third stereotype, women are dependent on men, three papers (theses 1, 2, and 4) challenge the stereotype of women as emotionally and physically fragile. Thesis 1

describes how female teachers struggle more than male teachers to gain respect due to perceptions of fragility. Thesis 4 highlights physical fragility stereotypes, where boys are expected to perform strength-related tasks. The studies reveal persistent perceptions of women as weak and dependent (Moreno, 2015).

Finally, the fourth stereotype, males are more rational and intellectual than females, all four theses explore the stereotype that men are more rational and intellectual, while women are emotional. Thesis 1 shows students describing male teachers as “serious” and female teachers as “nice.” Thesis 2 discusses the conflict between rationality and emotionality, using color symbolism. Thesis 3 contrasts male competitiveness with female cooperation. Thesis 4 associates the idea that men do not cry with rationality and strength. Despite these stereotypes, thesis students argue that intelligence is not gender-specific and emphasize the role of education in nurturing talents in everyone (Van Dijk, 2010).

Implications

The results obtained reveal a series of implications for teachers who should incorporate transformative language in their daily practice. Such a language should aim at deconstructing gender stereotypes to address issues that can perpetuate inequality in the classroom, leading to biased expectations. For instance, if EFL teacher unconsciously believe that girls are better at languages and boys are better at logical subjects, they may inadvertently encourage girls more in languages learning giving less attention to boys.

Stereotypes may also influence students’ interactions among themselves. Boys might feel forced to take the leading roles while girls might assume a rather passive behavior just observing what boys do. On the other hand, stereotypes might have an impact on the way teachers interact with their students. Because of social and cultural expectations, female teachers may feel it is natural to adopt a rather maternal approach while male teachers might feel they must comply with the authoritarian type. The implication this has on students is huge because they perceive that traditional gender roles are transmitted by their teachers.

In the EFL classroom selecting the teaching materials is truly important. Research indicates that certain resources may have the potential to perpetuate gender stereotypes thus making it vital for teacher to examine the didactic material avoiding textbook that reinforce traditional gender roles. To effectively deconstruct stereotypes teachers should emphasize awareness and critical thinking. On the other hand, it is an absolute must for teachers to examine their own beliefs regarding gender and consider how these preconceptions influence their teaching approaches. One way of doing this, is keeping a journal where teachers can record their own thoughts on gender inclusivity and reflect on their own practices inside the classroom.

Making sure that every student has opportunities to actively participate in class is another way to organize inclusive classroom. Teachers should encourage everybody to express their opinions regardless of their gender and social expectations. Using approaches such as cooperative learning can effectively promote individual accountability regardless of gender. Fostering teamwork motivates students to share thoughts and engage respectfully with their classmates.

Limitations

Like every piece of research, this study also faced some limitations, especially regarding the interpretation of its findings. Firstly, it is important to consider the sample size of four graduation papers. Although the results are interesting and confirm most of the studies on the topic, there are some restrictions in terms of generalizability of the results. Moreover, as the study focused on the findings in four graduations papers, some of the conclusions the authors arrived at might have some of their own biases.

One limitation is that the four examined graduation papers focused on short term interventions implemented in schools, within the study area. These quick interventions might not fully reflect the long term impacts and ongoing effects of efforts to combat gender stereotypes.

Although the afore mentioned limitations, the results of the study confirm existing research on gender stereotypes in Chile highlighting the role of teachers in deconstructing these stereotypes. The study highlights the importance of teaching approaches in promoting gender equality within classrooms suggesting that brief interventions can effectively challenge and alter gender stereotypes.

Conclusion: Closing Reflections

While some important progress has been made, traditional perspectives and biases based on gender still persist in our country. It's essential for teachers to integrate examples and stories that challenge gender stereotypes into their language and teaching materials to make educational content more engaging and relatable, for all students. By selecting resources that portray a variety of gender roles and experiences educators can promote a deeper understanding of gender. This approach not addresses and dismantles stereotypes but also cultivates thinking skills among students encouraging them to reassess their own beliefs about gender. Ultimately by embracing these approaches educators contribute to eradicating rooted prejudices thus creating a richer and educational environment that embraces diversity and promotes mutual respect.

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Contact email: erika.delabarra@usach.cl

Engaging Online Students in Blended Synchronous Learning: An Exploratory Study

Qiyun Wang, Nanyang Technological University, Singapore

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Abstract

Blended synchronous learning (BSL) is an instructional approach that enables online students to participate in classroom activities from geographically separated sites using video conferencing technologies. Despite its educational benefits, maintaining and increasing the engagement of online students is challenging. In this study, some strategies were adopted in two classes (N=22 & 23) to investigate how online students could be effectively engaged and their perceptions of the strategies applied. Surveys and focus group discussions were administered. Results showed that leading group discussions was helpful for online students to be engaged. However, it had challenges for online students as they did not know who was talking and not every member could be observed in the video. Having a teaching assistant (TA) was highly rated. It enabled the instructor to pay close attention to the questions posted to the chat box promptly and helped online students know what was happening in class when the connection was unstable. Giving peer feedback was another useful strategy. However, it only worked when everyone was familiar with the assignment topics of others. Using an interactive tool like Pear Deck did not noticeably increase student engagement. It seemed the design of learning content and activities was more important than the tool itself. In addition, the students commonly indicated that they were highly engaged, and they did not think that their engagement level was lower when they were online. This finding was inconsistent with existing literature, which requires further investigation in the future. Implications for practitioners and researchers are discussed.

Keywords: Blended Synchronous Learning, Engagement, Interaction, Video Conferencing, Strategy

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Introduction

Blended synchronous learning (BSL) is defined as a learning approach that online students participate in classroom learning activities from geographically separated sites by using technologies like real-time video conferencing. BSL has many educational benefits for onsite and online students. For classroom students, they have opportunities to interact with a wide variety of students (Bower et al., 2015). They continue to attend classroom activities when they are absent from class due to health conditions or natural catastrophes (Wang et al., 2018). For online students, while benefiting the convenience and flexibility of online learning, they enjoy a live classroom atmosphere and high social presence of the instructor and classmates (Wang & Huang, 2023).

Nevertheless, we cannot assume that putting students in a BSL setting will make the online students be equally engaged in the learning process, as many factors may prohibit them from participating in the learning process. Existing research has identified that the engagement level of online students is often lower than that of the classroom students as they often have limited interactions with classroom counterparts and encounter technical difficulties (Wang & Huang, 2023). Therefore, maintaining and increasing the engagement level of online students becomes crucial in a BSL setting. The purpose of the study was to explore how to effectively engage online students when they were participating in classroom learning activities from other sites. The research questions were:

- What are useful strategies to engage online students in BSL?
- What are the students' perceptions of the strategies applied?

Conceptual Framework

Engagement is the students' commitment or effort involved in learning. It has three dimensions - behavioural, emotional, and cognitive (Fredricks et al., 2004) - or four areas - academic, behavioural, cognitive, and psychological (Appleton et al., 2006). Behavioural engagement is the observable behaviours necessary to the achievement of learning objectives, such as attendance, participation, and assignment completion. In an online learning environment, behavioural engagement is reflected by the indicators of the number/frequency of visits, the number of clicks, the number of posts, the time-on-task (Liu et al., 2015), or the number of page views, time spent on pages (Henrie et al., 2015). Emotional engagement includes 'both the feelings learners have about their learning experience, such as interest, frustration, or boredom, and their social connection with others at school' (Henrie et al., 2015, p.37). Cognitive engagement is often defined as the student's investment in learning. It often includes self-regulation and metacognitive behaviours. Among the dimensions, behavioural engagement and emotional engagement are more observable, and cognitive engagement is less observable but more related to learning outcomes.

As shown in Figure 1, to engage themselves, online students must actively interact with learning content, the instructor, and peers via technology in BSL. The learning content includes learning materials, tasks, activities, and assessment. The learning content must be authentic (Hew, 2018), relevant (Herrington et al., 2003), and challenging (Zepke & Leach, 2010). Using continuous e-assessment helps with engaging online students (Holmes, 2017). The instructor's behaviour affects the student engagement. For example, after studying the highly rated MOOCs, Hew (2018) reports that the instructor's accessibility and passion are among the key factors that affect students' engagement. Accessibility is the extent an instructor interacts with students. A low degree of instructor accessibility may cause students

to feel that they are ignored, or no one cares about them. Passion is the positive power that drives an instructor to put effort in teaching. Research also shows that the interaction between students and students and between students and the instructor helps in promoting student engagement (Junco et al., 2010). In addition, technology is a mediating tool for online learners to participate in class activities from remote sites (Cloonan & Hayden, 2018). However, technology often becomes a limiting factor. For instance, noise or echo affects the clarity of oral communication and learners' concentration and engagement in a BSL environment (Wang & Huang, 2023).

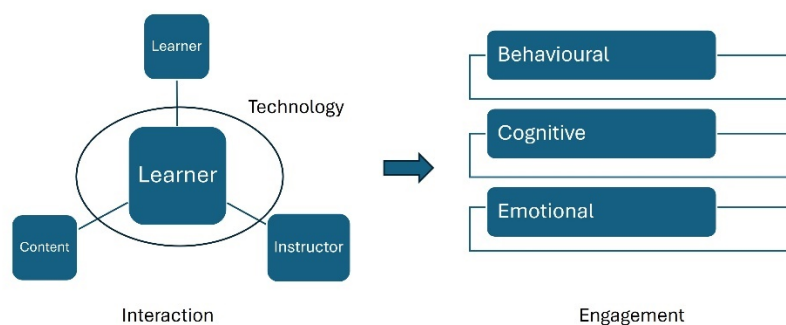


Figure 1. Conceptual framework

Methods

This is an exploratory study to explore how online students could be effectively engaged in BSL. Though the engagement of classroom students is equally important, the emphasis of this exploratory study was on investigating how the online students in BSL could be engaged by applying certain strategies and their perceptions of the strategies employed.

This study was conducted in two classes taking Masters' programmes in a teacher training institute. There were 22 and 23 participants in the classes, respectively. There were 13 teaching weeks and 10 of which were conducted in the BSL mode. About 2-5 students attended classroom learning activities via Zoom video conferencing and the rest were in the physical classroom in each BSL session. The two courses were taught by the same instructor. One course (called H) heavily involved hands-on activities to practise on various ICT tools and the other (called T) was more theoretical. The instructor was situated in the classroom. There were two cameras in the classroom, one focusing on the front area of the classroom where the instructor was frequently standing, and the other targeting at the entire room for online participants to observe what was happening in the room. The following strategies were purposefully applied in the BSL sessions to engage the online students:

- The online participants were required to keep their cameras on
- The instructor frequently asked online participants to answer questions
- The instructor designed interactive learning activities like online polls or quizzes
- A TA at the classroom monitored the chat box and communicated with the online participants
- Each student gave peer feedback to the sharing by others
- Pear Deck with some embedded interactive learning activities was piloted in one session

In Course T, the following strategies were employed:

- Small group discussions using Zoom breakout rooms were involved with each group composing of 1 online and 3-4 classroom students
- An online template with scaffolding questions was created to facilitate group discussions
- The online students facilitated and presented their group discussions

Both quantitative and qualitative data were collected. The instruments included online surveys and focus group discussions (FGDs). The online surveys composing of five-point Lickert scale items were administered at the end of the courses with some items being customized for the two courses. 18 and 16 students responded to the surveys. Means and SDs were calculated. For the focus group discussions, three focus group discussions with 3-4 students in each group were conducted via Zoom and each discussion lasted about an hour. Content analysis was carried out to code the responses. The unit of analysis was a sentence of each response.

Results and Discussion

The survey results from the two classes are presented in Tables 1 and 2. In both classes, the students indicated that the instructor played an active role to frequently invite them for contribution (M=4.33, 4.06) and interact with them (M=4.11, 4.27), and the instructor addressed their concerns promptly (M=4.06, 4.31). The online students could follow the instructor's presentation (M=4.44, 4.31) or demonstration (M=4.13) and stayed focused (M=4.33, 4.38). However, they did not frequently interact with the instructor (M=3.78, 3.81) or peers (M=3.78, 3.75). This result is consistent with the findings of other studies like Shi et al. (2021). It implies that enhancing the interaction between online students and others is an area to be further explored for improving students' engagement.

Having group discussions (in Course T) was useful for engaging online students. They actively participated (M=4.44) and facilitated (M=4.50) group discussions. In addition, using online templates to facilitate group discussions made their discussions focused (M= 4.56). They were highly engaged when they were presenting their discussion results to the class (M=4.44). In Course H, the students also mentioned that they were more engaged when they were presenting their artefacts to the class than listening to others' sharing (M=4.44 vs 4.13). In both classes, they mentioned giving peer feedback engaged them (M=4.28, 4.06).

The students in both classes were satisfied with the course content and they did not encounter critical technical difficulties in the session. They did not feel using Pear Deck in Google Slides was more engaging than using Zoom with PowerPoint and Poll Everywhere (M=3.78, 3.38). It seemed that students preferred using familiar technological tools and the design of learning activities was more crucial than the tool itself.

The students in both classes indicated that they were equally engaged in the classroom and online (M=4.17, 4.13), and their engagement level was not lower than when they were in the classroom (M=3.39, 2.56, negatively coded). Nevertheless, the online students in Course T were more engaged (M=4.39) than the students in Course H (M=3.87).

In summary, the following strategies were identified useful for engaging online students in BSL:

- Group discussions using breakout rooms in Zoom
- Online students leading and presenting group discussions
- Having a TA to keep contact with the online students
- Giving peer feedback on familiar topics

Table 1: Survey Result from Course T (N=18)

	Min	M	SD
1. The instructor paid close attention to us (online participants) during lectures	2	4.11	.900
2. The instructor frequently invited us (online participants) for contributions (e.g., comments, questions, or answers) during the lecture	3	4.33	.686
3. The instructor had frequently interactions with us in the BSL sessions	2	4.11	.963
4. The instructor addressed our concerns and/or questions promptly in the BSL sessions	2	4.06	.966
5. Having a teaching assistant in the classroom helped in notifying the instructor to address our concerns posted to the chat box	3	4.56	.616
6. I closely followed the instructor's presentations from homes in the BSL sessions	3	4.44	.616
7. I stayed focused during the BSL sessions	3	4.33	.594
8. I frequently interacted with the instructor during the BSL sessions	2	3.78	.878
9. I kept contact with classroom peers using backchannels like WhatsApp during the instructor's presentations in BSL sessions	1	3.78	1.060
10. Group discussions were frequently involved in the BSL sessions	4	4.78	.428
11. I actively participated in group discussions in breakout rooms during BSL	3	4.44	.616
12. Group discussions gave me opportunities to interact with peers	4	4.61	.502
13. Using templates in group discussions made our discussions focused	3	4.56	.616
14. I was empowered to take leadership roles (e.g., as a facilitator or presenter) in group discussions during BSL	3	4.06	.802
15. As a group discussion facilitator/presenter, I was motivated to put more effort in group discussions during BSL	4	4.50	.514
16. I was highly engaged when I was presenting to the class	2	4.44	.784
17. I was engaged when others were presenting to the class	3	4.11	.471
18. Giving peer evaluation made me concentrate on peers' sharing	3	4.28	.669
19. The learning content of the course was relevant	4	4.78	.428
20. The learning content of the course were helpful	4	4.78	.428
21. I did not encounter technical difficulties in the BSL session using Zoom.	1	4.11	1.023
22. The session using Pear Deck (in Google Slides) was more engaging than the sessions using Zoom only	2	3.78	1.114
23. I was highly engaged in the BSL sessions	3	4.39	.608
24. I was equally engaged wherever in the classroom or at home in the BSL sessions	2	4.17	.786
25. My engagement level was lower when I was online than when I was in the classroom in the BSL sessions	1	3.39	1.092

Table 2: Survey Result from Course H (N=16)

	Min	M	SD
1. The instructor paid close attention to us (online participants) during lectures	3	4.06	.772
2. The instructor frequently invited us (online participants) for contributions (e.g., comments, questions, or answers) during the lecture	3	4.06	.772
3. The instructor had frequently interactions with us in the BSL sessions	3	4.27	.799
4. The instructor addressed our concerns and/or questions promptly in the BSL sessions	3	4.31	.704
5. I closely followed the instructor's presentations when I was online in the BSL sessions	2	4.31	.873
6. I stayed focused during the BSL sessions	3	4.38	.719
7. I frequently interacted with the instructor during the BSL sessions	1	3.81	.981
8. I kept contact with classroom peers using other backchannels like WhatsApp during the instructor's presentations in BSL sessions	2	3.75	1.000
9. I could follow the instructor's demonstration during the hands-on activities in BSL	3	4.13	.619
10. I was highly engaged during the hands-on activities	3	4.25	.683
11. I was highly engaged when I was sharing my artefact with the class	4	4.44	.512
12. I was engaged when others were sharing their artefacts with the class	2	4.13	.885
13. Giving peer feedback made me concentrate on peers' sharing	3	4.06	.772
14. The feedback received during peer feedback was helpful for improving the artefact	3	4.13	.640
15. The learning content of the course was relevant	3	4.37	.619
16. The learning content of the course were helpful	4	4.47	.516
17. I did not encounter technical difficulties in the BSL sessions using Zoom	2	4.25	.856
18. The session using Pear Deck (in Google Slides) was more engaging than the sessions using Zoom only	2	3.38	.957
19. I was highly engaged in the BSL sessions	3	3.87	.619
20. I was equally engaged wherever in the classroom or at home in the BSL sessions	2	4.13	.885
21. My engagement level was lower when I was online than in the classroom in the BSL sessions	1	2.56	1.365

In addition to the benefits, the participants in the FGDs also mentioned some limitations associated with the above strategies. For instance, having a TA in the class helped in many ways. It enabled the instructor to pay close attention to their questions posted to the chat box promptly and enables them to know what was happening in the class when the connection was unstable. Nevertheless, they further expected the TA to provide instructional support in addition to technical support or notifying the instructor only. In addition, letting the online student moderate group discussion was useful but challenging. They sometimes did not know who was talking as not every member was displayed in the video. Giving peer feedback was engaging. However, it was hard for them to give informative feedback when they were not familiar with the project topics of the other groups.

Using an interactive tool like Pear Deck did not increase student engagement. The design of learning content and activities seemed to be more important than the tool itself. In addition, the students did not feel that their engagement level was lower when they were online. This finding varied from other studies, which often report that the engagement level of online students is lower than that of classroom ones (Conklin et al., 2019). Further studies are needed to verify this result.

The findings of the study have implications for both practitioners and researchers. Practitioners can apply the identified strategies to engage online students, like letting the online student facilitate and present group discussions and having a TA to support the instructional process. On the other hand, they must bear in mind that each strategy has its limitations too. To effectively engage online students, practitioners must deliberately adapt the strategies to make them effective for specific target groups of learners. For researchers, they can further explore if the engagement level of online students is generally lower or higher than that of classroom students and why.

This study has some limitations. The participants were adult learners, and the research context was higher education. The findings might not be transferable to other dissimilar contexts like primary or secondary schools. Therefore, further research is needed to verify the effectiveness of the identified strategies in other contexts. In addition, the class sizes were relatively small, and the findings were less representative.

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Contact email: qiyun.wang@nie.edu.sg

***Strategies for Cultivating an Entrepreneurial Spirit to Equip Students With Life Skills:
A Literature Review***

Heny Kusdiyanti, Universitas Negeri Malang, Indonesia

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Abstract

The development of policies in education and the implementation of practices to foster an appropriate entrepreneurial spirit are very much needed to equip students with life skills and also to support students' entrepreneurial competencies. The aim of this research is to examine various strategies and approaches that have been researched and implemented to develop an entrepreneurial spirit among students, the importance of developing an entrepreneurial spirit among students, including its impact on their preparation to enter the world of work and society. This research uses a literature review method to develop a comprehensive understanding of the factors that influence the growth of students' entrepreneurial spirit. Through a literature review, this research identifies several key aspects that can improve students' entrepreneurial spirit. First, entrepreneurship education at the tertiary level has a crucial role in providing theoretical and practical understanding of the business world. Second, mentorship and guidance from experienced business practitioners can help students develop the necessary skills and knowledge. These three literature reviews highlight the importance of practical experience through internships, business development projects, or extracurricular activities related to entrepreneurship. By engaging students in real-world experiences, they can hone their interpersonal, leadership, and innovation skills. The results of this literature review explore the role of educational institutions, curriculum, mentorship, and a supportive learning environment in instilling an entrepreneurial spirit. Based on the results of this literature, it is hoped that this research can contribute to the development of educational policies and the implementation of best practices in fostering an entrepreneurial spirit among students, so that they can be ready to face the complexities of the world of work and life with confidence and independence.

Keywords: Entrepreneurial Spirit, Students, Literature Review, Entrepreneurship Education, Mentorship, Practical Experience

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Introduction

The development of policies in education and the implementation of practices to foster an appropriate entrepreneurial spirit are crucial to equip students with life skills and support their entrepreneurial competencies. This is particularly important in today's fast-paced and ever-changing business environment, where adaptability, creativity, and innovation are highly valued (Haddad et al., 2021). The entrepreneurial spirit is not only essential for students to succeed in their future careers but also to contribute positively to society. Developing an entrepreneurial spirit among students has been extensively researched and emphasized by various researcher. For instance, Anser et al., (2021) highlights the significance of entrepreneurship in fostering innovation and economic growth. Similarly, Jarvis, (2012) emphasizes the role of entrepreneurship in driving economic development through innovation and risk-taking. Moreover, the World Economic Forum's Global Shapers Survey in 2016 underscores the importance of entrepreneurial skills in preparing young people for the future workforce (Schwab & Samans, 2016). In this context, the aim of this research is to examine various strategies and approaches that have been researched and implemented to develop an entrepreneurial spirit among students, including its impact on their preparation to enter the world of work and society.

The research on entrepreneurial education by Handayati et al. (2020), Padilla-Angulo et al. (2019), Thelken & de Jong (2020) Wiklund & Shepherd (2005), highlights several significant gaps that need to be addressed to enhance our understanding and implementation of effective entrepreneurial education strategies. Each study offers insights into different educational strategies for fostering entrepreneurship. However, there is no consensus on which methods are most effective. Handayati et al. (2020) might focus on experiential learning, while Padilla-Angulo et al. (2019) could emphasize the importance of mentorship programs. The lack of comparative studies that evaluate the relative effectiveness of these various approaches leaves educators uncertain about best practices. Most studies primarily examine short-term outcomes, such as immediate changes in students' attitudes or skills following a specific educational intervention. For instance, Thelken & de Jong (2020) might report increased entrepreneurial intention post-intervention, but there is little information on how these intentions translate into actual entrepreneurial activity over time. The long-term impact on students' career success and entrepreneurial ventures remains underexplored. Additionally, much of the research is context-specific, focusing on particular regions or educational systems. For example, Wiklund & Shepherd (2005) might study entrepreneurial education in a Western context, while Handayati et al. (2020) could focus on Southeast Asia.

This context-specificity limits the applicability of findings to other regions or educational systems, making it challenging to generalize the results globally. There is a scarcity of studies that examine entrepreneurial education across different cultural and educational contexts. Comparative studies that explore how different strategies perform in varied settings are needed to identify universally effective practices. Without this, educators in one region might struggle to adapt strategies that were successful in a different context. While individual studies provide valuable insights, there is a need for comprehensive reviews and meta-analyses that synthesize existing research. Such reviews could identify patterns, common challenges, and effective strategies across multiple studies, offering a broader perspective on entrepreneurial education.

Furthermore, there is a significant gap in empirical research that rigorously evaluates the long-term effectiveness of different educational strategies. Studies often lack robust

methodological designs, such as longitudinal studies or randomized controlled trials, which are essential for understanding the sustained impact of educational interventions. By addressing these gaps, future research can contribute to the development of more effective and universally applicable entrepreneurial education strategies, ultimately fostering a stronger entrepreneurial spirit in students worldwide. This research uses a literature review method to develop a comprehensive understanding of the factors that influence the growth of students' entrepreneurial spirit.

Method

A literature review in this context is an exhaustive survey of existing academic publications, including peer-reviewed journals, books, conference papers, and other credible sources adopted from (Kitchenham et al., 2010). The goal is to collect, evaluate, and integrate research findings related to the entrepreneurial spirit among students. The process generally involves the following steps:

Defining the Scope and Objectives

The first step involves delineating the specific objectives of the review. For instance, understanding the psychological, sociocultural, educational, and economic factors that influence entrepreneurial intent among students.

Searching for Relevant Literature

This step requires identifying and accessing databases like PubMed, JSTOR, Google Scholar, and university libraries. Keywords might include "student entrepreneurship," "entrepreneurial spirit," "factors influencing entrepreneurship."

Selection Criteria

Not all retrieved literature is relevant. Criteria for inclusion and exclusion must be established. This might involve selecting studies based on publication date, relevance to the research question, methodological rigor, and the credibility of the sources.

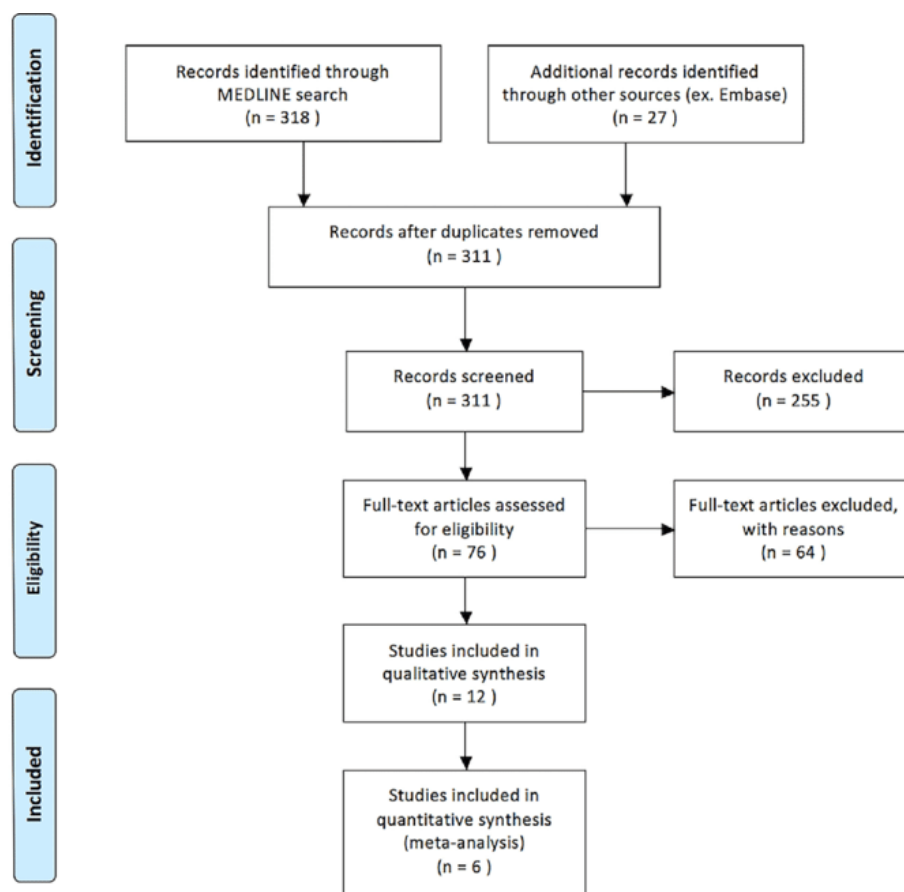


Figure 1. Inclusion Strategy using PRISMA-Based Flow

Data Extraction and Analysis

Key information from the selected literature is extracted. This includes research questions, methodologies, findings, and conclusions. Techniques such as thematic analysis or meta-analysis may be employed to identify patterns and relationships among the factors.

Synthesis of Findings

The extracted data is then synthesized to provide a cohesive understanding. This synthesis may reveal common themes such as the impact of educational programs, the role of family and social networks, psychological traits like risk tolerance and resilience, and external factors like economic conditions and policy support.

Result and Discussion

Entrepreneurship Education at the Tertiary Level: A Comprehensive Overview

Entrepreneurship education at the tertiary level begins with a robust theoretical foundation, covering an array of business-related disciplines. This education imparts essential knowledge in economic principles, business management, marketing strategies, financial literacy, and industry dynamics (Pérez, 2016). Students delve into courses on business planning, market analysis, and strategic management, which are critical for understanding how to develop and sustain competitive business models. They learn to analyze market trends, forecast consumer behavior, and identify opportunities and threats in various industries. The curriculum often includes studies on resource management, encompassing human, financial, and physical assets, which are vital for the effective operation of any business (Das et al., 2016).

Furthermore, students gain insights into the legal and regulatory frameworks that govern business activities, ensuring they can navigate complex legal landscapes and comply with pertinent regulations. This theoretical grounding equips students with the analytical and strategic thinking skills necessary to make informed decisions in a competitive business environment (Gourova et al., 2013; Liu & Yang, 2020; Shakeel et al., 2020).

Complementing the theoretical knowledge, entrepreneurship education at the tertiary level emphasizes practical experience and application. Universities and colleges incorporate experiential learning opportunities such as internships, business simulations, and project-based assignments to provide real-world exposure (Abidin et al., 2013; Ćadil et al., 2014). Internships are particularly valuable, offering students firsthand experience in business settings where they can observe and participate in daily operations, engage with professionals, and understand organizational cultures. These internships help students build professional networks and acquire practical skills that enhance their employability and entrepreneurial capabilities. Business simulations and project-based assignments challenge students to apply classroom concepts in controlled environments, where they create and manage virtual businesses, make strategic decisions, and respond to market changes (Cosenz & Noto, 2017; Wongtianchai et al., 2016). These practical experiences foster critical skills such as problem-solving, leadership, and innovation, preparing students to tackle real-world business challenges effectively.

In addition to imparting theoretical and practical knowledge, entrepreneurship education at the tertiary level focuses on developing entrepreneurial mindsets and essential soft skills. This holistic approach ensures that students are not only equipped with business acumen but also with the attributes necessary for entrepreneurial success. Courses and activities encourage creativity, critical thinking, and adaptability, enabling students to identify and seize opportunities, even in uncertain environments (Aldianto et al., 2021; Griffith & Hoppner, 2013). Communication and teamwork are emphasized through group projects and presentations, helping students learn to articulate their ideas clearly and collaborate effectively with others. Leadership skills are nurtured through various leadership training programs and activities, preparing students to lead teams and manage businesses confidently (Eniola & Entebang, 2017; Gotz et al., 2020). Furthermore, the entrepreneurial mindset cultivated through this education inspires students to take initiative, embrace risk, and learn from failures, which are crucial traits for any successful entrepreneur. By integrating theoretical knowledge, practical experience, and the development of soft skills, entrepreneurship education at the tertiary level prepares students to become innovative leaders who can drive economic growth and contribute positively to society.

The Role of Educational Institutions, Curriculum, Mentorship, and a Supportive Learning Environment in Instilling an Entrepreneurial Spirit

Educational institutions play a pivotal role in nurturing and developing entrepreneurial spirit. They serve as the primary platform where individuals can acquire the knowledge, skills, and mindset necessary for entrepreneurship. These institutions, ranging from schools to universities, offer structured learning experiences that are essential for fostering creativity, critical thinking, and problem-solving abilities (Paulus, 2000; Roe et al., 2020). In higher education, business schools and entrepreneurship programs provide specialized courses that cover essential aspects of starting and managing a business. These institutions often collaborate with industry experts and successful entrepreneurs to offer real-world insights and practical knowledge. Through workshops, seminars, and guest lectures, students are exposed

to the challenges and opportunities in the entrepreneurial landscape (Appelbaum et al., 2017). Moreover, institutions often facilitate networking opportunities, allowing students to connect with potential mentors, investors, and business partners.

The curriculum is a critical component in shaping an entrepreneurial mindset. A well-designed curriculum integrates theoretical knowledge with practical applications. It includes courses on business planning, financial management, marketing, innovation, and leadership. By incorporating case studies, project-based learning, and simulation exercises, the curriculum helps students understand the dynamics of the business world and develop the skills needed to navigate it. Entrepreneurship education also emphasizes the importance of interdisciplinary learning. Integrating subjects like technology, design, and social sciences can provide a holistic understanding of how different fields intersect in the business environment. This interdisciplinary approach encourages students to think outside the box and come up with innovative solutions to complex problems. Moreover, the curriculum should be dynamic and responsive to the evolving business landscape (Gieure et al., 2019; Kusdiyanti et al., 2019). Incorporating emerging trends such as digital transformation, sustainability, and social entrepreneurship ensures that students are prepared for the future challenges and opportunities in the entrepreneurial world.

Mentorship is a cornerstone in developing an entrepreneurial spirit. Experienced mentors provide invaluable guidance, support, and encouragement to aspiring entrepreneurs. They share their insights, experiences, and lessons learned, helping mentees navigate the complexities of starting and running a business. Mentors can offer practical advice on various aspects of entrepreneurship, from refining business ideas and developing strategies to managing finances and building a team (Pressley et al., 2020; Rupeika-Apoga et al., 2022). They also provide emotional support, helping mentees build confidence and resilience. Through regular interactions and feedback, mentors help mentees identify their strengths and weaknesses, set realistic goals, and track their progress. Mentorship programs within educational institutions often connect students with alumni, industry experts, and successful entrepreneurs. These programs create a supportive network where students can seek advice, share their challenges, and gain inspiration from those who have walked the entrepreneurial path.

A supportive learning environment is crucial for nurturing an entrepreneurial spirit. Such an environment encourages experimentation, risk-taking, and collaboration. It provides the resources and opportunities needed for students to explore their entrepreneurial interests and develop their ideas (Duarte Alonso et al., 2020; Gieure et al., 2019). Educational institutions can create a supportive environment by fostering a culture of innovation and entrepreneurship. This can be achieved through dedicated spaces like innovation labs, incubators, and accelerators where students can work on their projects, access resources, and receive mentorship. These spaces often provide access to technology, funding opportunities, and industry connections, enabling students to turn their ideas into viable businesses. Furthermore, a supportive learning environment encourages collaboration and peer-to-peer learning. By working in teams, students can leverage diverse skills and perspectives, enhancing their problem-solving abilities and fostering a sense of community (Gurr et al., 2016; Mandal & Saravanan, 2019). Institutions can also organize competitions, hackathons, and startup events that provide a platform for students to showcase their ideas, receive feedback, and gain recognition. In addition, a supportive learning environment promotes the development of soft skills such as communication, leadership, and adaptability. These skills

are essential for entrepreneurial success, as they enable individuals to effectively manage teams, negotiate with stakeholders, and adapt to changing market conditions.

Conclusion

Entrepreneurship education at the tertiary level effectively combines theoretical knowledge, practical experience, and soft skill development, creating a robust framework for developing future entrepreneurs. Students gain a solid foundation in essential business principles, covering economic theories, business management practices, and legal frameworks that are crucial for understanding and navigating the business landscape. This theoretical grounding is enriched through practical experiences such as internships and business simulations, which allow students to apply classroom concepts in real-world settings. These hands-on opportunities enhance their problem-solving and leadership abilities, as they engage in daily business operations, interact with professionals, and make strategic decisions in controlled environments. Moreover, the curriculum is designed to foster an entrepreneurial mindset by promoting creativity, critical thinking, and adaptability. Through various courses and activities, students learn to identify opportunities, innovate, and develop resilience in the face of challenges. This comprehensive approach ensures that graduates are not only equipped with the necessary knowledge and skills but also possess the entrepreneurial drive and mindset needed to navigate the complexities of the business world and drive economic growth. By integrating theoretical insights, practical applications, and the cultivation of soft skills, tertiary-level entrepreneurship education prepares students to become innovative leaders and successful entrepreneurs.

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*Wage Premiums for Workers With Graduate Degrees:
A Comparative Study of Nine Asian Countries*

Mamiko Takeuchi, Aichi Gakuin University, Japan

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Abstract

This study explores the changes in wage premiums of highly educated employees by gender in major Asian cities in 2019 and 2022. In 2022, the percentage of highly educated employees decreased in some countries amid the COVID-19 pandemic. Parts of the wage premium are explained by wage increases in large firms, managerial positions, and industries to which highly educated employees contribute. Further, the wages of highly educated female employees might have been more affected by the COVID-19 pandemic than those of male employees in 2022. India did not have a robust wage premium, especially in 2022.

Keywords: Highly Educated Employees, Wage Premium, Impact of the COVID-19 Pandemic, Asian Countries

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Introduction

The number of younger workers with higher educational qualifications in developing Asian countries has increased. Marouani and Nilsson (2016) emphasize a tendency toward higher educational attainment in Malaysia, and Kasahara et al. (2016) confirm the increase in higher educational attainment in Indonesia. Truong et al. (2021) mention that access to higher education is growing faster than the populations in Vietnam, Indonesia, and Thailand. Chi et al. (2011) indicate that as the proportion of educated workers increases, the mean income and dispersion of earnings should increase because educated workers tend to receive higher wages. The aforementioned studies discuss the popularization of higher education at a national level. However, it is important to examine earnings inequality in rural and urban settings separately, particularly in Asian countries (Chi et al., 2011), where highly educated workers tend to concentrate in metropolitan areas.

Based on this literature, we estimate the wage premiums of highly educated employees using data from major cities in nine Asian countries: Japan, China, South Korea, India, Thailand, Malaysia, Vietnam, the Philippines, and Indonesia. This is the first study to compare the wage premiums by gender in each country considering the impact of the COVID-19 pandemic between 2019 (before the COVID-19 pandemic) and 2022 (during the COVID-19 pandemic).

In Japan, Yasui (2019) shows that the wage premium for female Japanese postgraduates has been rising. Shimoyama and Murata (2019) show that the wage premium gap between university graduates and postgraduates for less educated employees in Japan varies across industries. Shiga et al. (2022) find that around 30% of the postgraduate wage premium in Japan can be explained by the type of undergraduate school, type and rank of the graduating university, cognitive ability indicators, and parents' education level.

Fleisher et al. (2011) indicate that the effect of schooling on productivity is the highest among foreign-invested firms in China. Chi et al. (2011) mention that Chinese urban employees changed substantially from 1987 to 2004, with a major shift in employment from state-owned enterprises to private, foreign, and joint venture companies. Rong and Wu (2022) find that the wage premium for professional jobs is higher among highly educated industrial employees in China than among those in non-professional jobs.

Warunsiri and McNown (2010) confirm that the return on education is higher for female employees than male employees, while unmarried employees show higher returns than married ones in Thailand. Tran and Van Vu (2020) find that humanities graduates earn higher earnings than graduates from scientific or business disciplines in Vietnam. Kenayathulla (2013) identifies private returns on years of schooling for male and female employees in Malaysia.

Research has also accumulated on gender differences in wage premiums. Mohanty (2021) finds that female employees with technical diplomas face a sticky floor effect, while women with technical degrees face both sticky floor and glass ceiling effects. Mohanty (2021) also indicates that lower attachment to the labor market, marriage, and the presence of children are key factors explaining women's lower labor market rewards compared to men. Deshpande et al. (2018) also find a gender wage gap among salaried employees in India.

Gustafsson and Wan (2020) mention that the gender wage gap widened rapidly between 1995 and 2007 in urban China. Tromp (2019) points out that reductions in Korean differences by gender in tenure, regular employee status, education, and occupation are associated with a fall

in the wage gap. However, these variables continue to play an important role in the 2016 wage gap. Suharyono and Digdowiseiso (2021) find that the strongest impact of education on wages by gender can be found at the college level and above in Indonesia.

Furthermore, some studies have been published examining the impact of the COVID-19 pandemic. Putra et al. (2023) find that income loss and job loss are prominent among male, younger, and less educated people as well as among self-employed and part-time non-agricultural workers in India. Dang et al. (2023) find post-pandemic increases in unemployment and temporary layoff rates alongside decreases in employment quality in Vietnam. They also find that monthly wages decline even as the proportion of workers receiving below-minimum wages substantially increases, contributing to sharply rising wage inequality. Furthermore, Dang et al. (2021) point out that the gender difference in the effects of the COVID-19 pandemic on job loss is larger in China than in Japan and South Korea. Ardiyono (2022) finds that labor reduction is slower in Indonesia than Vietnam.

Based on the results of these previous studies, our unique contribution is to focus on highly educated employees in major cities in nine Asian countries and to compare the wage premiums of university graduates and postgraduates using the latest dataset and considering the impact of the COVID-19 pandemic on these wage premiums.

Data and Method

The data used for the analysis are individual data from the 2019 APAC Employment Status and Growth Attitudes Survey and the 2022 Global Employment Status and Growth Attitudes Survey, conducted by the Japanese think tank, Parsons Research Institute. The data are provided by the Center for Social Research and Data Archives, Institute of Social Science, The University of Tokyo. These surveys were conducted in February 2019–March 2019 and February 2022–March 2022, respectively, covering workers in the nine countries of Japan, China, South Korea, India, Thailand, Malaysia, Vietnam, the Philippines, and Indonesia. There are 15 major cities included: Tokyo, Osaka, and Aichi (Japan); Beijing, Shanghai, and Guangzhou (China); Seoul (South Korea); New Delhi and Mumbai (India); Bangkok (Thailand); Kuala Lumpur (Malaysia); Hanoi and Ho Chi Minh City (Vietnam); Manila (the Philippines); and Jakarta (Indonesia).

The survey was conducted among men and women aged 20–69 years. In each country, 500 male and 500 female samples were collected with equal allocation by gender and age as well as a gradual allocation to avoid income bias.

The analysis target is employed individuals (including directors, civil servants, and professionals) aged under 55 years who had graduated with their highest qualification, considering the retirement age in each country. We used an ordinary least squares analysis, in which the dependent variable is the logarithm of annual earnings converted into US dollars using the exchange rate at the time of the survey. Using data from 2019 and 2022, this study provides a comparative analysis, by country and gender, of how the premium for highly educated individuals changed during the COVID-19 pandemic.

In this study, we estimate the equations for Models 1–5 with log annual earnings as the dependent variable, adding explanatory variables sequentially in each model and examining how the coefficients of the dummy variables of university and postgraduate degrees change. This method is also used by Shiga et al. (2022). Model 1 is a basic analysis with explanatory

variables including university degree dummy, postgraduate degree dummy, age, age squared, months of tenure, and months of tenure squared. Model 2 adds dummies as explanatory variables for regular employees, managers, directors, civil servants, and professionals. Model 3 adds a foreign-affiliated dummy and large company dummy as explanatory variables. Model 4 adds 20 industrial classification dummies. Model 5 adds a married dummy and number of children as explanatory variables. Our analysis examines the characteristics of the wage premium for highly educated employees in major Asian cities by comparing changes in the coefficients from Models 1–5 across the two-year points and by gender.

The estimating equations for each model are as follows: $university_i$ is the university dummy and $postgraduates_i$ is the graduate school dummy. We focus on the changes in the two coefficients of β_1 and β_2 . The explanatory variables W_i in Model 2, X_i in Model 3, Y_i in Model 4, and Z_i in Model 5 are the set of variables to be added. α is the intercept, and ε_i is the residual in each equation.

Model 1

$$\log earnings_i = \alpha + \beta_1 university_i + \beta_2 postgraduates_i + \beta_3 age_i + \beta_4 age_i^2 + \beta_5 tenure_i + \beta_6 tenure_i^2 + \varepsilon_i$$

Model 2

$$\log earnings_i = \alpha + \beta_1 university_i + \beta_2 postgraduates_i + \beta_3 age_i + \beta_4 age_i^2 + \beta_5 tenure_i + \beta_6 tenure_i^2 + \beta_7 W_i + \varepsilon_i$$

Model 3

$$\log earnings_i = \alpha + \beta_1 university_i + \beta_2 postgraduates_i + \beta_3 age_i + \beta_4 age_i^2 + \beta_5 tenure_i + \beta_6 tenure_i^2 + \beta_7 W_i + \beta_8 X_i + \varepsilon_i$$

Model 4

$$\log earnings_i = \alpha + \beta_1 university_i + \beta_2 postgraduates_i + \beta_3 age_i + \beta_4 age_i^2 + \beta_5 tenure_i + \beta_6 tenure_i^2 + \beta_7 W_i + \beta_8 X_i + \beta_9 Y_i + \varepsilon_i$$

Model 5

$$\log earnings_i = \alpha + \beta_1 university_i + \beta_2 postgraduates_i + \beta_3 age_i + \beta_4 age_i^2 + \beta_5 tenure_i + \beta_6 tenure_i^2 + \beta_7 W_i + \beta_8 X_i + \beta_9 Y_i + \beta_{10} Z_i + \varepsilon_i$$

Descriptive Statistics

Table 1 shows the percentage of respondents by gender with a higher education qualification (university, postgraduate degree, and total) as their highest education level for the nine countries. Table 1 reveals the following characteristics. First, India has the highest ratio of postgraduates, while the Philippines had the highest ratio of university graduates for both genders during both years. Second, India had the highest ratio of highly educated employees overall, while Japan had the lowest, especially in 2019. In India, more than 80% of employees were highly educated in both 2019 and 2022, and the proportion of female postgraduates was

higher than that of male postgraduates. Third, the proportion of women with higher education was lower than that of men in Japan and South Korea in 2019 and 2022.

Table 1 also shows that the total percentage of men and women with higher education decreased in China, India, Thailand, and Indonesia. Unemployment among highly educated young adults is a problem in these countries. Katayama (2023) indicates that in China, in 2022, the unemployment rate for young people (ages 16–24 years) exceeded 15%, and the problem was more serious for those with higher education. She indicates that the COVID-19 pandemic further increased the desire among young Chinese individuals to work for state-owned enterprises and government agencies, which offer greater stability, amid intensified competition among jobseekers. According to International Labor Organization (ILO) statistics published by Global Note (2024), in 2022, China's unemployment rate for young people (15–24 years) was 15.9%, India's was 17.5%, and Indonesia's was 14.4%. The unemployment rate for young people in each of these three countries was relatively high. In 2019, Thailand's unemployment rate for young people was 3.5%, which is lower than that of China, India, and Indonesia, although it increased slightly to 3.9% in 2022. The increase in the number of highly educated people is inferred to have caused serious unemployment problems due to job mismatches during the COVID-19 pandemic in these countries.

Table 1: Percentage of Highly Educated Employees in 2019 (top) and 2022 (bottom)

Sex	Degree	Japan	China	Korea	India	Thailand	Malaysia	Vietnam	Philippines	Indonesia
Men	University	55.034	71.818	71.233	40.972	65.000	48.857	72.183	78.641	60.000
	Graduate	11.409	8.788	16.438	52.431	10.625	21.429	13.028	8.414	6.032
	Total	66.443	80.606	87.671	93.403	75.625	70.286	85.211	87.055	66.032
Women	University	45.806	72.222	69.831	28.912	72.455	49.558	74.315	78.077	75.667
	Graduate	4.516	14.327	11.525	69.048	11.677	20.649	8.904	6.923	7.667
	Total	50.323	86.550	81.356	97.959	84.132	70.206	83.219	85.000	83.333

Sex	Degree	Japan	China	Korea	India	Thailand	Malaysia	Vietnam	Philippines	Indonesia
Men	University	59.498	65.217	72.165	39.085	57.328	50.530	66.429	77.912	51.639
	Graduate	9.319	6.522	14.089	42.254	12.931	12.721	11.786	3.213	7.787
	Total	68.817	71.739	86.254	81.338	70.259	63.251	78.214	81.125	59.426
Women	University	58.228	54.110	67.491	40.976	63.273	58.917	79.048	82.222	62.295
	Graduate	5.063	5.479	8.834	53.171	8.000	17.834	6.349	3.889	10.656
	Total	63.291	59.589	76.325	94.146	71.273	76.752	85.397	86.111	72.951

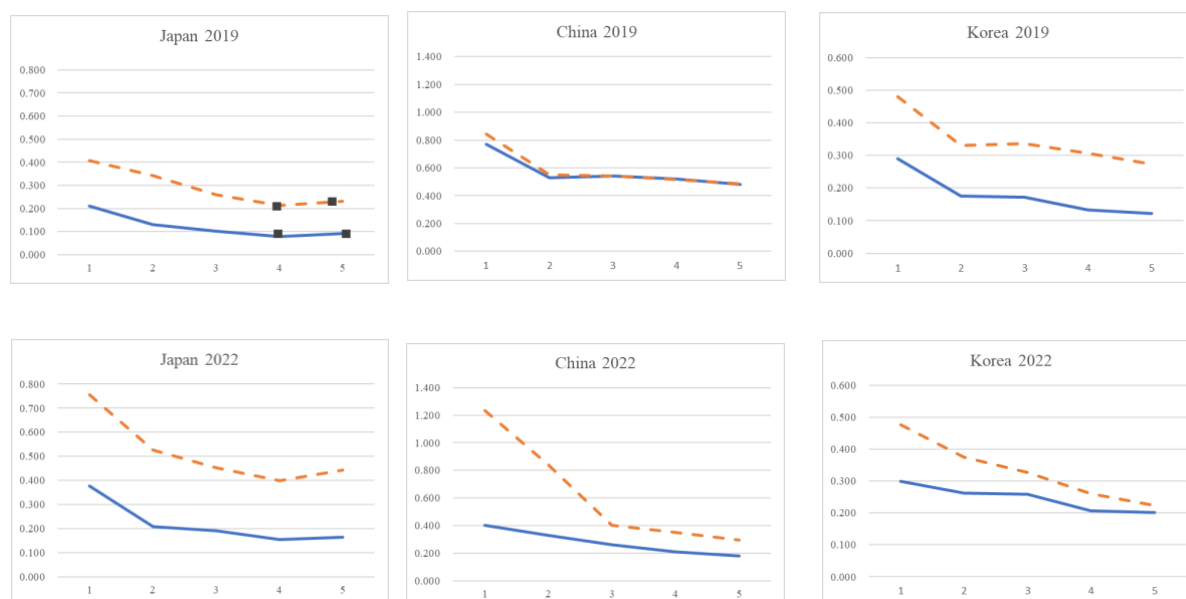
Analysis Results

The next step is to capture the changes in the coefficients resulting from a graph analysis. Figures 1 and 2 show the coefficients for the university dummy (solid line) and graduate school dummy (dashed line) in Models 1–5 by gender. These graphs are arranged vertically by country, to compare the coefficient changes between 2019 and 2022. Squares (■) on the lines indicate that the coefficients are not significant at the 10% significant level. Most graphs exhibit a downward-right curve. This indicates that the effects of university and graduate degree dummies are weakened by adding explanatory variables to each model. In other words, some of the effects (magnitudes of the coefficients) of the university and graduate degree dummies in Model 1 shifted to the effects of the variables added from Models 2–5, resulting in decreases of the coefficients of the two-degree dummies.

First, to confirm the extent of the decline in the slope of the coefficients for men in Figure 1, the coefficients decline significantly from Models 1 to 2 or 3, with the clear exception of India (except for the 2019 postgraduates), Vietnam, and the 2022 university graduates of Philippines. In other words, the wage (annual earnings) premium for the university and postgraduate graduates is largely explained by attribution to the variables of regular employees, managers, executives, civil servants, and professionals that we add in Model 2 and foreign-affiliated firms and large firms in Model 3. However, the industries added in Model 4 and the marital status and number of children added in Model 5 have little to do with university and graduate school premiums.

By contrast, for women in Figure 2, except for India (excluding graduate school in 2022), Vietnam (excluding 2019), and the Philippines (excluding 2019), the coefficients decline from Models 1 to 2 or 3, so that for men, the variables added in Models 2 and 3 can partially explain the premiums of highly educated employees in the nine countries.

Next, by comparing the change in coefficients between 2019 and 2022 for males in Figure 1, the following two features can be observed. First, both the university and the graduate school premiums are robust during the COVID-19 pandemic in five countries: Japan, China, Thailand, Malaysia, and the Philippines. Second, the postgraduate advantage declines remarkably in Vietnam in 2022, when all coefficients are no longer significant and have a negative sign. India no longer shows differences in the coefficients between university and graduate school, and Indonesia is no longer significant in the last model estimate.



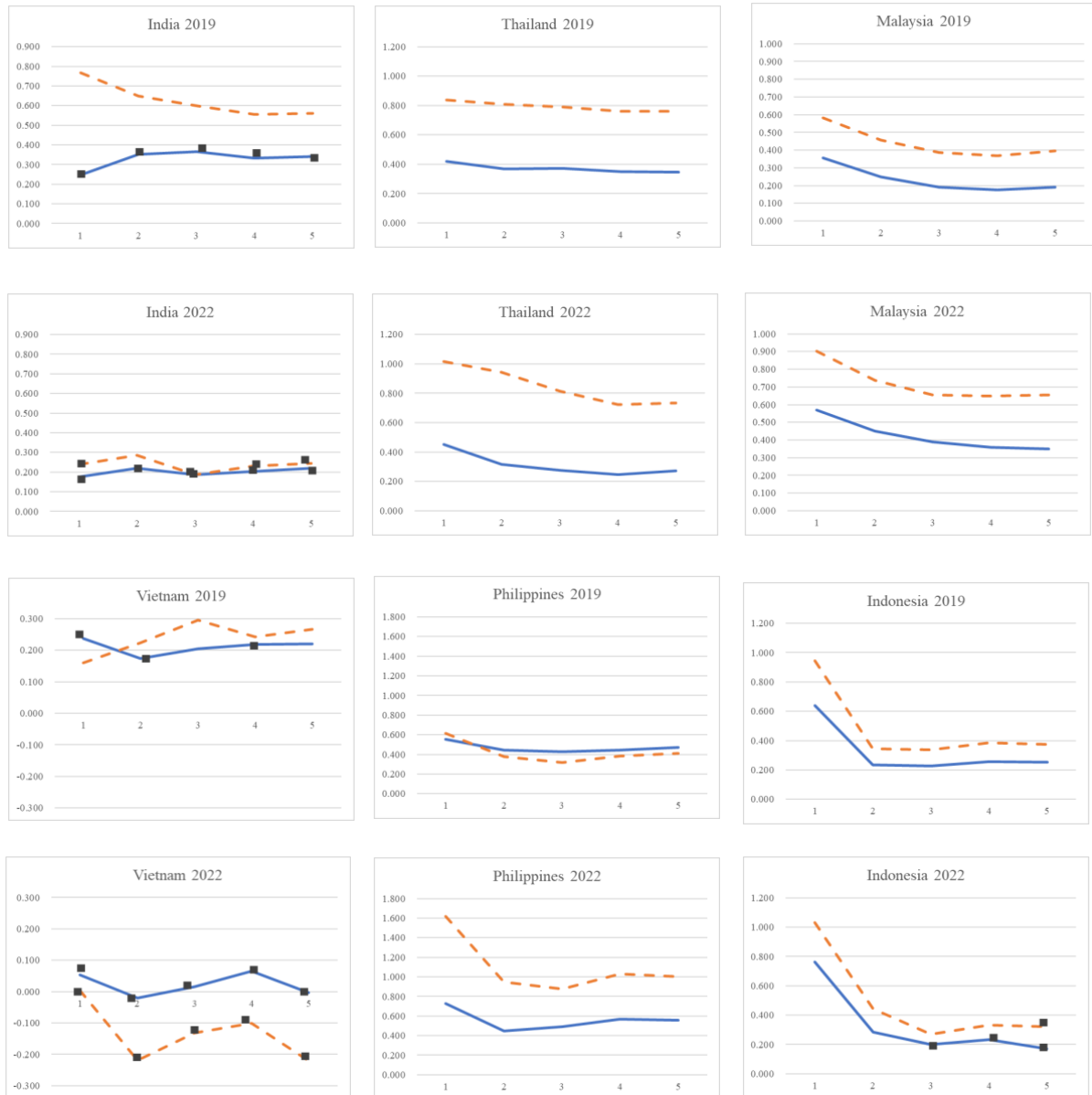


Figure 1: Wage premium for highly educated male employees (The vertical scale shows the magnitude of the coefficients and the horizontal scale shows the model number)

Note: ■ means the coefficient is not significant at the 10% level.

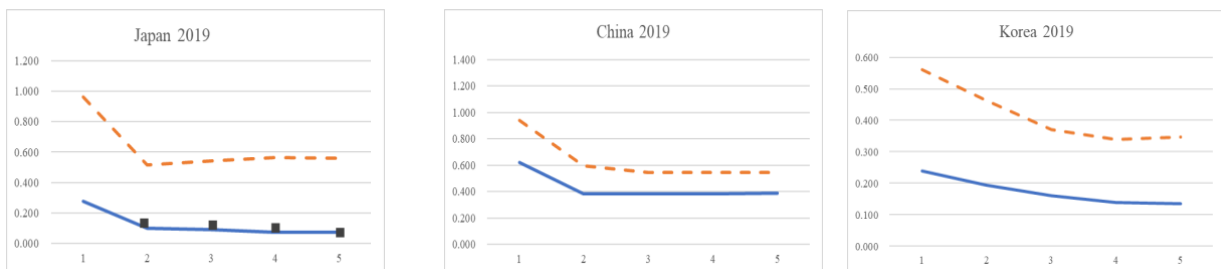




Figure 2: Wage premium for highly educated female employees (The vertical scale shows the magnitude of the coefficients and the horizontal scale shows the model number)
 Note: ■ means the coefficient is not significant at the 10% level.

Based on the above results, we confirm the characteristics of female employees, as shown in Figure 2. First, for Japan and Korea, the advantage of a postgraduate degree declines slightly,

but the premiums for university and postgraduate degrees are relatively robust in these two countries as well as China and Malaysia. Second, in Vietnam, like the case for men, the coefficients for undergraduates and postgraduates decrease and are no longer significant by 2022. Third, some of the coefficients are no longer significant for India, Thailand, the Philippines, and Indonesia, with Thailand showing a large drop in the coefficient for postgraduates in 2022.

Conclusion

This study compares the wage premiums of highly educated employees using data from major cities in nine Asian countries: Japan, China, South Korea, India, Thailand, Malaysia, Vietnam, the Philippines, and Indonesia. This is the first attempt to compare the wage premiums by gender in each country considering the impact of the COVID-19 pandemic in 2019 (before the COVID-19 pandemic) and 2022 (during the COVID-19 pandemic).

First, we reveal that the total percentage of male and female employees with higher education decreased in China, India, Thailand, and Indonesia. Unemployment among highly educated young adults is a major problem in these four countries. The increase in highly educated people is inferred to cause serious unemployment problems due to job mismatches during the COVID-19 pandemic in these countries.

Second, the analysis shows that some wage premiums can be explained by differences in employee attributes, such as regular employees, managers, foreign-affiliated companies, and large companies. However, the advantage of graduate degrees over university degrees decreased in some countries during the COVID-19 pandemic in 2022.

Third, India and Vietnam showed an increase in the non-significant coefficients for the effects of university and postgraduate dummies for men and women. In both countries, we confirm that the difference in mean annual earnings by education level narrowed in 2022, suggesting that the decline in the coefficients of several firm attributes led to lower wage premiums for highly educated employees. We also confirm that university graduates were more affected by the COVID-19 pandemic in 2022 than postgraduates, and female employees were more affected than male employees.

Only three countries—Japan, Korea, and Malaysia—maintained significant postgraduate wage premiums for both genders in 2019 and 2022 and four countries—China, Korea, Thailand, and Malaysia—have significant university graduate wage premiums for both genders in 2019 and 2022. Our analysis reveals that the growing number of highly educated Asian employees do not establish stable position for employment and wages enough to withstand economic shocks during emergencies such as the COVID-19 pandemic. In other words, it is a critical policy challenge to ensure stable and sufficient employment and wages for the growing number of highly educated workers.

Our study contributes to the literature by using the most recent data to examine the wage premiums of highly educated employees in urban areas in nine Asian countries, including the impact of the COVID-19 pandemic. Our results show that the percentage of highly educated employees and their attributes vary widely in Asian countries and possibly are a factor behind

the different changes of wage premiums during the COVID-19 pandemic in these countries. The results of this study should be verified in detail in future studies. Further work should also include securing sufficient samples and incorporating covariates, which this study does not address.

Acknowledgements

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Contact email: take@dpc.agu.ac.jp

Developing Students' Functional Literacy Through PISA Format Tasks

Aigul Aitan, Nazarbayev Intellectual School of Chemistry and Biology in Aktau, Kazakhstan
Kulpiya Amandossova, Nazarbayev Intellectual School of Physics and Mathematics in
Almaty, Kazakhstan

Alтынay Demisinova, Nazarbayev Intellectual School of Physics and Mathematics in Aktobe,
Kazakhstan

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Abstract

In 2019, as a result of preparation for the PISA, it was revealed that the functional abilities of students are low. To solve this issue, the Action Research was done in 3 months. During the study, a survey among students, illustrated that they were not prepared to describe information, analyze/interpret graphic text, and search for data using a hyperlink text. Our research aims to create an individual who is able to:

- use gained information from text in everyday life;
- quickly overcome obstacles encountered in life;
- know how to solve problems and communicate in the implementation of their ideas.

We planned to use graphics/mobile texts, hyperlinks in the lesson process. Graphic texts were chosen, since it was concluded it will be more effective to work with moving text for the development of critical thinking skills. Methods as "FILA", "GROW", "FISHBONE", "SWOT" were used on the lessons. According to the results of the first trial PISA exam, 64% of 25 students could not complete tasks with hyperlink, with the second text in it. To assess the ability of students to process and analyze the data in texts the interview was taken, after which the formative assessments with hyperlink, graphic texts were added to a school programme. It helped to flourish their critical thinking skills. Consequently, 88% of students depicted higher results. Students of NIS Aktau demonstrated better marks on 2022 PISA, than in 2019. After these practices, the project was represented at the international conference held in Bremen and Prague.

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Introduction

One of the most pressing problems in the educational process is the low functional literacy of students. The development of functional literacy of young people in the modern era of rapid development of knowledge and technology is one of the planned steps in the education system. Because the main indicator in the education system is the performance of tasks based on Reading Literacy, which is analyzed, summarized, and evaluated at a comparable level worldwide (OECD) after the analysis based on the result of the PISA exam, I interviewed students. The interview questions were as follows:

- Which question in the PISA task caused you difficulties?
- What task in the PISA task did you not have time to deliver?
- Which question in the PISA assignment did you read wrong?
- Which question in the PISA task was more complicated? Caused trouble?

From the results of the interview with these questions, we can conclude that students:

- We found that we ignore negative verbs without reading the questions in full until the end of the sentence;
- We noticed that we have difficulty critically evaluating the information in the text;
- We learned that hyperlinks could not save time when accessing text;
- Has difficulty fully decomposing information in graphic text.

Together with our colleagues, we will discuss the topic: "How to improve the reading literacy of students? We had a professional conversation, looking for an answer to the question: "What is it?" In the course of a professional conversation, we decided that the problem could be solved by moving from the level of understanding and knowledge to analysis, discussion, and decision-making thinking in the process of completing tasks with text types.

In solving these problems, it is important that students can sort out the knowledge and information gained and apply it to their needs in life. Therefore, each teacher needs to develop skills with information in the fields of professional, public education, and science to improve reading literacy by working on tasks in the functional literacy of students in their subject. A sequential lesson was created on the section "biodiversity" and "nature protection", a common topic. During the lesson, we planned to use graphic and mobile texts.

Our Research Goal

Develop students' ability to sort and apply the information received by working with non-holistic texts.

Research Objectives

- Learn to Interpret
- Ability to Selectively Read Information
- Direct to Make a Decision
- Learn to Conclude

Functional literacy is a knowledge skill that is formed by a person with adapts to the social environment because of the connection between school education and the multidisciplinary activity of a person in everyday life. The main feature of functional literacy is characterized

by the ability to solve life problems based on Applied Knowledge in various areas of a changing society [1]. Functional literacy is considered the main factor that contributes to lifelong learning, where people overcome obstacles in the cultural, political, social, and economic spheres and find solutions through ideas. Therefore, functional literacy, it shows an indicator of the highest potential of society. This is the Prevention of our society in one direction to get out of the social crisis.

Research Hypothesis

Why were graphic texts chosen? According to a joint approach, it was concluded that it would be more effective to work with graphic and moving text to develop reading skills, increasing the efficiency of reading. In the last interview tests, students were given the fact that graphic and mobile texts are most common, and they do not have the skills to perform them, they do not have time, and the development of digitalization literacy skills in students is considered.

Relevance of the Study

With frequent completion of tasks with non-holistic texts, the ability of students to read literacy develops.

Research Methodology

The main objects of PISA research are open-ended questions aimed at critical thinking, tasks based on analysis, and synthesis of information sorting, which find the main idea of the entire text. Students will like the tasks of summarizing (synthesizing) the information received from this text and making final thoughts. They use this knowledge and skill in solving obstacles encountered on the way of life, in differentiating the game. Therefore, we set ourselves the main goal of working with holistic and non-holistic texts and counting on time [2].

In the course of the study, we used the analysis, analysis, accumulation, and interpretation of the information obtained by the methods "FILA", "GROW", "FISHBONE", and "SWOT", depending on the influence of students on the development of functional literacy in the transformation of tasks through content differentiation in the direction of initial reasoning to turn a whole text into a non-whole text. The first time these methods were used in the lesson, the student could not immediately sort out the information, then the first and third times, when the tasks were built into these methods, we considered allowing the space of the thought process to be fully analyzed by describing the numerical information seen by the students, the accumulated information through graphic texts and speech with images.

We entered the second text with a hyperlink, integrated texts with information about the environment or endangered animals, and weather forecasts into the task of finding answers to the question and worked with a moving text: "search for answers to the question by accessing the link". In this regard, we have observed the effectiveness of the combined use of geographical and biological knowledge. The integrated knowledge contributes to the full transfer of the responsible soul.

In working with mixed texts, students were hampered by the inability to obey time. Therefore, it was recommended to read the questions before reading the mixed text, and then read the text. In this regard, it is possible to save time, since the student of the general text

understands that he should read the first question without first reading it, and then read the text.

The Result of the Study

In the case of the implementation of the purpose of the study, we focused on the implementation of the expected results:

- Can define the purpose of the text, and distinguish the form;
- Learn to use knowledge and make logical connections;
- Learn to think critically and formulate your own;
- Ability to apply their skills in life situations;
- Learn to evaluate their skills in comparison;
- Learn to read information selectively;
- Will be ready to overcome obstacles quickly;
- Can solve problems in the implementation of their ideas.

In tasks based on reading literacy, texts about situations that occur in real life are given to the student to develop the ability to think and give feedback. Our students only say "good" in one direction when giving feedback. This is the obstacle. What is the best part, and why? In the following lessons, we introduced the focus on answers to questions: "What are you talking about?"

To Search for Information in a Targeted Manner and to Obtain Information

- "Who?", "What?", "Where?", "When?", and "What did he do?" It is necessary to find specific material, taking as a basis the questions.
- Determine the topic of the text, and find the main idea.
- It is necessary to look for and identify information that is not clearly stated in the text.

The types of information are as follows: factual(fact); conceptual (inferential); and presented in a figurative or implicit form. There is no problem if the student understands this [3].

In the PISA program, texts should be selected on personal (self) topics -30%, public -30%, educational - 25%, professional-15%, so that they form public opinion as needed in life. For example, we have selected modern professional texts such as the profession of a flight attendant, the profession of a hairdresser, or an aviation engineer to know public opinion. It was also considered that the student should be aware of the information that is happening daily following the Times. The text of the assignment also included texts that provide the necessary information for life, such as the ethics of daily cleaning of teeth and the protection of personal rights. This is because the student uses the knowledge gained to make it easier for him to live his life as he needs it. For example, we have selected texts such as about the conditions to be considered in the delivery of glass material by mail. After all, in Student Life, a student should be careful when sending gifts, and parcels to his family from another city, and be able to use the information in the text in the life he needs.

Another aspect to consider when creating a task is that information must be present in a system focused on Search, Selection, integration and interpretation, analysis, and evaluation. For example, "Who can be a donor? it is intended that the student will be prepared for various situations that will occur in life by receiving a text on the topic" [4].

It was assumed that the created criteria of success and expected results would allow students not only to achieve their educational goals but also to reflect on the future in the context of globalization to use their knowledge for the benefit of the country. And how to achieve this? Of course, to achieve results, we have selected the methods, tasks, and resources that will be performed in the process of the research lesson, so that they are available for our research purposes together so that public and professional information is received. The goal is to build a self-governing personality, ready for environmental and economic situations, aimed at choosing a future profession, to form a relationship with the environment. The main goal of reading literacy is also to interpret the information received by these students and apply it to their life needs. The tasks are provided to identify and evaluate the information provided in the text. In most cases, the advantages and disadvantages of the problem are evaluated in comparison. In a study by Vincent R. Ruggiero, a professor at the State University of New York, "critical reading strategies", we followed the principle that "before reading any text and relying on the information contained in it, everyone should use a four-step Critical Reading Strategy: Review, analysis, reading, and evaluation".

Discussion of Research

With the rapid development of technology in the current course of life, if the human world is functionally literate, a person will undoubtedly be formed who will be able to live and effectively apply the acquired knowledge to himself. Therefore, it is necessary to consider the impact on the thinking process when compiling a question, depending on the need and availability of the text for the daily task of the student per the requirements of the time. Only then will the ability to functional literacy be formed. People with high reading literacy make their life easier by determining the route of routes at the Daily stop, without disturbing anyone, without losing time, taking medications from a pharmacy with instructions after a doctor's appointment, allowing them to choose the direction and time they need from a graph text with a table.

The main reason for working with solid and non-solid texts and considering time is that working with graphic text teaches students to sort, analyze, and analyze information. Effective ways to work with mixed and aggregated texts, not as holistic as looking for answers in the second text through a hyperlink, are important for learning to look for modern information and to reckon with time. We also remember that tasks aimed at performing through hyperlinks are often based on increasing the use of knowledge gained from many other disciplines in life, and the ability to search for information by the Times is formed. The idea is that students need to get used to the effective use of time to access the hyperlink and find the answer to the highlighted question.

In working with mixed texts, students were hampered by the inability to obey time. Therefore, it was recommended to read the questions before reading the mixed text, and then read the text. In this regard, it is possible to save time, since the student of the general text understands that he should read the first question without first reading it, and then read the text.

In tasks aimed at analyzing information in mixed texts, they read different points of view and two-way opinions and conclude. He will be able to make comparisons and stop at the information he needs. This is the problem that we also consider when creating the main task questions, interpretation, and comparison questions. The student must be free and balanced in

his own game. To create conditions for this, it is also advisable to use questions at the level of constant analysis, application, and evaluation of the thought process [5].

The use of systematized information in the ecotourism eco-project based on a theatrical poster and diagrammatic results for the development of reading literacy in the majority of tasks based on functional literacy also gave good results. As proof of this, the project representing Kazakhstan took first place at the international scientific conference "Ecology: The School of Ecology: Thinking, Research, and Action" held in Bremen, Germany. At the international level, he defended the international group held in Germany and was awarded a special diploma (Research team members, scientific supervisors: Aitan A.L., Kazakh language teacher; Baimukhanbetova A., German language teacher; research students in the project: 11th-grade students Altybai Nesibeli, Ospanova Farida, and Abil Amina).

Students' ecological literacy increases as they care for the environment. In the lessons on "Biodiversity," they collect information about animals, birds, and plants included in the Red Book, make brochures, summarize the information, and write a compact text. Practical works were made to interest the reader and were distributed to students and other schoolchildren at the bus stops, and they also contributed to the development of environmental literacy.

Clean up the seashore and say, "Let's protect nature!" I sent the baton to the schools of the National Academy of Sciences in other cities: Almaty NIS PhM, Petropavl PhM, and Kokshetau PhM. As a result, there were several relay movements on environmental issues in society.

The international scientific research article held in the Czech Republic won 1st place in the world selection in the "perspective of geographical research" section and received a special award. Students in the 11th grade wrote the research article together with the students of Tilegen Sayazhan and Yeraly Kundysh.

To use underground water sources in Mangistau by the times and to solve the problem of drinking water, for several years now intellectuals have been encouraging students to think about solving social problems and to open blocked springs. Underground water sources in the regions of Beineu, Uzen, Taushyk, Fort, Jinglydi, and Shayyr were taken as the object of research. Research is still ongoing, and updates are being developed. In previous academic years, the research project won a prize in the Republican "Zerde" competition (Shansharbekova Venera and Muratkyna Asel).

He is conducting intra-school research with students in grades 10–12 in the section "environment" on the topic "Harmful Impact of Gravel Production and Processing on the Environment." An extended study is currently underway, and this topic was previously awarded a prize in a national competition. He is still looking into the future, revealing one of the reasons for the ecological consequences of the local area and making recommendations and warnings to prevent bad weather. With such public works and research projects aimed at restoring the balance between nature and humans, young people are developing environmental literacy.

We published a children's magazine, "Aikorkem," with my 10th–11th grade students. At that time, their comics, created by themselves, gathered a special audience. By drawing comics, we increase students' interest in reading works of art. My student, Nurlykhan Utegaliev, works especially hard at drawing comics. Like Botagoz, my 8th grader turned into a comic

based on Y. Altynsarin's work "Father and Child" and won a prize in the online, Republican competition on the topic "Comics: A New Approach." The editor-in-chief of the magazine, the designer Dzhazilya Berdeshbaeva, wrote stories herself, taught moral values, solved the language problem, and wrote a thought-provoking story to participate in the eco-project. On the occasion of that story, the student himself will make an illustration according to the main idea. At this time, students can adapt to functional literacy. This is also an achievement.

If the human world is functionally literate in the period of rapid development of technology in modern life, a person who is inclined to live and who can effectively use the acquired knowledge will be formed. Therefore, it is necessary to consider the impact on the thinking process when choosing a text for the student's daily task based on the need and availability of questions. Only then will he be fully formed as a functionally competent person.

Based on the task, it is necessary to consider the correct setting of the questions given to the thinking process, and the impact on critical thinking. In tasks based on functional literacy, the use of systematized information about the work of ecotourism, eco-projects based on theatrical posters, and schematic results gave a good result for the development of educational literacy of the public. In the future, it is planned to group tasks based on reading literacy and present them to other colleagues as a methodological booklet.

Conclusion

can describe and analyze information in graphic texts. On the contrary, the ability to analyze is increased by using information in a whole text, turning it into graphic text, such as a table, or diagram, which is not a whole. Students use the results of their lives to promote the formation of a functionally competent person who can apply the acquired knowledge in life and make rational decisions in difficulties. By sorting and analyzing information, knowing the knowledge you need, understanding, evaluating, and analyzing it, you can easily switch from thinking to thinking. As a result, students will be ready to quickly overcome the difficulties and obstacles that they face in life. He knows how to solve problems and communicate in the implementation of his ideas.

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Exploring Multiculturalism Through Vocal Teaching in the Context of Digital Society

Yaping Chen, Jiangxi University of Finance and Economics, China

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Abstract

In the era of new scientific and technological revolution, Digital technology has far-reaching impact on the political, economic and cultural development of various countries. The article explores how music from different cultures brings people together in the context of digital society, It can show us clearly the research significance. The researchers examined the research questions through a self-reporting survey. Data was collected in 2023 from students in China (n=25), who completed a 25-item questionnaire. The purpose of this study is three -fold: (1) During this research, we show that vocal music teaching has advantages. In particular, teachers work to instill student pride in their cultural heritage through digital technology in the classroom, help expand cultural music education, and showcase their culture, music, and languages. (2) In the classroom, emphasis is placed on integrating people, technology, and culture, emphasizing digital technology features such as humanization and interactivity, as well as subjective features such as virtualization. (3) By designing digital empowerment, we can break through the limitations of time and space, and human-machine interaction, and achieve the integration of convenience, equality, and wisdom, ultimately achieving the function of cultural education. Results indicated that how culture of the digital society bears the important mission of inheriting national spirit, and the development of the digital society has promoted the more frequent dissemination of culture. Therefore, the important role of digital technology in the construction of cultural education should be utilized to lay the spiritual pillar of a community with a shared future for mankind.

Keywords: Digital, Vocal, Multiculturalism

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Introduction

The digital revolution has fundamentally transformed the landscape of education, offering new avenues for learning and cultural exchange. Vocal teaching, traditionally confined to the physical classroom and specific cultural contexts, has been profoundly impacted by these technological advancements. In today's interconnected world, digital platforms enable educators and students to transcend geographical limitations and engage with a vast array of vocal traditions and techniques. This paper delves into the myriad ways in which digital technology facilitates the exploration of multiculturalism in vocal teaching, enhancing cultural awareness, diversifying vocal techniques, and fostering creative expression.

The traditional model of vocal teaching often centers around a specific cultural or musical tradition, limiting students' exposure to the rich diversity of global vocal practices. However, the advent of digital technology has broken down these barriers, allowing for a more inclusive and comprehensive approach to vocal education. Digital tools such as online tutorials, video conferencing, and interactive applications have become integral to modern teaching methodologies, providing real-time interaction and access to a wealth of resources from around the world. Additionally, emerging technologies like virtual reality (VR) and augmented reality (AR) offer immersive experiences that bring diverse vocal traditions to life, enhancing the educational experience.

This paper explores the role of digital technology in vocal teaching, focusing on how it facilitates the integration of multicultural perspectives. By examining the benefits and challenges associated with this integration, we aim to provide insights into how educators can effectively leverage digital tools to create a culturally rich and inclusive learning environment. Through this exploration, we highlight the potential of digital technology to revolutionize vocal teaching, fostering a deeper appreciation for global vocal traditions and promoting cultural understanding.

Background

The concept of multiculturalism in education emphasizes the inclusion of diverse cultural elements in the learning process [1]. This approach not only enriches the educational experience by providing multiple perspectives but also fosters a more inclusive and empathetic environment. In the realm of vocal teaching, multiculturalism involves integrating various vocal traditions, techniques, and styles from around the world [2]. The digital age has significantly facilitated this integration, enabling the seamless exchange of cultural knowledge across borders.

Historically, vocal education has been deeply rooted in specific cultural contexts, with each tradition developing its own unique methods and styles. This often led to a siloed approach, where students and educators focused on their own cultural practices, with limited exposure to other traditions. The rise of digital technology has disrupted these boundaries, offering unprecedented opportunities for cross-cultural exchange and learning.

Digital platforms such as YouTube, Zoom, and various e-learning websites offer an abundance of resources, including tutorials, live classes, and recorded performances [3]. These tools provide students with access to a diverse array of vocal techniques and styles from multiple cultures, thus expanding their educational perspectives. Additionally, they improve teaching methods and enhance the learning experience. Advanced technologies like virtual reality (VR)

and augmented reality (AR) further amplify this by providing immersive and interactive methods for engaging with vocal practices from different cultural backgrounds [4]. These technologies allow students to virtually attend masterclasses, interact with renowned vocalists, and take part in global competitions and collaborations, further enriching their education.

The integration of multiculturalism in vocal teaching is not limited to exposing students to different styles but also involves fostering a deeper understanding of the cultural contexts from which these styles emerge. This holistic approach encourages students to appreciate the historical, social, and linguistic nuances that shape vocal traditions, thereby promoting cultural empathy and awareness.

In the context of globalization, multicultural education is essential for preparing students to navigate and thrive in a diverse world. By embracing multiculturalism in vocal teaching, educators can equip students with the skills and knowledge necessary to become versatile performers capable of engaging with a wide array of musical genres and cultural expressions [5]. This approach aligns with broader educational goals of promoting social cohesion, reducing prejudice, and fostering a sense of global citizenship.

Research Content

The traditional model of vocal teaching often centers around a specific cultural or musical tradition, limiting students' exposure to the rich diversity of global vocal practices. This conventional approach typically emphasizes the techniques, styles, and repertoires of a particular musical heritage, which, while valuable, can inadvertently narrow the scope of a student's musical education. For example, a student learning classical Western opera might become proficient in Italian arias and German lieder but remain largely unaware of the nuances and techniques of Indian classical music, African choral traditions, or Chinese folk songs. This focus can result in a somewhat insular learning experience, where the richness and diversity of global vocal traditions are not fully explored or appreciated.

Aspect	Traditional Model	Digital Model
Cultural Focus	Specific tradition	Multiple traditions
Teaching Methods	In-person lessons	Hybrid (in-person and online)
Resources	Physical materials	Online tutorials and virtual classes
Interactivity	Limited interactive tools	Interactive digital tools (VR, AR)
Accessibility	Geographic limitations	Global reach
Assessment	Traditional exams	Multimedia and digital tools
Student Engagement	Direct interaction	Virtual and interactive engagement

Table 1. The Difference Between Traditional Model and Digital Model

However, the advent of digital technology has significantly disrupted this traditional paradigm, breaking down geographical, cultural, and educational barriers. Digital technology has made it possible to adopt a more inclusive and comprehensive approach to vocal education, one that embraces the vast array of vocal practices from around the world (Table 1). This transformation is rooted in several key developments (Table 2):

1. Proliferation of Digital Platforms

The proliferation of digital platforms has facilitated unprecedented access to a wide variety of vocal traditions. Online platforms such as YouTube, Coursera, and Udemy, along with specialized music education websites, offer a plethora of resources that feature vocal techniques and styles from every corner of the globe. Students can now watch tutorials on throat singing from Mongolia, learn about the intricate vocal ornamentation of Persian classical music, or study the call-and-response patterns of African American spirituals, all from the comfort of their own homes. This accessibility democratizes vocal education, making it possible for students from diverse backgrounds to access and learn from a rich tapestry of musical traditions.

2. Real-Time Interaction With Global Instructors

Digital technology enables real-time interaction between students and vocal instructors from around the world. Video conferencing tools like Zoom, Skype, and Microsoft Teams have become integral to modern education, including vocal instruction. These tools allow for live, interactive lessons with instructors who specialize in various vocal traditions, regardless of physical distance. A student in New York can take lessons from a qawwali singer in Pakistan, a flamenco vocalist in Spain, or a koto player in Japan. This real-time interaction not only enhances the learning experience by providing immediate feedback and personalized instruction but also fosters a deeper cultural exchange, as students and teachers share their unique musical perspectives and traditions.

3. Asynchronous Learning

In addition to live instruction, digital technology supports asynchronous learning, where students can access pre-recorded lessons and tutorials at their convenience. This flexibility is particularly beneficial for students with busy schedules or those living in different time zones from their instructors. Asynchronous learning platforms often include interactive elements such as quizzes, practice exercises, and discussion forums, allowing students to engage with the material actively and collaboratively. This approach encourages self-paced learning and provides opportunities for students to revisit and reinforce their understanding of various vocal techniques and traditions.

4. Interactive and Immersive Music Experiences

Virtual and Augmented Reality: The integration of AI with virtual reality (VR) and augmented reality (AR) has revolutionized the way we experience music. Platforms such as Melody VR and Wave leverage AI to create immersive concert environments, where users can interact with music and their surroundings in real-time. These experiences are not merely passive; they allow students to engage actively with different musical elements. For instance, a student can be virtually transported to a grand concert hall to practice their stage presence and performance skills or immerse themselves in the cultural ambiance of a traditional Balinese village to participate in local musical rituals. Augmented reality can further enhance learning by overlaying digital instructions and visual aids onto the real world, providing instant feedback on vocal techniques or guiding students through complex vocal exercises. These immersive experiences make learning more engaging, memorable, and culturally rich, allowing students to experience global music traditions as if they were there in person.

AI-Driven Interactive Music Videos: AI technology is transforming the landscape of music videos by making them interactive. Unlike traditional music videos that follow a fixed narrative, AI-driven interactive music videos adapt to user inputs or real-time data, creating a personalized viewing experience. For vocal students, this means they can engage with videos that change based on their choices, exploring different vocal styles and techniques dynamically. For example, an interactive video might allow a student to choose between different vocal techniques or styles at key points, providing a tailored learning experience that responds to their interests and progress. This interactivity makes learning more engaging and allows students to experiment with various vocal traditions in a way that static content cannot offer.

5. Personalized Music Recommendation Systems

Personalized music recommendation systems have become a cornerstone of modern music streaming services such as Spotify, Apple Music, and Pandora. These platforms utilize sophisticated AI algorithms to analyze user preferences and listening habits, providing tailored music suggestions that align with individual tastes. For vocal students, this technology opens up a world of discovery. By analyzing a student's listening patterns, these systems can recommend a diverse array of vocal traditions and styles that they might not have encountered otherwise. A student who frequently listens to Western classical music might receive recommendations for Indian classical ragas, African choral pieces, or traditional Japanese folk songs. This personalized exposure helps students broaden their musical horizons and develop a deeper appreciation for the richness of global vocal traditions.

6. Intelligent Digital Technologies

AI-powered learning applications such as Yousician and Flowkey have transformed the way students learn music. These applications use advanced algorithms to provide real-time feedback and create personalized learning paths tailored to each student's skill level and progress. By analyzing a student's performance, these systems can identify mistakes, suggest improvements, and adapt lessons to match the learner's pace. This level of customization ensures that students receive the support they need to improve their vocal techniques effectively. In addition to structured lessons, platforms like SoundCloud, Bandcamp, and YouTube enable students to record, upload, and share their singing with a global audience. This exposure allows students to receive feedback from listeners around the world, fostering a sense of community and collaboration. It also provides opportunities for students to showcase their progress, build confidence, and connect with peers who share similar musical interests.

7. AI-Generated Music and Cultural Adaptation

AI technology is pushing the boundaries of music creation and cultural adaptation. Models like OpenAI's GPT-3 and Google's Magenta use deep learning techniques to compose new music by analyzing vast datasets of existing compositions. These AI models can generate music in various styles, providing fresh and innovative compositions that draw from a rich pool of musical influences. For vocal students, this technology offers a unique opportunity to explore and experiment with new musical ideas and styles. Moreover, AI helps translate lyrics and adapt music to different cultural contexts, making it more accessible to a global audience. Real-time translation of lyrics during live performances and adaptations of compositions to suit different musical tastes and traditions enhance the inclusivity and diversity of musical experiences. This capability ensures that music transcends linguistic and cultural barriers, fostering a more connected and appreciative global music community.

8. Promoting Cultural Education Through Social Media

Social media platforms such as Instagram, TikTok, and Twitter play a crucial role in promoting cultural education and global musical appreciation. Educators and students can leverage these platforms to create and share short videos that explain various vocal techniques, showcase different cultural traditions, and highlight the richness of global musical practices. Social media provides a dynamic and accessible platform for cultural exchange, enabling students to collaborate with peers from different backgrounds, participate in international virtual choirs, and contribute to a diverse musical community. These platforms also allow educators to reach a broader audience, spreading awareness and appreciation for diverse vocal traditions. By engaging with social media, students can develop a deeper understanding of the interconnectedness of global music and foster a sense of global citizenship through shared musical experiences.

Aspect	Description	Examples/Tools
Proliferation of Digital Platforms	Access to a wide variety of global vocal traditions, democratizing vocal education.	YouTube, Coursera, Udemy
Real-Time Interaction with Global Instructors	Live, interactive lessons with international instructors, fostering cultural exchange.	Zoom, Skype, Microsoft Teams
Asynchronous Learning	Flexible learning schedules with pre-recorded lessons and interactive elements for active learning.	Recorded tutorials, quizzes, practice exercises, discussion forums
Interactive and Immersive Music Experiences	VR and AR create immersive learning environments, enhancing engagement and cultural context.	Melody VR, Wave
Personalized Music Recommendation Systems	AI algorithms provide personalized music recommendations, broadening musical horizons.	Spotify, Apple Music, Pandora
Intelligent Digital Technologies	AI-powered apps provide real-time feedback and personalized learning paths, enabling global performance sharing.	Yousician, Flowkey, SoundCloud, Bandcamp, YouTube
AI-Generated Music and Cultural Adaptation	AI creates new compositions and adapts music for different cultural contexts.	GPT-3, Magenta
Promoting Cultural Education through Social Media	Short, engaging videos promote cultural exchange and education, fostering a global musical community.	Instagram, TikTok, Twitter

Table 2. This Table Summarizes the Eight Key Aspects of How Digital and AI Technologies Enhance Vocal Education, Providing Descriptions and Examples for Each Aspect to Illustrate the Impact of These Technologies in Creating a More Inclusive and Comprehensive Vocal Learning Environment.

The advent of digital technology has revolutionized vocal teaching by breaking down the barriers inherent in the traditional model. This transformation allows for a more inclusive and comprehensive approach to vocal education, one that embraces the rich diversity of global

vocal practices. Digital platforms provide unprecedented access to diverse resources, real-time interaction with international instructors, and immersive learning experiences through VR and AR. They also support innovative pedagogical approaches and personalized learning, enhancing students' engagement and understanding. By integrating digital technology into vocal education, educators can foster cultural awareness, promote empathy, and prepare students to become versatile and culturally sensitive vocalists in a globally connected world. The future of vocal education lies in harnessing the power of digital technology to create a vibrant, inclusive, and culturally rich learning environment.

In the era of the new scientific and technological revolution, digital technology has a profound impact on the political, economic, and cultural development of various countries. This article explores how music from different cultures brings people together in the context of a digital society, clearly illustrating the research significance. The study employs a self-reporting survey to examine the research questions, with data collected in 2023 from students in China (n=25), who completed a 25-item questionnaire.

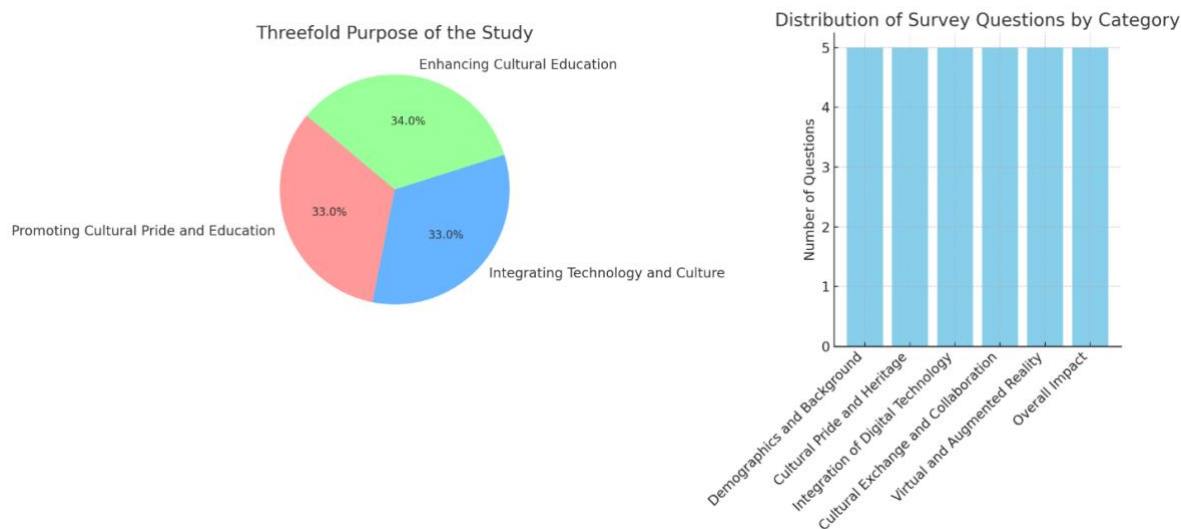


Figure 1. Threefold Purpose of This Study and Distribution of Survey Questions by Category.

The purpose of this study is threefold:

1. Promoting Cultural Pride and Education

Vocal music teaching has notable advantages, particularly in instilling student pride in their cultural heritage through digital technology in the classroom. This approach helps expand cultural music education and showcases diverse cultures, music, and languages. By leveraging digital tools, educators can create engaging and interactive lessons that highlight the unique aspects of various vocal traditions, fostering a sense of pride and connection to one's cultural roots.

For instance, incorporating digital storytelling methods to teach the history and significance of different vocal styles can deepen students' appreciation and understanding of their cultural heritage. Digital storytelling allows educators to create multimedia presentations that combine audio, video, and text to narrate the journey and evolution of specific vocal traditions. By integrating interviews with cultural experts, archival footage, and interactive timelines,

students can explore the rich tapestry of their cultural heritage in a dynamic and engaging manner.

Moreover, digital platforms can facilitate access to rare and traditional music recordings, providing students with authentic examples of vocal styles that might be difficult to experience otherwise. For example, an educator might use a digital archive of traditional Native American songs to teach students about the vocal techniques and cultural significance of these songs. This not only preserves these important cultural artifacts but also brings them into the contemporary educational context.

2. Integrating Technology and Culture

Emphasis in the classroom is placed on integrating people, technology, and culture. This involves leveraging digital technology features such as humanization and interactivity, as well as subjective features like virtualization. By designing digital empowerment, educators can break through the limitations of time and space, achieving the integration of convenience, equality, and wisdom. This integration allows for real-time feedback, collaborative learning, and the creation of virtual environments that simulate cultural contexts, providing students with a holistic and immersive educational experience.

For example, using Virtual Reality (VR) to recreate traditional cultural festivals where specific vocal techniques are performed can offer students a unique and engaging way to learn. Imagine students donning VR headsets and being transported to a vibrant Brazilian Carnival, where they can experience the lively samba rhythms and vocal styles in a 360-degree immersive environment. Such an experience not only enhances their understanding of the vocal techniques but also immerses them in the cultural context that shapes these traditions.

Similarly, Augmented Reality (AR) can be used to create interactive learning experiences. For instance, an AR app might allow students to visualize traditional African musical instruments and learn about their role in vocal performances by interacting with 3D models. This hands-on approach can make learning more engaging and memorable, bridging the gap between theoretical knowledge and practical application.

Moreover, digital platforms enable collaborative learning, where students from different parts of the world can work together on projects, share their musical traditions, and learn from each other. Platforms like Zoom, Microsoft Teams, and Google Classroom can facilitate real-time interactions, allowing students to participate in joint rehearsals, discussions, and performances. These collaborative efforts foster a sense of global community and cultural exchange, enriching the educational experience (Figure 1).

3. Enhancing Cultural Education

Results indicated that the culture of the digital society bears the important mission of inheriting national spirit. The development of the digital society has promoted the more frequent dissemination of culture. Therefore, the important role of digital technology in the construction of cultural education should be utilized to lay the spiritual foundation for a community with a shared future for mankind.

Digital platforms facilitate the sharing of cultural content on a global scale, enabling students to experience and appreciate diverse vocal traditions. This exposure broadens their musical

horizons and fosters a deeper understanding of the cultural contexts that shape different vocal practices. For example, virtual exchanges between schools from different countries can help students experience and learn about each other's vocal traditions in an interactive and engaging way.

Such exchanges can involve virtual performances, where students from different countries perform their traditional songs for each other. These performances can be followed by Q&A sessions, where students can ask questions and learn more about the cultural significance of the songs they heard. This not only promotes cross-cultural understanding but also encourages students to appreciate the diversity of vocal traditions around the world.

Additionally, online platforms like YouTube, Spotify, and SoundCloud provide access to a vast array of global music. Educators can create curated playlists that introduce students to a wide range of vocal styles and traditions. These platforms also allow students to share their performances with a global audience, receive feedback, and connect with other musicians who share their interests.

Furthermore, social media platforms such as Instagram, TikTok, and Twitter can be used to promote cultural education. By creating educational content that highlights different vocal traditions, educators can reach a broader audience and inspire interest in cultural music education. For instance, a series of short videos explaining the vocal techniques used in Tuvan throat singing could go viral, sparking curiosity and appreciation for this unique vocal tradition.

Integration of Multiculturalism in Vocal Teaching

The integration of multiculturalism into vocal teaching involves several key elements:

- **Curriculum Design:** Incorporating various vocal traditions to ensure diverse cultural representation. This includes selecting a repertoire that spans different cultures, incorporating traditional songs, and exploring the vocal techniques and styles unique to each tradition. Educators can also include lessons on the historical and cultural significance of each vocal style, helping students understand the context in which these traditions developed. For instance, a curriculum might include traditional African call-and-response songs, Indian classical ragas, and Western operatic arias, providing a comprehensive overview of global vocal practices.
- **Collaborative Projects:** Encouraging projects between students and teachers from different cultural backgrounds to foster cross-cultural exchange. Collaborative projects can involve joint performances, cultural exchange programs, and virtual collaborations with students and educators from other parts of the world. These projects provide opportunities for students to learn from each other, share their cultural heritage, and develop a deeper appreciation for diversity. For example, a virtual choir project that brings together students from different countries to perform a piece that incorporates elements from each culture's vocal traditions can be a powerful learning experience.
- **Guest Instructors:** Inviting guest instructors from various cultural traditions to share their expertise. Guest instructors can provide students with firsthand experience of different vocal techniques and styles, offering insights into the cultural contexts that shape these practices. This exposure helps students develop a well-rounded understanding of global vocal traditions and enhances their versatility as performers. For instance, inviting a master of traditional Chinese opera to conduct a workshop can provide students with a unique perspective on this ancient art form.

- **Community Engagement:** Interacting with local and global communities to create a more inclusive and diverse learning environment. Community engagement can involve partnerships with cultural organizations, participation in multicultural festivals, and collaborations with local artists. These interactions provide students with opportunities to experience diverse vocal traditions in real-world settings, fostering a sense of connection and belonging to the broader cultural community. For example, organizing a cultural exchange event where students perform vocal pieces from different cultures can help build community and promote cultural understanding.

Case Studies

- **Virtual Choirs:** Virtual choir projects bring together singers from around the world, showcasing the beauty of multicultural collaboration. These projects leverage digital technology to facilitate rehearsals, recordings, and performances, allowing singers to participate regardless of their geographical location. Virtual choirs provide a platform for exploring diverse vocal traditions and fostering cross-cultural understanding through music. For example, the Virtual Choir by Eric Whitacre has brought together thousands of singers from different countries to perform choral pieces, creating a powerful demonstration of global unity and artistic collaboration.
- **Online Workshops:** Online vocal workshops featuring instructors from different cultural backgrounds provide students with firsthand experience of diverse vocal traditions. These workshops offer opportunities for students to learn from experts in various vocal styles, engage in interactive lessons, and participate in cultural exchange activities. Online workshops also provide a flexible and accessible way for students to expand their vocal skills and knowledge. For instance, a series of online workshops on traditional African vocal techniques, Indian classical singing, and Western classical opera can offer students a comprehensive and diverse learning experience.

Challenges and Solutions

While the integration of multiculturalism in vocal teaching offers numerous benefits, it also presents several challenges:

- **Language Barriers:** Language differences can hinder communication and understanding between students and instructors. To address this, educators can use translation tools and provide multilingual teaching materials. Additionally, incorporating language learning into the vocal curriculum can help students develop linguistic skills that enhance their ability to engage with diverse vocal traditions. For example, teaching students basic phrases and pronunciation in the languages of the vocal pieces they are learning can enhance their understanding and performance.
- **Access to Technology:** Not all students have access to the necessary technology and resources. Providing low-cost or community-supported digital access can help bridge this gap.
- **Cultural Misunderstandings:** Educators must be mindful of cultural sensitivity and avoid reinforcing stereotypes. Providing cross-cultural training for teachers can help mitigate these issues. Developing a curriculum that emphasizes cultural respect and understanding, and encouraging open dialogue about cultural differences, can also promote a more inclusive learning environment. For instance, incorporating discussions about cultural appropriation and respectful engagement with other cultures into the curriculum can help students navigate these complex issues.

Future Directions

In the context of digital society, the future of vocal teaching lies in continuously integrating multicultural perspectives. Emerging technologies such as artificial intelligence (AI) and machine learning can further enhance the learning experience, providing personalized and culturally diverse vocal training. These technologies can analyze vocal techniques and styles from different cultures, offering tailored feedback and exercises to help students master a wide range of vocal traditions.

AI-driven tools can provide real-time analysis and feedback on vocal performance, helping students refine their techniques and adapt to different styles. Machine learning algorithms can analyze large datasets of vocal recordings, identifying patterns and trends that can inform personalized learning pathways for students. These technologies can also facilitate the creation of virtual mentors, providing students with ongoing guidance and support as they explore diverse vocal traditions.

Moreover, advancements in VR and AR technologies will continue to enhance the immersive learning experience, allowing students to engage with vocal traditions in increasingly realistic and interactive ways. For example, VR can be used to recreate historical performances, enabling students to experience the cultural and historical context of different vocal styles firsthand. AR can overlay digital information onto real-world environments, providing interactive learning experiences that blend physical and virtual elements.

As digital technology continues to evolve, it will play an increasingly important role in promoting multiculturalism in vocal education. By embracing these technologies, educators can create a more inclusive and interconnected learning environment that celebrates the diversity of global vocal traditions and fosters a deeper understanding of the cultural contexts that shape music.

Conclusions

In the context of a rapidly advancing digital society, the integration of multiculturalism into vocal teaching is not just an opportunity but a necessity. The adoption of digital technologies has the potential to revolutionize traditional vocal education by making it more inclusive, accessible, and culturally diverse. By embracing digital platforms, educators can break down geographical and cultural barriers, providing students with unprecedented access to a vast array of global vocal traditions. This approach not only enhances vocal skills but also deepens students' understanding of the cultural contexts that shape music.

The research highlighted in this article demonstrates the profound impact that digital technology can have on vocal education. Through innovative tools such as virtual reality, AI-driven learning platforms, and social media, educators can create engaging and immersive learning experiences that foster cultural pride, promote global awareness, and support cross-cultural collaboration. By integrating multicultural perspectives into the curriculum, vocal teaching can become a powerful tool for building a more inclusive and interconnected world. The future of vocal education lies in the continuous integration of emerging technologies that enhance the learning experience while promoting cultural diversity. As we move forward, it is crucial to recognize the importance of cultural education in the digital age and to utilize digital tools to preserve, celebrate, and share the rich tapestry of global vocal traditions. By doing so, we can empower the next generation of vocalists to become not only skilled performers but

also culturally aware global citizens, capable of contributing to a more harmonious and understanding world.

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Appendix

Supporting Information for Exploring Multiculturalism through Vocal Teaching in the Context of Digital Society

Here is a detailed list of the 25-item questionnaire that could be used to collect data on the impact of digital technology in vocal teaching and multiculturalism among students in China:

Demographic Information

1. **Age**
 - Under 18
 - 18-22
 - 23-27
2. **Gender**
 - Male
 - Female
 - Non-binary
 - Prefer not to say
3. **Level of Education**
 - Undergraduate
 - Graduate
 - Postgraduate
4. **Major/Field of Study**
 - Music
 - Arts
 - Humanities
 - Sciences
 - Others (Please specify)
5. **Years of Vocal Training**
 - Less than 1 year
 - 1-3 years
 - 3-5 years
 - More than 5 years

Technology and Learning

6. **Access to Digital Devices for Learning**
 - Yes
 - No
7. **Frequency of Using Digital Tools in Vocal Training**
 - Daily
 - Weekly
 - Monthly
 - Rarely
 - Never
8. **Types of Digital Tools Used (Select all that apply)**
 - Online tutorials
 - Video conferencing (e.g., Zoom)
 - Learning apps

- Virtual reality (VR)
 - Augmented reality (AR)
 - Others (Please specify)
- 9. Effectiveness of Digital Tools in Enhancing Vocal Skills**
- Very effective
 - Effective
 - Neutral
 - Ineffective
 - Very ineffective
- 10. Challenges Faced in Using Digital Tools for Vocal Training (Select all that apply)**
- Technical issues
 - Lack of access to devices
 - Lack of digital literacy
 - Distraction
 - Others (Please specify)

Cultural Awareness and Education

- 11. Exposure to Different Vocal Traditions Through Digital Platforms**
- Very high
 - High
 - Moderate
 - Low
 - Very low
- 12. Learning About Cultural Contexts of Different Vocal Styles**
- Very interested
 - Interested
 - Neutral
 - Uninterested
 - Very uninterested
- 13. Impact of Digital Learning on Understanding Cultural Significance of Music**
- Strongly agree
 - Agree
 - Neutral
 - Disagree
 - Strongly disagree
- 14. Participation in Virtual Cross-Cultural Vocal Projects**
- Yes
 - No
- 15. Satisfaction with Multicultural Content in Vocal Training**
- Very satisfied
 - Satisfied
 - Neutral
 - Dissatisfied
 - Very dissatisfied

Classroom Integration

- 16. Integration of Cultural Elements in Classroom Lessons**
- Very often

- Often
- Sometimes
- Rarely
- Never

17. Engagement with Guest Instructors from Different Cultural Backgrounds

- Very often
- Often
- Sometimes
- Rarely
- Never

18. Collaborative Projects with Students from Different Cultures

- Very often
- Often
- Sometimes
- Rarely
- Never

19. Use of Digital Storytelling in Vocal Lessons

- Very often
- Often
- Sometimes
- Rarely
- Never

20. Perception of Cultural Sensitivity in Vocal Education

- Very sensitive
- Sensitive
- Neutral
- Insensitive
- Very insensitive

Personal and Educational Outcomes

21. Improvement in Vocal Skills Through Digital and Multicultural Learning

- Significant improvement
- Moderate improvement
- Slight improvement
- No improvement
- Decline

22. Sense of Cultural Pride After Multicultural Vocal Education

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree

23. Impact on Creative Expression Due to Exposure to Different Vocal Styles

- Significant impact
- Moderate impact
- Slight impact
- No impact
- Negative impact

24. Preparedness for Global Musical Environment

- Very prepared
- Prepared
- Neutral
- Unprepared
- Very unprepared

25. Overall Satisfaction with Digital and Multicultural Vocal Education

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

These questions aim to cover a broad range of aspects related to the impact of digital technology on vocal training and multiculturalism, providing a comprehensive understanding of the students' experiences and perspectives.

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Contact email: chenying@jxufe.edu.cn

***Translanguaging Practices in EFL Classroom:
A Collaborative Linguistic Landscape-Based Project***

Harjuli Surya Putra, Atma Jaya Catholic University of Indonesia, Indonesia
Setiono Sugiharto, Atma Jaya Catholic University of Indonesia, Indonesia

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Abstract

Translanguaging as extending beyond a view that EFL students have a unified repertoire made up of all their existing multilingual and multimodal resources. Translanguaging pedagogy lens posits that multilingual students draw on their holistic linguistic repertoire in a fluid way in social interaction in multilingual classrooms. This article aims at exploring a creative pedagogical Linguistic Landscape-based project through engaging Indonesian students to become ethnographic researchers in their local surroundings. Focusing on one of the creative classroom activities through making ‘mood board’ to demonstrate visual awareness of Linguistic Landscapes, this project constructs an EFL classroom as a collaborative translanguaging space that entails the teacher to engage the students in translanguaging practices through using their diverse semiotic resources. The data were obtained through classroom observations and video-stimulated-recall-interview in an Indonesian University. Methodologically, this article applies Multimodal Conversation Analysis to analyse the classroom observation data and then triangulated with the video-stimulated-recall-interview data analysed applying Interpretative Phenomenological Analysis. The findings demonstrate how the participants recognize and mobilise the use of their various languages and multimodal practices to challenge the raciolinguistics and monolingual ideologies and facilitate their English learning as a decolonial resistance by incorporating their semiotic resources as a unitary repertoire. That is, the findings illuminate that translanguaging was driven by ideology and culture. What happened in this translanguaging space was a need to communicate in which the students make use of languages and cultures simultaneously or what the researcher calls ‘transcultural communication’.

Keywords: Translanguaging, Multilingual Repertoire, Linguistic Landscape, Collaborative Project, English Learning

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1. Introduction

Language practice among different people with different linguistic and cultural backgrounds might encourage bi/multilingual students to employ their entire linguistic repertoire in classroom interaction (Wei, 2023). Unsurprisingly, studies investigating language practices between teacher and students who have different linguistic repertoire and social-cultural background have given fertile ground to some scholars to experiment in the scope of teaching English to EFL students. Various concepts attempt to observe the actual language practices as classroom interactions. From the early enthusiastic concept investigating the student's language practices that favors World Englishes and Global Englishes (Kachru, 1992) in English language teaching classrooms (Matsuda, 2003) and the development of intriguing concept that favors the exploration of this language practice such as codemeshing (Canagarajah, 2011b), to the more current notion of translanguaging and multimodal resource as an approach of language pedagogy (Dobinson et al, 2023).

The research on translanguaging was undeniable because the studies on translanguaging have flourished, particularly in the field of education as a pedagogical strategy to engage and recognize multilingual students' existing linguistic competence (Canagarajah, 2011a; García and Wei, 2014). That is, it is considered necessary for a teacher to construct a safe space in the classroom where the EFL students translanguage during the learning process (Tai and Wong, 2022). Working from this perspective, translanguaging safe space indicates the space where students can translanguage their linguistic diversity and encourage meaning making without embarrassment or shame in front of their teacher and peer (Canagarajah, 2011a).

However, understanding the complexity of how translanguaging practices is conducted in English classroom, can make English teachers rearrange their English teaching strategies in the 'trans-era' of Global Englishes. It is thus not too surprising that the notion of translanguaging can be incorporated into the potential role of Linguistic Landscape (LL) to concatenate the reciprocal interconnection between place and linguistic resources (Pennycook, 2017). Therefore, several studies of LL-based projects have burgeoned and recently taken a stronger orientation towards student's language awareness and linguistic competence conducted as classroom project (Wangdi and Savski, 2023). These studies shared a similarity of collaborative ethnographic research to explore the potential role of LL through co-produced pedagogical activities to develop students' critical thinking, intercultural competence, and language awareness.

However, the translanguaging concept is more than a pedagogical or practical issue in educational circumstances, philosophically, it is a political standpoint and/or decolonial stance to the translanguaging practice as a pedagogy for English language teaching (Wei, 2022). That is, translanguaging pedagogy has a plausible concept to decolonize English learning and teaching by joining languages that historically have been separated because of colonization (Rajendram, 2022). Again, a more thorough coverage on how flexible and fluid translanguaging practices can facilitate English language learning through using LLs and decolonize English teaching and learning process as a practical justice pedagogy in Indonesian educational sector has not been explored further. Therefore, this LL-based project attempts to fill in this gap.

This study, therefore, aims to address this gap by exploring the collaborative engagement LL-based project for students to engage in translanguaging practice and investigating how translanguaging practice has the prospects to decolonize English teaching and learning

process as a practical justice pedagogy in Indonesian educational sector. To address this aim, this study is trying to explore a creative educational LL-based project through engaging EFL students to become ethnographic researchers in their local surroundings and focus on one of the creative classroom activities through making 'mood board' to demonstrate visual awareness of their selected LLs.

Thus, I attempt to answer the following research questions:

1. How does the LL-based project pave the way for EFL students to engage in translanguaging practices and facilitate English learning?
2. How can the translanguaging practices promote a decolonial potential pedagogy in English learning?

2. Literature Review

Translanguaging in Multilingual Classroom

Translanguaging in the setting of a multilingual and multicultural classroom has been conducted to facilitate verbal communication and connection of the students with their teacher and peer. Apart from supporting communicative interaction in English classroom, the vibrant process of translanguaging might develop their various linguistic resources in communication and change the teacher and students' attitudes towards their diverse linguistic repertoire resources, thus allowing them to fully engage in knowledge co-making (García and Lin, 2018). That is, translanguaging is the activity of creating experiences, knowing the knowledge, and making meaning by using two languages (Baker, 2011). Accordingly, translanguaging indicates to use one language to help the students make meaning the other language to reinforce understanding and knowledge in both languages. Translanguaging is the process in which a language speaker draws on his/her various linguistic and multimodal resources in communication (Wei, 2018).

Over the years, the burgeoning studies in multilingual classroom focused on translanguaging receive increasing attention in diverse educational contexts and stimulate some scholars to investigate teacher translanguaging practices (Herrera, 2023) and explore translanguaging as pedagogy to developing students' discursive practices (Sembiente et al, 2023; Infante and Licona, 2021). All findings reveal the same common fact that translanguaging is already part of teachers and students' language practices and provides meaningful opportunities for them to engage multimodal and multilingual resources in meaning-making with the classroom community and with the content.

Translanguaging as a Decolonizing Pedagogy for ELT

Apart from the multilingual competence and the multiple linguistic repertoires of the EFL students in educational context, translanguaging can also be used as an analytical lens when it explicitly to reveal socio-political and ideological issues to the appearance of translanguaging as a pedagogy (Chen and Lin, 2023). These issues have prompted the emergent scholars on translanguaging practices and viewed the prospects of translanguaging strategy as a decolonial pedagogy for English language teaching by understanding students' linguistic repertoire (Fang, Zhang, and Sah, 2022). Decolonizing pedagogy is the need the transformative potential to liberate learning practices and to radically transform the ways in which colonized individuals set themselves free in learning process (Wei and García, 2022). Again, Wei (2022) asserts that translanguaging can be viewed 'more than a pedagogic or

theoretical perspective; it is a political stance, a decolonizing stance' (p. 173). Hence, a particular political stance and/or a decolonizing stance influence the effectiveness of translanguaging space to legitimize translanguaging practice as a practical justice pedagogy.

Regarding to the colonial history in Indonesia, it has affected students' linguistic repertoire to continue English imperialism through the naming of linguistic phenomena, segregation and hierarchy of languages, and the power of monolingual policies and practices in the class (Rajendram, 2022). Translanguaging recognizes that the students whose multiple named languages in their repertoire naturally move between their multiple languages (Dobinson, 2023). In Indonesia, the perspective of English learning represents a native-speakerism ideology (Zein, 2019). This view considers native speaker 'standard' English as the end goal (Fang and Liu, 2020). This happens often because we are still shadowed form the coloniality which is displayed in the racism and patriarchy environment. Whereas translanguaging offers the different ways in which the students employ various language resources to make meaning, without obedience to (named) language boundaries and to the socio-political and ideological circumstances (Wei, 2018).

The Use of Linguistic Landscapes as a Pedagogical Tool

Urban LLs provide an opportunity of practicing the language and insights into the effective ways in which language is deployed in multilingual contexts on public signs in a particular place (Wu, Silver, and Zhang, 2021). Linguistic landscapes consist of public writing such as public signs, billboards, store names, and sometimes refers to the public linguistic space of a particular place (Gorter, 2006; Spolsky, 2009). Effective definition put forward by Landry and Bourhis (1997) that LL is the language or images displayed in communal road signs, business signs, billboards, public roads, and place names in an urban agglomeration (p. 25). Naturally, people walk down the street and pay attention to the public signs. Thus, this situation indicates that LL displays an arena where social and economic issues take place.

As a classroom advantage of discussing public signage, LLs can be considered more appropriate, informative, and communicative to bring into class discussion as a teaching material (Gulten, 2021). These studies support the concept that exposing students to the LLs may provide awareness of the languages used in public spaces and give new insights into how classroom interactions can be extended to the surroundings of the students' community. Moreover, LL discussion activity can promote the development of students' speaking competence as it engages them towards the opportunity to relate what they experience outside the classroom with texts displayed in urban spaces (Gorter, Cenoz., and der Worp, 2021).

3. Methodology

Project Design and Participating Subjects

The study was devoted for a collaborative ethnography exploration of LL fieldwork, along with co-production of creative activities using the design of mood board in the class. Thus, I instigated a classroom project in a General English class of 41 first-year Indonesian university students. All students were born and raised in Indonesia and spoke Indonesian as their first language. Regarding to the participating teacher who is willing to participate in this research, Mr. R (Pseudonym) has adequate experience for ten years in teaching English in this university.

Pilot Project

The starting point for collaborative LL-based project is following Sayer's (2010) and Barrs' (2020) proposed LL research model. The researcher replicated their procedures for carrying out this collaborative LL project as follows:

1. The students first got two weeks of lectures that introduced them to the concept of LLs as examples of the public signs that display English in their local surroundings.
2. The teacher then required the students to form seven small groups of 6 to 7 students to discuss LLs in their surroundings. Then, the students were introduced to the collaborative LL-based project.
3. Afterwards, the students were then required to print copies of the signs and then brought them into the classroom for class discussion. The students were then required to sort their pictures into categories. The teacher asked the students to critically analyze the pictures of signs through teacher-mediated questions proposed by Rowland (2013) including:
 - ✓ What kinds of signs do you see in the picture.
 - ✓ Where is the sign located.
 - ✓ Who wrote the sign.
 - ✓ What is the message conveyed through texts or symbols.
 - ✓ Who is the intended audience?
 - ✓ Why do you think English is used on the sign?
4. The students then integrated processes of signs collection and interpretation to engage in the collaborative activity of engagement with the LLs through making a mood board, then encouraged to present the mood board product to the class.

Data Collection

The project included two research instruments for the collection of data: classroom observations and video stimulated recall interview. The researcher made use of classroom observations and field notes written up at the same time during the collaborative LL project and co-production of mood board activity. The video stimulated recall interview was then conducted after the observations.

Data Analysis

The video recordings of the classroom observations and post-video-stimulated recall interviews as the data sources were then analyzed by employing Multimodal Conversation Analysis (MCA) and Interpretative Phenomenological Analysis (IPA) (Tai, 2023). MCA was deployed to analyze the video recordings of the classroom interactions. First, the researcher rewatched the video recordings of the classroom interactions by looking for translanguaging practice and then transcribed the video manually in which the screenshots from the video clips were taken. Second, the screenshots of video recordings were transcribed by using transcription convention proposed by Jefferson (2004) and Mondada (2018) (see Appendix A). Third, the analysis of each line was conducted to scrutinize the diverse series of talk.

Meanwhile, IPA was deployed to analyze the video recordings of post-video-stimulated recall interviews. IPA was used as the analytical method for perceiving translanguaging practices that were created in certain moments of classroom activities. To ensure that the IPA analysis was valid, the procedure of video-stimulated-recall-interview data analysis was organized based on 'three key theoretical underpinnings: phenomenology, hermeneutics, and

idiography' (Tai, 2023, p. 52). After accomplishing the MCA analyses, fieldnotes analyses, and IPA analysis, it then allows for the data to be triangulated.

4. Findings and Discussion

Co-production of Mood Board: Portrait and Analysis of Process and Product

This part accounts for pedagogical project of LL-based project in paving the way for EFL students to involve in translanguaging practices and facilitate English learning by employing their various linguistic and non-linguistic resources in classroom interaction. After the participating students had explored the city landscape in their surrounding area, they were required to bring photographic prints of signs to class to discuss with their group members. First, the students attempted to organize and identify the signs into categories. They were then encouraged to cut out and sort their pictures into categories (see Figure 1).



Figure 1. Cutting out and sorting photographic prints into categories

In organizing the photographic prints of signs into categories, the students attempted to describe the pictures and identify the patterns and interrelation across parts of the pictures of signs. After organizing and identifying the signs into categories, in this segment, the mood boarding process was created as a bulletin board which has any arrangement of categorized pictures, letters, colors, and shapes that makes up a coherent idea of the collected LLs from the students' local surroundings. A mood board is a type of visual representation of carefully selected collage of images and texts that functions to convey a general idea and an emotional mood about a certain topic (Chang et al, 2020).

Each group then prepared a paperboard, colored paper, scissors, a glue stick, and several categorized prints of pictures collected from their previous collaborative LL project investigations in their local neighborhood. Each group member performed different tasks, some focusing on designing up background of mood board. Others made various textures with the colored board by cutting the edges (see Figure 2).



Figure 2. Mood board in progress: Designing up the background of mood board

As a way of decorating the mood board, some students decorated textures of the mood board surface by giving ornaments, colored paper, and glitter on the mood board (see Figure 3). In addition to this, they applied cut out shapes from colored paper, then stuck onto the paperboard to construct the themes from the text and photographs. The activity of decorating the mood board therefore provided the students to explore their creativity and enabled them to see the relationship between various elements with their selected pictures.



Figure 3. Mood board in progress: Decorating the mood board

In addition to this, some students arranged the layout and positioned the photographic prints of images and stuck them onto the paperboard. Moreover, others incorporated more handwritten text that related to the images. It was also initiated by the students to freely combine the text from the LLs they had taken before. Accordingly, the process of making mood board therefore allowed the students to explore their previous LLs project experiences into a resultant artefact (see Figure 4).



Figure 4. Mood board in progress: Arranging the layout and positioning the images

The mood board products once completed. The project revealed that EFL students must experience learning and become aware of English usage in their local neighborhoods. It consistently reflects as put forward by Chesnut et al (2013) that the students gained further insight and experiences on the explorative fieldwork on LL to understand various language as semiotic embodiment in social contexts. The mood board products once completed (see Figure 5), then each group was provided a visual space for presenting their resultant mood board to the class.



Figure 5. The mood board as resultant artefacts once completed

Representative Extracts: Analysis

In this part, two classroom observation extracts during the collaborative LL project in the classroom were selected as representative interactions. For reporting purposes, the researcher only sorts out the representative extracts of the video recordings instead of describing all the transcribed interactional activities. The first extract illustrates how collaborative LL project paved the way for EFL students to engage in translanguaging practices and facilitated English learning (see Extract 1). The second extract showed the representative interactions which illustrate how the group was presenting their resultant mood board that was displayed in front of the class.

Extract 1: Answering a Student-Initiated Question During the Co-production of Mood Board

From classroom interactions, the teacher, Mr. R (T) was explaining and guiding students (S) to discuss their discoveries of photographic prints of signs with their group members by utilizing the PowerPoint slide. T required that S should categorize the photographic prints of signs by identifying the connections and patterns across parts of the pictures of signs. T then encouraged S to cut out and sort their pictures into categories. Before T planned to move to the next explanation, a student (S) tilted his head and gazed at his friend to his right and S then self-started a question. S questioned whether there are any criteria in categorization. T then planned to address the students' question by pointing at the PowerPoint slide.

- 11 T: [Well] listen (.) listen everybody (.) please you categorize.
 +T pointed at the screen, extending his right-hand arm.



Figure #1

- 12 T: Kategorikan dia yah from those pictures. ((Categorize the signs))
 +T Extending left-hand index finger pointing at the screen.
 13 (0.1)
 14 A store sign (.) if you have (.) if you have store sign, please you think okay] for the title sore sign and then put the picture.
 +T Extending left-hand index finger contingently pointing at the screen.
 15 (0.1)
 16 T: A government warning and notice if you have please you make the title and pick the picture ()
 +T contingently kept moving his right-hand up and down at the screen.



Figure #2

- 17 T: and then the art of mural you pick which one is the picture and then covid 19 (.) if you have don't forget
 18 +T moved towards the students slowly.
 T: >Okay< but sir I don't have for example I don't have billboard
 19 T: Hello, I don't have billboard sir, it's ok
 +T moved back to the screen and waved the hand.
 20 (0.2)
 21 T: () You just pick the pictures you have based on the categories
 22 (0.1)
 23 Okay ↑ All right do it right now.
 +T moved towards the students.
 24 + S tilted his head and gazed at his friend to his right
 + S chatted to his friend
 + S raised a hand and self-initiated a question



Figure #3

- 25 (0.1)
 26 T: Yes?
 +T raised his head and looked at the student and walked over him
 27 S: Sir it is *gak papa yah kalo misalnya kita gak bikin* (0.1) about covid 19 sign ((it is ok if we don't make))
 +S looked at T and approached him
 28 (0.1)
 29 T: That's ok yah (0.1)
 +T nod his head and pointed at the PowerPoint slide
 *--->



Figure #4

- T: Yah, you speak the picture based on (what you got) if it's not about covid 19 is ok, forget it and skip, all right?
 30 (.)
 31 S: Thank you sir
 32 T: Yes
 +T turned his body, facing other student and checking the activity
 33 (4.2)
 34 S: Sir!
 +S called T again, raised his hand while standing up, and again self-initiated a question



Figure #5

- 35 T: *Iya* (0.5) ((yes))
 +T turned his body, facing to S and walking over to him

- 36 S: °So do we group the picture berdasarkan kategori? ° (0.2)
 ((Do we group the picture by category?))
 37 (0.3)
 38 T: [Ok]
 (0.2)



Figure #6

- +T directs his gaze to the screen, uses his index finger to point at the PowerPoint slide and occasionally looks at S
 T: and then (0.1) covid 19 you clasify and categorize based on the picture (0.1) you match.
 (0.4)

Extract 1: Answering a Student-Initiated Question During the Co-production of Mood Board

In line 11, T asked S to categorize the signs. Further, in line 12, T rephrased his statement in Indonesian ‘*kategorikan dia yah*’ (Categorize the signs) based on the connections and patterns across parts of the pictures of signs. The extract showed that Mr. R simultaneously deployed his multilingual (Indonesian and English) and multimodal resources (i.e. extending left-hand index finger pointing at the screen and contingently kept moving his right-hand up and down at the screen). Although T was supposed to be employing English as the main linguistic convention to give explanation in the class, T also employed distinct semiotic resources to provide convenient space for S to promote a multilingual and multimodal forms in gaining the pedagogical objectives.

Further, in lines 26, S raised his hand and initiated a question by uttering *gak papa yah kalo misalnya kita gak bikin* (it is ok if we don’t make) in Indonesian and looking at T (line 27). S then switched back to English to utter ‘covid 19 sign’. Simultaneously, in a 0.1-second pause, T nodded his head and pointed at the PowerPoint slide and directly responded to S’s question by uttering ‘That’s ok yah, yeah, you speak the picture based on (what you got) if it’s not about covid 19 is ok, forget it and skip, all right?’ S responded the corrective feedback in English by uttering ‘thank you’. Simultaneously, in line 38, T directed his gaze to the screen, used T’s index finger to appoint at the PowerPoint slide and occasionally looked at S to respond the question by uttering ‘ok, and then covid 19 you classify and categorize based on the picture you match’. That is, this extract revealed that S also spontaneously empowers his multilingual (Indonesia and English) and multimodal forms (i.e. raising his hand while standing up and tilting his head) to engage in translanguaging practices.

During the video-stimulated-recall interview, for extract 1, the teacher and students were asked to explain the rationales for them to engage in translanguaging practices during the project. R then invited T to explain why he is keen to affirm his utterance using Indonesian and his rationale for using such flashy use of gestures while pointing the screen. R is attentive to understand the rationale of T’s use of gesture to make sense of his pedagogical practice, obtain the reason why T uses Indonesian to restate his statement, and know T’s feeling when the student is asking a question in Indonesian. It is noticeable in the MCA analysis that T makes use of extending left-hand index finger, moving his right-hand up and down at the screen, and tapping his fingers contingently on the board to attract students’ attention.

In extract 1, not only teachers, but student also uses various linguistic resources (Indonesian and English). T acknowledges that he never compels his students to fully use English in the class, so it is not a problem if they use various linguistic resources. T believes that the use of various linguistic resources can facilitate the students in learning English. That is, T sets free the students to mobilize their various linguistic resources to construct different ways of speaking. It consistently reflects as revealed by Infante and Licona (2021) and Sembiente et al (2023) that translanguaging practice is already part of teachers and students' language practices and provides meaningful opportunities for them to engage multimodal and multilingual resources in meaning-making with the classroom community.

Extract 2: Engaging Students Participation in Classroom Discussion

From the classroom interactions, the teacher (T) was asking a group to present their project. The students (S) began to stick the mood board on the whiteboard, then the teacher (T) was guiding students how to present their mood board in front of the classroom by giving advice for them to explain their resultant mood board based on their understanding and using their own sentences instead of focusing on their mobile phone and notes. In line 5, T engaged S to prepare the presentation well. T then encouraged S to explain the findings based on their understanding.

- 1 +S walked slowly to the front of the classroom.
+S took a sticky tape and stucked the mood board on the whiteboard.



Figure #1

- 2 (1.0)
3 +T took the microphone.
4 (0.1)
5 T: [Well] (0.1) before you begin (0.1) once again I said to you, please you prepare very well
6 T: When you are standing here, okay!
+T moved his right hand towards the front of the classroom.
7 (0.1)
8 T: you can (.) you can bring a paper, you can bring a phone
+T simultaneously took a paper showing to the students.



Figure #2

- 9 T: but when you explain, please you explain based on your understanding. Just, don't just focus on your mobile phone, just reading yeah!
+T kept looking the paper in his hand.
10 T: Please you don't be textual
11 (0.1)

- 12 Jangan kamu terus-terusan baca (0.1) textual. ((Don't keep reading))
+ T kept looking at the paper and moved it contingently.
- 13 S: Yeah, Okay↑ please you try to explore your ability to explain based on your understanding yeah↑
- 14 T: [Okay] you can bring this as your support (01) but please↑ don't focus on your text yeah↑
+T showed the paper in his right hand to the students.
- 15 (0.1)
T: (you are free free) Alright okay come on!
+T gave the microphone to S1. *--->>
- 16 (0.2)
- 17 +S1 took the microphone while holding the paper in his hand.
S1: [Good morning, everyone]
- 18 S1: So, we are here (would do) presentation (0.1) (today's our discussion) about linguistic landscape.
- 19 S1: before we go (0.1) we start the presentation.
+S1 turned her body facing her friend and whispering.
+S1 passed the microphone to the friend next to her.
- 20 +S2 took the microphone while holding a cellphone in his left hand.
S2: Saya ada pantun ni, dengerin yah. ((I have a Malay four lines poem, please listen))
+S2 directed her gaze to the class and occasionally looked at her cellphone.



Figure #3

- 21 S2: Pergi ke pasar beli terasi. ((go to the market to buy shrimp paste))
- 22 SS: cakep. ((great))
- 23 S2: belinya dengan kemiri. ((Do not forget to buy candlenut))
- 24 SS: cakep. ((great))
- 25 S2: sebelum kami mulai presentasi. ((Before we start the presentation))
- 26 SS: cakep. ((great))
- 27 S2: izinkan kami memperkenalkan diri. ((Let us introduce ourselves))
- 28 SS: hahahaha
- 29 (0.2)
+S2 gave the microphone to S1.
- 30 +S1 He slightly bowed his head and once looked at the note in her hand
S1: 大家好。我叫 Chery 我是尼亚斯人 ((Dàjiā hào. Wǒ jiào Chery wǒ shì Ní yā sī rén)) ((Hello all, my name is Chery, I am Nias tribe))



Figure #4

- 31 SS: hahahahaha
+ S1 gave the microphone to S3.
- 32 +S3 took the microphone.
S3: こんにちは 私の名前は サンタ・リヤニ・ストゥメアン。
((Kon'nichiwa, watashi no namae Santa Riyani Situmeang)).
((Good afternoon, my name is Santa Riyani Situmeang)).
+S3 smiled and gave the microphone to S4
- 33 S4: My name is Fitri Amaliyah Tanjung
+S4 gave the microphone to S5.
- 34 S5: my name is khaidir.
+S5 gave the microphone to S6.
- 35 S6: My name is Jonatan.

Extract 2: Engaging Students Participation in Classroom Discussion

It is noticeable in this extract that Mr. R utilized numerous gestures through the paper to give an example to students not to be monotonous using notes or mobile phones during presentations. T encouraged the students to have a stance toward their selected LLs. T encouraged them to be affiliated with their own understanding about their LLs discoveries from local surroundings. It can be noticed that T was attempting to make use of paper as a resource for assisting the process of providing students' understanding so that they did not focus on notes and mobile phones. T gave students the freedom to explore their understanding of the LL they encountered. T uttered an affirmation marker 'yeah, okay' in

high intonation which denotes his concern about being confident to explore their own sentences in presentation session.

Moreover, the extract analysis reveals that Mr. R simultaneously emphasized his statement in line 12 again by repeating the whole sentence ‘jangan kamu teru-terusan baca’ in Indonesian and looking at the paper concurrently. That is, it illustrates his affirmation of the target Indonesian expression. T uttered ‘jangan kamu teru-terusan baca’ in Indonesian to warn students to be confident to employ their own understanding toward the selected LLs. The extract showed that Mr. R simultaneously deployed his multilingual (Indonesian and English), multimodal resources (i.e. moving the paper in his right hand and looking at the paper contingently) to stimulate students’ imagination of avoiding themselves from monotonously focusing on paper during the presentation. Further, Mr. R rephrased the warning in English and asked his students to think about using the notes just for supporting them instead of fully focusing on the notes (see line 13). Simultaneously, the student nodded head to respond to T’s warning.

During the video-stimulated-recall-interview for extract 2, The researcher (R) then invited T to describe his perspectives on the effectiveness of the translanguaging practices in promoting a decolonial pedagogy in English learning by recognizing learners’ linguistic repertoire during the LL project and his rationale in implementing the various translanguaging strategies to challenge the monolingual ideology, especially on activating students’ multilingual and multimodal repertoires as a key role in facilitating English learning. In this extract, T acknowledged that warning students to explain their resultant mood board based on their understanding and using their own sentences instead of focusing on their mobile phone and notes, is an attempt to ensure that students are paying attention to their talk.

Afterward, the researcher and T were jointly making sense of the students’ rationale of employing their creativity and criticality reciting pantun (Malay oral poetic form) to strategically communicate before the presentation in line 20. T believed that the students not only attempt to calm themselves down by reciting pantun before the presentation, but also attract the audiences’ attention on their presentation. Notably, T acknowledged that the students have included cultural values or ideology by reciting pantun in their presentation. It is evidenced that in classroom interaction, the students explore their creativity by reciting pantun for those reasons. This contributes to the creation of an integrated translanguaging space which bridges students’ cultural and ideology values in which they can develop their positive emotionality to enhance their linguistic and communicative competence. That is, this condition consistently reflects as pointed by Dovchin (2021), when translanguaging practice is employed in the classroom, it may provide EFL students with an emotionally safe space where they feel comfortable to manage their negative emotions through employing different layers of linguistic resources.

5. Conclusion

It is evident in the classroom analysis that the findings in extract 1 that the LL project provides opportunities for the students to employ translanguaging practices by exploring their entire linguistic and semiotic repertoire. That is, the embodiment of the students’ translanguaging practices can facilitate their English learning in the classroom. This finding reinforces previous findings revealed by Tian (2022) that in a translanguaging space, the students were given the freedom to explore their entire linguistic and semiotic repertoire authentically to portray different way of learning English and facilitate them in language

learning. In this extract, T attempts to implement translanguaging as a pedagogy in classrooms by opening a space for the students to be confident and free exploring their multilingual and multimodal resources during the classroom interaction. This approach consistently reflects as stated by García et al. (2016), when translanguaging is carried out as a pedagogy in classrooms, it can provide four purposes: (1). Helping the students engage with and understand complex texts; (2). Developing students' academic language skills; (3). Creating space for bilingual ways of learning; (4). Supporting students' bilingual identities.

Further, drawing on extract 2, T mentioned that translanguaging practice is a potential approach in providing freedom for his students to employ their diverse multilingual and multimodal resources in classroom interactions. Since they can learn a foreign language from their first learned language. Moreover, T resists the English-only monolingual ideology to facilitate his teaching and learning. It is evidenced that T admits the importance of understanding translanguaging as a unitary repertoire and translanguaging practices should also be understood as more than a pedagogical, but a political and decolonizing stance in providing freedom for his students to employ their diverse multilingual and multimodal resources in English learning. The findings reinforce the argument revealed by Wei and García (2022) that translanguaging as a political stance has the potential to decolonize English language teaching.

Viewed in this way, it is noticeable in the combining MCA and IPA analysis that translanguaging spaces were characterized by creativity and criticality. The extract presented shows how creative appropriations and translanguaging practices emerge through bringing Indonesian values through reciting pantun into English language learning. However, when the student incorporated the classroom presentation that integrated the pantun, she demonstrated a learning practice that shows not only the interplay across languages and different multimodal resources, but also the interplay across ideologies and culture. The practice illuminates that translanguaging was driven by ideology and culture. What happened in this extract was a need to communicate in which the students make use of languages and cultures simultaneously or what the researcher calls 'transcultural communication'. As argued by Baker (2021) that in the wider range of multimodal resources typically forms transcultural communication practices.

Accordingly, the findings of the project contribute to bi/multilingual classroom management to provide learning and using diverse multilingual and multimodal resources as a transcultural process. Further, the findings how engaging translanguaging as an analytical classroom strategy can help teachers to recognize and understand how they can manage students' participation and engagement in a translanguaging space.

Regarding the approach generated from the blend of MCA and IPA methodological framework for investigating translanguaging in multilingual classrooms, may not be generalized to other English classroom contexts given the contextualized nature of the study, that will potentially create some limitations. First, the participants' translanguaging practices may differ in other level, other subject scope, or in other English language classroom. Second, for the reporting section, the researcher can only sort out the representative extracts instead of presenting all the transcribed instances of participants' translanguaging practices. Therefore, Further researcher is suggested to pay attention to the details how teachers get involved with the whole classroom interactions and construct translanguaging spaces by adopting a longitudinal study which can observe and analyses changes in a translanguaging practice over time.

Acknowledgment

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Appendix A. MCA Transcription Conventions

Sequential and timing elements of the interaction

[Beginning point of simultaneous speaking (of two or more people)
]	End point of simultaneous speaking
=	Talk by two speakers which is contiguous
OR	(i.e. not overlapping, but with no hearable pause in between) continuation of the same turn by the same speaker even though the turn is separated in the transcript
(0.2)	The time (silence in tenths of a second) between utterances
(.)	A micro-pause (one tenth of a second or less)

Paralinguistic elements of interaction

wo:rd	Sound extension of a word (more colons: longer stretches)
word.	Fall in tone (not necessarily the end of a sentence)
word,	Continuing intonation (not necessarily between clauses)
wor-	An abrupt stop in articulation
word?	Rising inflection (not necessarily a question)
<u>word</u>	(underline) Emphasized word, part of word or sound
word↑	Rising intonation
word↓	Falling intonation
°word°	Talk that is quieter than surrounding talk
wo[rd	Onset of overlapping talk or other sounds
wo]rd	End point of overlapping talk or other sounds
hh	Audible out-breaths
.hh	Audible in-breaths
w(h)ord	Laughter within a word
>word<	Talk that is spoken faster than surrounding talk
<word>	Talk that is spoken slower than surrounding talk
WORD	talk louder than surrounding talk
\$word\$	Talk uttered in a 'smile voice'
(word)	Word in doubt
()	Unclear word(s)

Other conventions

(word)	Approximations of what is heard
((comment))	Analyst's notes
#	Indicating the exact moment at which the screenshot was taken.
+	Marks the onset of a non-verbal action (e.g. shift of gaze, pointing)
XX	Inaudible utterances
* *	Each participant's actions are delimited between two identical symbols and are synchronized with correspondent stretches of talk.
+ +	The action described continues across subsequent lines
*--->	until the same symbol is reached.
--->*	The action described continues after the excerpt's end.
*--->>	
....	Action's preparation.
----	Action's apex is reached and maintained.
//	The point at which tracing a particular embodied action begins or ends.
mar	Participant doing the embodied action is identified in small characters.

Sources. Adapted from Jefferson (2004) and Mondada (2018)

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Contact email: harjuli82@gmail.com

Exploring Pedagogies Available for Skill Acquisition in Hospitality and Student's Preference

Harrietta Akrofi-Ansah, Kumasi Technical University, Ghana
Evelyn Catherine Impraim, Kumasi Technical University, Ghana
Vida Commey, Kumasi Technical University, Ghana
Lois Vigil Commey, Kwame Nkrumah University of Science and Technology, Ghana

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Abstract

Skill acquisition is very important aspect of hospitality/tourism teaching delivery. An in-depth semi-structured interview was conducted involving two hundred (200) hospitality/tourism lecturers, students and practitioners in the industry to examine various pedagogies that are available, effective and preferred by students of hospitality education. The study showed that demonstrations and practical activities are dominantly used by technical universities than traditional universities. This is because, the courses and modules (catering, food and beverage production, food technology, event organizations, etc.) within the tourism and hospitality education at technical universities are practically intensive. These pedagogies are also effective since they drive hands-on and visual engagement of students in the teaching and learning process. Interactive discussions and theoretical reflective/experiential learning are more dominant in traditional universities that offer leadership, entrepreneurship and managerial skills to both undergraduate and postgraduates. Reflective learning is highly preferred by postgraduate students who desire to become frontrunners, policy framers, managers and leaders at the industry level. Considering the limitations of practical pedagogy, it becomes imperative that, government provide some financial support to students who enroll in skill-based tourism and hospitality education. Provision of financial resources to students will fully accelerate inclusive participation which will further enhance the effectiveness of practical pedagogy in skill-based hospitality education at technical universities. Moreover, traditional universities must embrace demonstrations as part of pedagogy for leadership and managerial skills acquisition for undergraduate tourism and hospitality students. These can be achieved through integrated field visits by partnership with firms within the industry.

Keywords: Hospitality/Tourism Education, Skills Acquisition, Pedagogies

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Introduction

Interest in tourism and hospitality education in Ghana has increased over the last decades. Indeed, several higher learning academic institutions such as universities, colleges and vocational training institutes have widened their scopes and intake of students in tourism and hospitality educations (Commey *et al.*, 2019). Public universities such as University of Cape Coast, Kwame Nkrumah University of Science and Technology, University of Ghana, Kumasi Technical University, Accra Technical University, etc. are currently running various master programs. The overarching aim of tourism and hospitality education in Ghana is to create synergy between academia and the industry through labour supply, development policies and research (Amisah *et al.* 2020). Hence, the ability of tourism and hospitality students to translate theory into practice in real world situations have gained significant attention over the decade. This brings into light the effectiveness, relevance and efficiency of teaching and learning methods within tourism and hospitality education. Much research attention has been given to learning styles and methods across the globe. In fact, learning style as grounded in literature has been construed as a confusing strand on interrelation models, concepts and constructs. Researchers have become overly concerned with the physiological dimensions of the brain function in the teaching and learning process. Thus, authors such as Ndou *et al.* (2019); Hsu (2018) and Della *et al.* (2021) give relevance and lays more emphasis on how the human brain is able to capture, process and appreciate concepts that are taught in the classroom. Essentially, the brain function perspective of the argument focuses on the cognitive abilities of students to appropriate and articulates concepts, models and constructs which are taught as part of academic disciplines. Other authors such as Amangeldi *et al.* (2023) and Civak (2021) have also explored the relevance of the learning environment that suits students. Thus, in as much as the brain is the storage environment of students, the environments within which teaching is delivered must also reflect the cognitive capacities of students. Olenych *et al.* (2021) lays much emphasis on combination of manipulatives, graphical illustrations with theoretical delivery of teaching as essential to enhancing learning outcomes. Indeed, the preference of students regarding teaching and learning differ based on contexts. Several forms of learning styles have been proposed and used across the globe over the century. These include: instructional learning, information processing method, social interaction, cognitive personality method, etc. Instructional preference reflects the learning choice of students where teaching is delivered in an environment that integrates sound, lighting, design, graphics and visuals, etc. (Farsari, 2022). Social interaction also connotes the learning choice of students where teaching is delivered in a discussion and interactive manner. Information processing highlights students learning choice where they are allowed to process teaching information and resources on their own with little interference from instructors (Farsari, 2022). Teaching and learning preference for skills acquisition within tourism and hospitality education has also received some level of research attention. Nonetheless, there are still some confusions on the choice and preference of students regarding the different strands of pedagogies in the context of effectiveness, relevance and efficiency (Carvalho *et al.*, 2021). Students are often in dilemma regarding the kind of teaching methodology that blends their cognitive abilities in appreciating lessons taught in the lecture hall. While skill acquisition toward a growing and vibrant tourism and hospitality industry is paramount in Ghana, it becomes very eminent to explore the relevance, effectiveness and efficiency of pedagogies that fit the preference of students. Students are expected to translate their skills and competences at the industry level. However, Asirifi *et al.*, (2013) found some high degree of competency gap and mismatch between students' skills and industry expectations. According to Asirifi *et al.* (2013) majority of tourism and hospitality students are not able to translate theoretical assumptions, concepts,

models and constructs they have been taught in school into practice at the industry level. According to Desere and Hattingh (2019) and Commey (2021) more than 60% of tourism and hospitality students have competence gaps which limit their abilities to making meaningfully impacts at the industry level through policies, best practices, research, management and leadership. While these competency gaps undermine the contribution of tourism and hospitality education to industry, little has been done on the contributions of pedagogies to the narratives discussed above. Remediating the narrative therefore calls for urgent research into best pedagogies that fulfil the underlying objectives of skills acquisition within tourism and hospitality education. Justifiably, the findings of this research provide insights to lecturers on best pedagogies that deliver superior teaching outcomes to students.

Literature Review

Some studies have been done on the preference and effectiveness of pedagogies for skill acquisition in tourism and hospitality education across the globe. For instance, Kusumawardhana (2019) found that majority of tourism and hospitality students in United Kingdom preferred practical activities and demonstration than theoretical exposition to concepts and models. Kusumawardhana (2019) carried out his study among 493 food and beverage students across five public universities where 67% of the students enjoyed practical teachings and demonstrations that theoretical discussions. Practical activities and demonstration are most effective for practical based modules such as catering, food and beverage, and tour operations. This observation is consistent to what was observed by Hsu (2018). According to Hsu (2018) skill-based tourism and hospitality education such as food and beverage, food processing and development, tour operations etc. are practical hence students prefer demonstrations and practical activities than theoretical reflections. Interestingly, the aforementioned studies were carried out among college and undergraduate students who were enrolled in practical based skills acquisition programs. It was therefore not surprising that these students had similar findings that reflect higher preference for demonstrations and practical activities in teaching and learning. From a different perspective, Boluk et al. (2021) observed that, students who were enrolled in hotel and accommodation management preferred discussion and social interactions than demonstration and practical activities. Thus, 69.3% out of 783 students who participated in the study of Boluk *et al.* (2021) ranked their preference for discussions and social interactions as very high compared to demonstrations which was ranked as low. According to Boluk *et al.* (2021), hotel management require strong leadership and managerial acumen. Hence, hotel management students mostly want to interact with their colleagues and industry practitioners by leveraging on their experiences. This observation is confirmed by Steriopoulos *et al.* (2022) where 79.4% out of 925 hotel management students preferred interactions with industry practitioners than theoretical reflections. Steriopoulos *et al.* (2022) explained that, interactions with industry practitioners help students to develop relevant knowledge of industry trends, innovations and best practices which enable them to match their skills once employed in the labour market. Steriopoulos *et al.* (2022) observed that, 59% were willingly to do vacation internship with hotels and other accommodation service operators due to their desires to learn on the job through constructive and effective interactions with players in the industry. Similarly, Wong et al. (2022) observed that, undergraduate hotel management students in Singapore and Taiwan preferred reflective learning than practical and demonstrations. Wong et al. (2021) noticed that majority (72.9%) of the students were willing to undertake at least four internships as part of their learning process for proper reflection on industry trends. According to Wong et al. (2021) and Chen *et al.* (2022), reflective learning is preferred by students who always want learn from field observations that offer them the

opportunity to experience real world situations. Ngwenya *et al.* (2022) and Fullagar and Wilson (2019) also observed a different narrative where post-graduate tourism and hospitality students preferred theoretical reflections than demonstrations and social discussions. According to Joppe and Elliot (2015), postgraduate tourism and hospitality education is aimed at equipping students with skills and abilities to research and translate research findings into actionable policies. Postgraduate tourism and hospitality education such as Master of Philosophy (MPhil) and Doctor of Philosophy (PhD.) are aimed at training students to become frontrunners of the industry in areas of researcher, leadership, management and policy frameworks. Hence theoretical reflections become the most effective pedagogy for such students. It is not surprising when 61.8% out of 281 MPhil and PhD students ranked theoretical reflections as their most preferred pedagogy in UK (Joppe & Elliot, 2015). Theoretical reflective learning pedagogy equip students with extant knowledge how to apply models, concepts and theories of tourism and hospitality development into real world situations.

Theoretical Review

Pedagogical theories lay emphasis on how aspects of teaching are brought together, how teaching is delivered and how students understand and appreciate teaching outcomes. Teaching is expected to sharpen and broaden the knowledge of students on issues, concepts, models and constructs within an academic discipline. Various pedagogical theories have been proposed over the years and each of them derive inspiration from three major perspectives which include: herbatianism, the new London group and learning theories. Essentially, each of these three perspectives reflects five teaching methodology which include: preparation, presentation, association, generalization and application (Uysal & Kilic, 2022). Thus, instructors are required to go through each of these stages in order to deliver superior teaching outcomes. Since, this study is overly focused on students, it becomes imperative to situate the learning theory perspective to provide enough theoretical explanations to the preference and effective of various pedagogies in skills acquisition within tourism and hospitality education. Two learning theories including behaviorism and constructive learning theories are applied in this study. Earlier theorist such as Skinner (1953) propounded behaviorism as a theoretical underpinning of students' articulation of concepts, models and constructs. Skinner focused on observable behaviors and explained that, effective learning outcomes is achieved when students are supported in the teaching process through drills, practical demonstration and reinforcement. According to Fullagar and Wilson (2019), incorporation of practice into lectures enable students to exercise behavioral control over concepts. Thus, student develop much interest in lectures when practical activities are integrated into the learning procedure. For skill-based academic programs such as food and beverage, food technology, food development, etc. student require more practical activities to enhance their appreciation of what they are taught in class (Amangeldi *et al.*, 2023). Although this theory is widely used in teaching method studies and development, nonetheless, it has some limitations. According to Ngwenya *et al.* (2022), demonstrations and practical based teaching methods are only effective in skill-based academic programs. Hence applying this theory to explain the effectiveness of pedagogy for postgraduate tourism and hospitality students may be flawed. This explains why reflective learning theory is used as an augmenting theory for the study. Reflective learning theory assumes that, students develop better critical thinking and problem-solving skill when they are allowed to analyse concepts, models and experiences for future improvement. Postgraduate tourism and hospitality students become better critical thinkers and industry policy framers and problem solvers when they are able to reflect and apply tourism and hospitality development theories into real

world situation. In effect, MPhil and PhD tourism and hospitality education that are research-based required reflective teaching and learning in order to produce superior teaching and learning outcomes. Students who prefer theoretical reflective learning are able to create abstract concepts, models and constructs and also apply them for effective problem solving.

Materials and Methods

The study adopted cross-sectional research design and qualitative approach. Cross-sectional research design was appropriate for the study because, it allowed the study to develop wider findings across different fragments of the tourism and hospitality sector across broader geographical scope. Thus, cross-sectional research design enabled the study to sample respondents from food and beverage sector, food development sector, tour operations, hotel and accommodation management, art and culture etc. Moreover, adoption of cross-sectional research design enabled the study to sample respondents from different locations including: Kumasi, Accra, Cape Coast, Sunyani, Tamale and Takoradi. Qualitative research approach enabled the study to develop expansive knowledge on the research issues. For instance, qualitative approach allowed the to probe further the reasons why respondents preferred some available pedagogies over others. Moreover, the probing method employed in the interviews enabled the study to developed deeper insight into the effectiveness of each pedagogy based on availability and students' preference. The study population included tourism and hospitality students from five public universities as well as those practicing in the industry. In-depth semi-structured interviews were conducted among two hundred respondents to gather data on the research issues. The data were analysis through Castleberry and Nolen's (2018) thematic analysis.

Results and Discussions

This section of the paper presents the results and discussions of findings. The results and discussions centers on availability and effectiveness of identified pedagogies in skills acquisition in tourism and hospitality education such as; demonstration, practical activities, interactive discussions, theoretical reflections (experiential learning) and instructional learning.

Availability and Effectiveness of Demonstrations

Demonstration is one of the widely used pedagogies in skill-based education across the globe. Availability of demonstration in this study was peculiar to technical universities (Kumasi and Accra Technical Universities). Thus, usage of demonstration as a pedagogy was pronounced in these to higher learning institutions than Kwame Nkrumah University of Science and Technology, University of Ghana and University of Cape Coast. Essentially, tourism and hospitality education in both technical universities where demonstration is used are skilled and practical based. Thus, courses such as food technology, food development, catering, food and beverage service are the main focus of hospitality education in technical universities. This explains why demonstration is significantly used in those universities. For instance, one of the lecturers who was interviewed at KTU stressed that:

“The kind of hospitality education offered at KTU is hands-on skill-based. Courses such as food and beverage, food processing and development, catering, food and beverage service are highly integrated into the program. This explains why we place much emphasis on demonstration as one of the teaching and learning pedagogies.”

Another lecturer at ATU also indicated that:

“The program is 70% skill-based. Thus, course such as food service, food processing and development, food technology, catering etc. are the main focus of hospitality education at ATU. Essentially, demonstration is one of the widely used pedagogies in skill-based academic programs.”

Further probing showed that, demonstration has become one of the most effective teaching and learning styles at technical universities that offer skill-based tourism and hospitality educations. According to lecturers/instructors and students who were sampled from KTU and ATU, demonstration enables students to develop better visual appreciation concepts and models that are taught as part of the skill acquisition process of hospitality education. For instance, one of the students at ATU indicated that:

“Demonstration helps me to develop visual connection and appreciation of concepts, constructs and models that are taught in class. The demonstration procedure in itself is visually appealing hence it engages my interest throughout the process. Several intriguing demonstrations are used in food preparation, food processing and technology, catering services and event organizing, etc. Demonstration experiences help me to understand how to prepare and handle various dishes by combining food technology and innovations. Although the theoretical aspect of the program is small, nonetheless, I wish 100% of the course are done through activities and demonstrations.”

Another industry practitioner who had his education from KTU emphasized that:

“Demonstration which was used as part of the teaching and learning methods during my time in school helped to be visually engaged in the teaching process. Demonstrations were highly utilised in courses such as food development and technology, catering, food and beverage production etc. In fact, I enjoyed those periods since they were interesting and mind engaging. Demonstrations are not boring like theoretical reflections and discussions in the lecture room. Hence, I preferred demonstration than those methods.”

The narratives above connote to the observations made by Della et al. (2021) and Hsu (2018) where demonstration was highly optimized in teaching and learning of skill-based hospitality education. Moreover, the effectiveness of demonstration as confirmed by lecturers and students from technical universities reflect the empirical findings of Della et al. (2021) and Hsu (2018). Demonstration as a grounded skill-based pedagogy in literatures are visually engaging and interesting. Thus, hands-on illustrations by instructors enable students to connect their minds by optimizing their visual sensory to concepts been demonstrated to them. Essentially, demonstration becomes one of the effective pedagogies that can be used by other universities. Kwame Nkrumah University of Science and Technology, University of Ghana and University of Cape Coast that train and produce majority of (59%) of tourism and hospitality graduate must incorporate demonstration as one of the pedagogies to enable instructors/lectures develop better visual connection with their students for effective learning outcomes. The study has demonstrated that, the teaching and learning framework of hospitality and tourism education do not incorporate demonstration. Nonetheless, course such as catering, hotel management and tour operations are integrated in the program’s model. Optimal development of skills in these areas are very paramount to industry performance

(Civak, 2021) hence the need for these three universities to provide the needed environment, capacities and logistics to facilitate optimal use of demonstration. Technical universities are able to optimise demonstration as a pedagogy to availability of facilities such as kitchens, food processing and development laboratories etc. Inspiration can be borrowed from KTU and ATU to better position demonstration as a pedagogy in skill-based hospitality education among the other three universities.

Availability and Effectiveness of Practical Activities

Skill-based tourism and hospitality education are dominantly delivered through practical education. Indeed, the finding of the study confirms this narrative where practical activities were highly utilised in both technical universities (KTU and ATU). As already discussed, integrated course within tourism and hospitality education in KNUST, UG and UCC are not practical based hence adoption and utilisation of practical activities as one of the pedagogies is very minimal. Excerpts of the interviews are provided below:

We combine demonstrations with practical activities. The demonstration is used by instructors while practical activities are used by students as part of the learning process. Students are given weekly practical assignments in various modules within course of the program. Students also engage in various practical lessons at the food preparation centers and laboratories. For instance, food technology, equipment handling, event organizing, beverage production, etc. are largely taught through practical activities. Practical activities also form part of the end of semester examination process of students. (Lecturer/Instructor, KTU)

Another lecturer at ATU stressed that:

About 65% of the skill-based hospitality education is areas such as food production, food technology, food handling, catering, beverage production, etc. are delivered through practical activities. Students are taken through practical lessons and series on each module every week. Practical activities are highly supervised by instructors and lectures for best outcomes. Moreover, practical activities are integrated as part of the outcome assessment and evaluation in both mid and end of semester examinations.

The study probe further to assess the preference and effectiveness of practical activities as part of pedagogies of technical universities. Findings of the study showed that preference and effectiveness of practical activities were very high. Nonetheless, lack of and practical logistics were identified as key limitations that undermine integration of practical activities as part of the pedagogical process of skill-based tourism and hospitality education in technical universities. For instance, one student at KTU indicated that:

“Practical activities are best when it comes to teaching and learning of models in catering, food and beverage, food production and technology, etc. Practical activities enable me in particular to try my hands on things that are taught in class. They offer me the opportunity to identify errors and most of the practical modules while perfecting them for a better industry-fit. Regardless of the advantages of practical activities, myself and some other colleagues encounter resource limitation for effective engagement in practical lessons. Most of the logistics we use for the program such as food materials, kitchen logistics, etc. are provided by students. Some of us

with limited financial resources find it extremely difficult to fully resource myself for effective participation in practical lessons.”

Another student at ATU stressed that:

“I prefer practical lessons than the other pedagogies. Reasons being that, practical lessons enable me to be actively involved in the teaching and learning process. Mistakes and errors made in the practical lessons are corrected for future performance. In fact, practical lessons enable me to develop skill-based capabilities that match industry expectations. Nonetheless, practical lessons are very expensive. Undergraduate students in particular find it extremely difficult to meet all the financial resource and logistic requirements for effectively involvement in practical lessons. The food stuffs and other logistics we use for catering, food and beverage production, food technology, food handling, etc. are purchase or rented by students. Some of us with limited financial capacity therefore find it difficult to fully participate in practical lesson.”

The narratives above align with observations made by Farsari (2022); Ndou et al. (2019) and Carvalho et al. (2021). According to Farsari (2022) practical activities are best for skill-based academic programs that seek to equip students with first-hand industry and entrepreneurial skills. Food and beverage preparation, event organizing, catering services are highly skilled-based. Moreover, these courses equip students with relevant skills to setup SMEs in the tourism and hospitality sector. This explains why practical activities provide best teaching and learning experience for tourism and hospitality students in technical universities (Ndou et al., 2019). Despite being effective, students with limited financial resources encounter limited participation practical learning thereby undermining their skills acquisition and learning outcomes. Financial and logistics support must be integrated as part of the learning framework to enhance the effectiveness and inclusive progressive participation of students in practical-based lessons.

Availability and Effectiveness of Interactive Discussions

Availability, utilisation and optimisation of interactive discussion were more pronounced in KNUST, UCC and UG. Utilisation of interactive discussions were moderate in the two technical universities. The courses and modules within tourism and hospitality educations (tour operations, human resource management, principles of management, entrepreneurship, etc.) are not practically intensive. This explains why interactive discussions were highly utilised in the three traditional universities.

“The courses and respective modules with the tourism and hospitality education framework are not practically intensive. Hence majority of teaching are delivered through interactive learning. Students are often divided into various groups for discussion and assignments on various topics. Lecture materials and resources are also delivered through interactive discussion which is optimized through full student participation.” (Lecture at UG)

Another lecturer at KNUST also stressed that:

“Courses within the program are not practically or skill-based hence interactive discussions are dominantly used as the main pedagogy within the tourism and

hospitality education at KNUST. Courses such as tour operations, event management, entrepreneurship, marketing, human resource management, etc. are abstract and theoretically based. Hence instructors and lecturers rely more on interactive learning. Students are normally grouped for various assignments and discussions on topics and constructs.”

Indeed, both students and lecturers had some challenges regarding effectiveness of interactive discussions. The challenges centered on ineffective participation in interactive discussions on the part of students. For instance, one of the students indicated that:

“We find it difficult to collaborate during group assignments. Some students often do not participate in group assignments and discussions. I think, it undermines the effectiveness of interactive learning.”

Another student at UCC also stressed that:

“I find it difficult to focus during discussions at the lecture halls. Sometimes I get divided attentions between lectures and social media notifications from my smartphone.”

Another lecturer also indicated that:

“Although interactive discussion is very convenient and easy to use, nonetheless, its impact on learning outcomes is quite low. Some students do not participate in group assignments and discussions. Some students also get divided attention between their phones and lectures.”

These narratives are consistent with the findings of Boluk et al. (2021); Olenych et l. (2021) and Steriopoulos et al. (2022). According to Boluk et al. (2021), interactive learning is best for abstract and less practical intensive teaching and learning. Essentially, the courses and modules within the tourism and hospitality education framework of the three traditional universities are based on theories, concepts and models. Essentially, traditional university education is expected to equip graduates with abstract knowledge, competencies and abilities that enable them to translate theories, models and concepts into real work problem solving (Olenych et l., 2021). Interactive discussions provide students opportunities to articulate theories and models to through research and group assignments. Nonetheless, the challenge of passive participation is widely recognized in literature as a major limitation of interactive learning. Studies such as Chen et al. (2022) and Wong et al. (2021) observed similar challenge where 45% of students were active participants in interactive learning. Majority of students are caught in the web of divided attention during lecture hours. Social media usage is very significant among students hence they find it difficult to actively engage and contribute in interactive discussions.

Availability and Effectiveness of Theoretical Reflections/Experiential Learning

Theoretical reflections/experiential learning was highly utilised in the three traditional universities (KNUST, UCC and UG) and the two technical universities (KTU and ATU). Theoretical reflections/experiential learning is delivered through PowerPoint presentation that combine lecture resources with graphic, visualized models, concepts can and constructs. According the instructors/lecturers, theoretical reflections/experiential learning is integrated

in tourism and hospitality education framework across all the universities to enable student develop skills, abilities and competences to translate theories into practice in real world work.

“Theoretical reflections/experiential learning is fully integrated into the teaching and learning procedure. Students are exposed to different theories and models through visualized PowerPoint presentations. Lecture notes are also delivered in PowerPoint presentation where students are allowed to expand their horizons on compressed materials.” (Lecture at KNUST)

Another lecturer at ATU indicated that:

“Although, majority of the course and modules are practical, nonetheless we expose student to theoretical reflections and experiential learning. This is done to enable student understand theories, models and concepts in tourism and hospitality such as service quality, customer services, brand loyalty, professionalism, entrepreneurship and marketing. Essentially, the skills they acquire through reflective learning enable them to transition theoretical concepts into problem solving skills on the job.”

Another lecturer at UG indicated that:

“The university offers only postgraduate tourism and hospitality education which is geared towards equipping graduates with skills and abilities to solve industry problems through innovations, policy and research. Hence majority of the modules and courses are delivered through reflective learning.”

The study observed that majority of the students that preferred reflective learning were postgraduate students who were already industry practitioners. It was observed that most of the postgraduate students wanted to fill some managerial and leadership competency gaps hence they found theoretical reflective teaching and learning as an effective pedagogy that meet their educational needs. For instance, one postgraduate who was interviewed stressed that:

“I am a manager of a three-star hotel in Kumasi. I enrolled in this postgraduate program to enhance my skills and competency in management and leadership in hospitality management. Hence, I prefer reflective learning since it enables me to develop wider knowledge in theories and models on leadership and management which are translated into problem solving in real world work.”

Another industry practitioner who received postgraduate hospitality management education from UCC indicated that:

“I work at the Catering Department at Parliament House. My boss encouraged me to enroll in tourism and hospitality management in 2016 which I did. I needed to enrich my managerial and leadership abilities at the unit hence the decision to heed to the recommendations of my boss. In fact, reflective learning was used in major parts of the teaching and learning process at UCC. It actually exposed me to diverse theories and models in areas such as service quality, management, human resource management, customer service, sustainability etc. which have enabled me to develop better problem-solving skills.”

These narratives are not different from the observations made by studies such as Wong et al. (2021); Ngwenya et al. (2022) and Amangeldi et al. (2023). Leadership and managerial competences and skills are very paramount to the development of the tourism and hospitality sector (Ngwenya et al., 2022). Postgraduate students must therefore be exposed to different strands on theories, models and concepts within the framework of theoretical reflective learning (Amangeldi et al., 2023). This pedagogy enables students to learn on their own through experiential learning by way of wide research. Extensive research enables postgraduate students to be independent learners which in turn enable them to better articulate theories and models that have translative effects in real world problem solving. In essence, theoretical reflective learning enables students who aspire to be frontrunners of the industry develop better leadership and managerial acumen skills and competences for progressive growth of the industry.

Conclusion

Pedagogies are paramount determinants teaching and learning outcomes. Bridging the competency gap on the part of tourism and hospitality graduates requires a comprehensive blend of effective pedagogies that meet the preference of students. This study explored the availability of pedagogies for skills acquisition within tourism and hospitality education across three traditional and two technical universities. Based on the findings of the study, it can be concluded that; demonstrations and practical activities are dominantly used by technical universities than traditional universities. This is because, the courses and modules (catering, food and beverage production, food technology, event organisations, etc.) within the tourism and hospitality education at technical universities are practically intensive. These pedagogies are also effective since they drive hands-on and visual engagement of students in the teaching and learning process. Nonetheless, resource limitation challenges also undermine progressive participation of students in practical lessons within the skill-acquisition educational framework. Thus, student with funds constraints are no able buy learning materials and tools (example, kitchen logistics, food stuff, food processing machines, etc.) to fully participate in practical lesson at technical universities. Interactive discussions and theoretical reflective/experiential learning were more dominant in traditional universities that offer leadership, entrepreneurship and managerial skills to both undergraduate and postgraduates. Reflective learning is highly preferred by postgraduate students who desire to become frontrunners, policy framers, managers and leaders at the industry level. Thus, reflective learning equips and expose students to different theories and models that provide different assumptions to concepts customer service, human resource management, marketing, etc. under tourism and hospitality education. Considering the limitations of practical pedagogy, it becomes imperative that, government provide some financial support to students who enroll in skill-based tourism and hospitality education. Provision of financial resources to students will fully accelerate inclusive participation which will further enhance the effectiveness of practical pedagogy in skill-based hospitality education at technical universities. Moreover, traditional universities must embrace demonstrations as part of pedagogy for leadership and managerial skills acquisition for undergraduate tourism and hospitality students. These can be achieved through integrated field visits by partnership with firms within the industry.

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Contact email: vicom3000@gmail.com

Implementation of Blended Learning in Hospitality Education and Training in Kumasi Technical University: Challenges and Recommendations for Success

Evelyn Impraim, Kumasi Technical University, Ghana
Lois Commey, Kwame Nkrumah University of Science and Technology, Ghana
Harrietta Akrofi-Ansah, Kumasi Technical University, Ghana
Vida Commey, Kumasi Technical University, Ghana

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Abstract

It is evident that several higher learning institutions in Ghana have implemented blended learning, nonetheless little empirical knowledge has been established regarding the effectiveness, benefits and challenges of the new learning model. This study employs a quantitative research design to develop empirical narratives that address the research gap portrayed above. Data were gathered from hospitality students through five-point Likert scale questionnaire. Descriptive statistics (mean, standard deviation and relative importance ranking) are used as the data analysis approach. Cost and quality of internet services reduced the participation of students in forums and discussions on virtual learning platforms. Factors such as limited learning materials, limited student-lecturer engagement as well as outsourcing of assignments and quizzes were key challenges that impede the learning outcomes of hospitality blended learning across universities. Enhancing the effectiveness of blended learning outcomes, hospitality education requires strategic measures such as partnership with mobile network and internet service providers. This recommendation will practically remedy the implications of internet cost on effectiveness of blended learning model. Strategic partnership with mobile and internet service providers will enable universities offer dedicated as well as cheap internet services to students which in turn will boost their participation in virtual classrooms.

Keywords: Blended Learning, Hotel Training, Skill Acquisition

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1. Introduction

Blended learning has several comparative advantages in contemporary times since it offers teachers, lecturers and students multiplier effects such as improved flexibility in teaching and learning, enhanced learner engagement, affordance, improved access to learning opportunities among others (Ozadowicz, 2020). The pedagogic method has been the traditional teaching and learning methodology over the past centuries. Nonetheless, literatures (Tang et al., 2023; Wuxue, 2023; Setiadi, 2021; Min et al., 2023; Vilo & Tan, 2023, Suryono et al., 2023 etc.) have suggested that; the practice of blending learning is gradually gaining momentum across the globe. Covid-19 pandemic in particular became the facilitator of blend learning which has now become an integrated teaching and learning framework for academic institutions across the globe. Ghana has over the past decade developed its digital infrastructures thereby making adoption and acceptance of technologically inclined teaching and learning models within the Technology Acceptance Model theoretical model relatively easier. The TAM advances two arguments that portray the acceptance of new models based on perceived benefits and challenges. Blended learning is commonly defined in literature as the integration of face-to-face and technologically moderated teaching and learning approaches (Ayuwardani et al., 2023). Blended-learning is typically achieved through conscious integration of some facet of traditional methods and digital media such as media, online teaching and learning, digital discussions and forums etc. Blended-learning approach offers a route or virtual learning opportunities for students across different academic fields. Thus, the adoption and integration of digital learning offers students the flexibility to combine work and academic work. Imperatively, blended-learning as stressed upon by Xu et al. (2020) provides students with different strands of opportunities such as enhanced engagement with peers, improved content appreciation etc. Despite its, rapid development and adoption rate, the effectiveness of blended learning among different classifications of students has been contentious. According to Thai et al. (2020), academic institutions often times do not implement blended-learning within the context of demographic variations of students. Thus, students between the ages of 18 and 35 years tend to be more adaptive and successful within the framework of blended-learning more than those above 35 years. According to Albeta et al. (2023), the utilisation rate of technologically inclined learning models among younger individuals tend to be more pronounced than those older individuals. Moreover, married and career students also find it somehow time consuming to blend their family and work-related duties and blending learning models. More so, the implementation of blended learning was more dominant among lecturers while students were left on the fringes. The narratives above clearly suggest that, the implementation of blended-learning in higher learning institutions may be significantly difficult for students. Hospitality education in particular is practically based. Thus, programs such as food and beverage, food development, hotel management, food technology etc. require more face-to-face and practical approach. Hence, successful and effective implementation of blended learning in hospitality education may be problematic (Wuxue, 2023). It is evident that several higher learning institutions in Ghana that offer hospitality education (Kumasi Technical University, Kwame Nkrumah University and Science and Technology, University of Cape Coast etc.) have implemented blended learning, nonetheless little empirical knowledge has been established regarding the effectiveness, benefits and challenges of this new learning model. Thus, the effects of blend learning on the effectiveness of teaching and learning practical-based academic programs such as hospitality has not been widely established in literature in the context of Ghana. This study sought to resolve the research gap and also make recommendations towards re-tweaking of the new teaching and learning approach for progressively positive outcomes.

2.1 Theoretical Model

Two theories including the Technology Acceptance Model and Institutional Theories were used as the underlying theories of the study.

2.1.1 Technology Acceptance Model

Technology Acceptance Model (TAM) was propounded by Davis (1985) and further developed by the same author in 1989 to provide a theoretical explanation to the factors that predict or drive the adoption of information technologies. The theory has its inception between employed in different academic fields to explain the adoption of technologies based on two major assumptions. The underlying assumptions of the model are 1) perceived benefits (usefulness) and perceived ease of use.

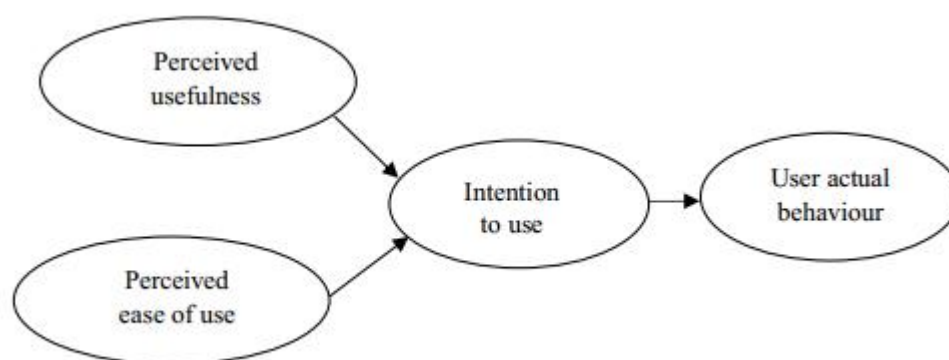


Figure 1: Technology Acceptance Model (Davis, 1989)

According to Davis (1985), the behavioural intentions of users (students and lecturers) towards new technologies (digital learning) is shaped by the benefits both stakeholders intend to derived from utilizing the technology. Thus, students are likely to accept blended learning if the perceived benefits such as flexibility, affordance, wide learning opportunities, better appreciation of content, fostered interactions of peers are optimized (Muller et al., 2023). The second assumption that influence intention to use is the perceived ease of use of blended learning. This assumption is explained by the factors that facilitate or impede the utilisation of blended learning. Thus, factors such as affordable internet data, constant availability of internet connectivity or network, usability of digital learning platforms, user support etc. are classified as the intervening factors that can facilitate or hinder the adoption rate of blended learning technologies. The TAM is without criticism. According to Min and Yu (2023), the user actual behaviour towards a new technology is not only influenced by perceived benefits or perceived ease of use. Thus, certain institutional principles, values and policies also shape the implementation of new technologically inclined teaching and learning approaches. This justified the application of institutional theory as the augmenting theory of the study.

2.1.2 Institutional Theory

Institutions are commonly defined as rules, norms, and beliefs that describe the reality of the academic institution, explaining what is and is not, what can be acted upon and what cannot (Hoffman,1999). Institutions are usefully viewed as performance scripts that provide stable designs for chronically repeated activity sequences, deviations from which are counteracted by sanctions or are costly in some manner (Jepperson, 1991). Organizations operate in a

setting where other institutions put some pressure on them; institutional environments are characterised by the elaboration of rules and requirements to which individual organizations must conform if they are to receive support and legitimacy (Scott, 1995). Institutional arrangements are fundamental to understanding organization because of the ways in which they tend to be reproduced without much reflection in practice (Muller et al., 2023). In adoption of blended learning, institutional theory helps us to understand how consensus is built around the effectiveness of blended learning and how policies, frameworks and practices associated with blended learning are developed and accepted (Jennings & Zandbergen, 1995). This theory is used to understand different types of external factors that force a higher learning academic institution to initiate or adopt a new practice such as blended learning. Therefore, this theory is used to link to the institutional drivers of blended learning models. Essentially, institutional policies, processes and frameworks set the strategic objectives and directions as well as ambitions (Alberta et al., 2023). In effect, management of higher learning institutions formulate and implement policy initiatives with expectations of changing the behaviour and attitudes of students and lecturers towards positive outcomes. Thus, innovative policies such as blended learning models may be implemented by universities with the ultimate goal of improving the quality of education.

2.2 Existing Literatures

Several studies have been carried out on blended learning across the globe especially during the peak periods and aftermath of Covid-19 pandemic. For instance, Lima et al. (2021) examined the effectiveness of blended learning within the context of technology acceptance model across ten public universities in Colombia. The study observed that, demography (age and marital status), internet affordability and network coverage were the two dominant factors that affected the effectiveness of blended learning in those ten universities. Internet availability among students in urban centers were positive (high) hence, such students were able to adapt effectively to blended learning than those in rural areas with limited internet accessibility. Regarding age, adaptability rate among students between the ages of 18 and 40 years was 42.8% higher than those above 40 years. Similar observations were made in the studies of Xu et al. (2020); Zimba et al. (2021) and Raes et al. (2020) where younger students had higher adoption rate than older students. These studies explained that, younger students were technologically savvy hence found little difficulties in utilizing online learning comparative to their older colleagues. Moreover, Lima et al. (2021) and Gao et al. (2020) found that, adaptation to digital learning was lower among married and career students than single and non-career students. According to both studies, married and career students often times experience marital and career role conflicts hence they find it extremely difficult to adapt to digital learning under such circumstances. These studies observed that, the submission rate of assignments as well as participation in online quizzes among married and career students were 31.09% lower than single and non-career students. Although Saboowala and Mishra (2021), Chiu (2021) and Muller and Mildemberger (2021) observed that, blended learning offered some level of flexibility in teaching and learning at universities. Nonetheless, the effectiveness of blended learning was low in terms of learning outcomes. Chiu (2021) in particular observed that the rate of cheating in terms of assignments, term papers and online quizzes were very high. Thus, 65% of students who were engaged in the study of Chiu (2021) often times outsourced their term papers and online assignment to consultancy firms. Another 32% also confessed on seeking help from their colleagues during online assignments. These events as reported by Chiu (2021) implicate the quality of teaching and learning outcomes.

3. Materials and Methods

The study adopted quantitative research design as well as explanatory research approach. The choice of these methods was premised on the fact that, the study intended to rely on a more scientific approach that led to research findings that were mathematically and statistically verifiable. Application of quantitative research design in particular enabled the study adopt an unbiased data collection approach (questionnaire) which was based on measurement items that were already established in literature (Mehrad & Zangeneh, 2019). Moreover, application of explanatory research approach enabled the study answer research question and also determine the predictors of effective blended learning in a more scientific approach (Mohajan, 2020). The population of the study consisted of hospitality postgraduate students sampled from three universities (Kumasi Technical University, Kwame Nkrumah University of Science and Technology and University of Cape Coast). These universities were chosen because of they have implemented blended learning models in tourism and hospitality programs. The sample size of the study (286) was determined through census and head count of hospitality students in the aforementioned universities. Sampling or selection of the participants was based convenience sampling. Data of the study variables were gathered through five-point Likert scale questionnaire. Reliability and validity of the measurement items will be done through Cronbach Alpha analysis. Descriptive statistics (mean and standard deviation) were used to measure the central tendencies of the responses which were used to measure the study constructs. Statistical inferences through bootstrapping technique was used to determine the statistical effect of certain predictors on effectiveness of blended learning model. Statistical Package for Social Science was used as the analytical software.

4.1 Results and Discussions

4.1.1 Demography of Respondents

Table 1 shows the data on the demographic profile of the respondents.

Characteristics	Frequency	Sampled %
Gender	286	100
Male	108	37.78
Female	178	62.22
Age (Years)	286	100
18-30	77	27.27
31-40	109	38.11
41-50	69	24.12
51-60	33	11.54
Career/employment status	286	100
Not employed (non-career student)	69	24.12
Employed (career student)	217	75.88
Years of experience with blended learning	286	100
Less than 1 year	77	26.92
1-2 years	162	56.65
Above 2 years	47	16.43

Marital Status	286	100
Married	209	73.08
Not married (never married, divorced, widowed, separated)	77	29.92

Source (Field Data, 2024)

Table 1: Demography of Respondents

Results in Table 1 shows that 62.22% and 37.78% of the respondents were females and males respectively. The data clearly gives an indication that women participation in hospitality education is on the ascendency in Ghana. The results further show that 38.11% of the respondents were between the ages of 31 and 40 years. It can also be seen that 27.27%, 24.12% and 11.54% of the respondents were between the ages of 18 to 30 years, 41 to 50 years and 51 to 60 years respectively. The data implies that, the age of majority of postgraduate hospitality students is clustered between 31 and 50 years. The inference drawn from this data is that, majority of postgraduate hospitality students are relatively old. Inference from Table 1 shows that 75.88% and 24.12% of the respondents were career and non-career students respectively. This implies that the affordance and flexibility of blended learning is offering vast opportunities for individuals in the working class to enroll in hospitality education in higher learning institutions. Majority (56.65%) of the respondents had used blended learning for at least between 1 and 2 years. Another 26.92% and 16.43% of the respondents had less than 1 year and above two years usage experience of blended learning respectively. Table 1 further shows that 73.08% and 29.92% of the respondents were married and unmarried students respectively. The demographic information about the respondents are expected to help the study ascertain the effects of variables such as age, marital status and career status on students' adaptation to blended learning.

4.2 Effectiveness of Blended Learning

Table 2 shows the measure of central tendencies of the statements which were used to explore the effectiveness of blended learning on a five-point agreement Likert-Scale.

Measurement Items (statements)	Mean	SD
I have sufficient knowledge on blended learning	2.04	1.71
I am able to log onto the virtual/digital classroom platform with ease	3.18	1.21
I am able to upload my assignments onto the virtual/digital classroom platform with ease.	3.10	1.59
I am able to participate in forums and discussions on the virtual/digital classroom platform with ease.	3.43	1.52
I participate in online quizzes with ease.	3.27	1.62
Blended learning generally as effective as the face-to-face traditional teaching and learning method.	2.01	1.96
I often times outsource my assignments and quizzes.	3.61	1.28
Blended learning has increased access to learning for career students	4.63	0.73
Blended learning has increased learning engagement with lecturers.	2.16	1.68
Blended learning has increased learning engagement with colleagues/peers.	4.28	0.93
Blended learning has increased flexibility (e.g., it enables me to learn on my own time and schedule).	4.31	0.91

Scale: 1=Strongly disagree 2=Disagree 3=Neutral 4= Agree 5= Strongly agree

Source (Field Data, 2024)

Table 2: Descriptive Statistics: Effectiveness of Blended Learning

The results show that majority (mean= 2.04) of the respondents disagreed on having sufficient knowledge on blended learning. This implies that, blended learning as an integrated learning model is entirely new to majority of the postgraduate hospitality students who participated in the study. This finding connotes to the empirical findings of Saboowala & Mishra (2021) and Chiu (2021). Essentially, blended learning is a new model that diffused to several parts of globe due to the implications (lock-downs, homestays, mobility restrictions etc.) on the educational sector. The model of blended learning is essentially new within the context of Ghana; hence it is not surprising when majority of the respondents had little knowledge on the model as integrated into hospitality education. The results also show that majority of the respondents fairly agreed on being able to log onto (mean= 3.18) and also upload their assignments (mean= 3.10) and term papers on virtual learning platforms implemented by their respective universities. Despite being new, students are progressively offered orientations on how to adapt to blended learning. Thus, students are taken through training on how to log on, upload assignments and also participate in forums. This explains why majority of the respondents fairly agreed to the fact that they are able to participate in forums, discussions (mean= 3.43) and online quizzes (mean= 3.27). Nonetheless, majority of the respondents disagreed on the comparative advantage (effectiveness) of blended learning over conventional face-to-face methodology. Studies such as Tonbuloglu and Tonbuloglu (2023) have raised contentions on the effectiveness of blended learning relative to face-to-face learning. According to Tonbuloglu and Tonbuloglu (2023), several students outsource their assignments, quizzes and examinations to consultants due to low level of monitoring and supervision on virtual teaching and learning platforms which are integrated within blended learning models. It was therefore not surprising when majority of the respondents in this study fairly agreed that they also outsource their assignments and quizzes to consultants. This setback of blended learning implicates the quality of teaching and learning outcomes (Tonbuloglu & Tonbuloglu, 2023; Min & Yu, 2023). Reduction of interaction time between lecturers and students was reported as one of the drawbacks that implicates the effectiveness of blended learning. This observation was also observed in the study when majority of the respondents disagreed (mean= 2.16) that blended learning increase learning engagement with lecturers. Blended learning is often delivered on virtual platforms. Hence the physical distance between students and lecturers makes it extremely difficult for both parties to interact. Students may resort to phone calls and e-mails to reach out to their lecturers. Nonetheless, busy schedules of the latter may implicate the effectiveness of phone and e-mail communication between the two thereby implicating progress, monitoring and supervision of students. With increased accessibility, majority of the respondents agreed that blended learning has increased both access to hospitality education among career individuals (not different from existing literatures such as Setiadi (2021) and Zimba et al. (2021). Enrollment in hospitality education has increased of the last five years in the three universities due to implementation of blended learning models. Thus, majority of postgraduate students are career individuals who are actively engaged in the private and public sectors. Blended learning models through online learning has made it possible for such individuals to enroll and acquire hospitality education based on the affordance and flexibility that the contemporary learning model offers. From the results and narratives above, it can be said that mean=4.28) and improved flexibility of learning schedules (mean= 4.31). These observations are the general effectiveness of blended learning as integrated within hospitality education is low. The next section of the analysis focuses on the challenges that impede effectiveness of blended learning.

4.3 Barriers/Challenges to Effective Blended Learning

Table 3 shows the measure of central tendencies of the statements which were used to explore the challenges that impede effectiveness of blended learning on a five-point agreement Likert-Scale.

Measurement Items (statements)	Mean	SD
High cost internet service (e.g., the cost internet service impedes my ability to fully participate in forums and discussions)	4.44	1.56
Unreliable internet service (e.g., quality of internet service at my area is poor thereby affecting my usage of the virtual classroom).	4.21	1.44
Unavailability of technical support on virtual learning platforms	4.43	1.57
Inadequate institutional support (e.g., timely responds to technical challenges on virtual learning platforms)	4.41	1.57
Role conflict (e.g., I encounter family and work-related work conflicts which impede my participation in forums and discussions)	4.42	1.58
Complexities of the user interface of the digital learning platform (e.g., I find it difficult to navigate the online/virtual learning platform).	4.43	1.57
Cost of travelling to campus for face-to-face schedules is very high since I live in a remote area.	4.42	1.56
My location is very far from campus so I am not able to fully participate in face-to-face aspect of the blended learning approach.	4.41	1.58
Access to learning materials on virtual learning platform is limited	4.40	1.57
Interactions with lecturers is very difficult and limited.	4.29	1.49

Scale: 1=Strongly disagree 2=Disagree 3=Neutral 4= Agree 5= Strongly agree

Source (Field Data, 2024)

Table 3: Descriptive Statistics: Challenges That Impede Effectiveness of Blended Learning

High cost of internet (mean= 4.44) and complexity of user interface (mean= 4.443) were ranked as the 1st and second major challenges that impede effectiveness of blended learning which is implemented through virtual classrooms. Internet is seen as the spine of virtual learning in recent times. Hence cost as elaborated in the technology acceptance model serves as a major hinderance to user behaviour on virtual learning platforms. Although the institutions through its policies as assumed in the institutional theory may implement blended learning as an innovative learning model to expand its accessibility, nonetheless, issues such as cost hinders the utilisation rate of virtual learning as encountered by the respondents in this study. Majority of the respondents were relatively old. Hence their inclinations to technologically inclined learning models seem to be low (Raes et al., 2020). Hence complexities in the user interface of virtual learning platforms reduces log-on rates, contributions to discussions and forums as well as participation in online quizzes. Older students with little knowledge on websites, mobile applications, virtual learning platforms find it somehow difficult navigating such platforms thereby limiting their participation within the framework of blended learning (Tang et al., 2023). Unreliable internet (mean= 4.21), unavailability of technical support (mean= 4.43), role conflicts (mean= 4.42), inadequate institutional support (mean= 4.41), lack access to learning materials (mean= 4.40), reduced interactions with lecturers (mean= 4.29) and cost of traveling to campuses (mean= 4.42) were also cited as major challenges that impede effectiveness of blended learning. As already discussed, the spine of blended learning is inherent on internet service. Hence the entire model is expected to encounter challenges when there are issues of poor internet connectivity. Although internet connectivity in urban areas is good than those in rural areas. Nonetheless, some remote students in rural communities with poor internet connectivity suffer delays in

terms of their participation in forums and discussions on virtual learning platforms as well as submission of assignments and participation in online quizzes. Such students often times seek help from their colleague in urban centered regarding participation in assignments and forums. This inherently impede the effectiveness, efficiency and quality of blended learning outcomes. Unlike campus education where students have free unlimited access to libraries and learning materials, blended learning has some limitations in this regard. Majority of additional learning materials are source from closed source online repositories (example, Jstor, Sage, Francis and Taylor, Emerald etc.) which require some access fees and institutional log-in requirements. Limited access to academic materials also impedes the scope learning which translates into reduced quality of blended learning outcomes (Muller et al., 2023). Role conflict is one of the major challenges that career as well as married students face. Combination of work and family related duties with academic roles often times lead to time-based role conflicts. The expectations from both work and family roles often times lead to delayed submission of assignments and participation in forums and discussions on virtual learning platforms.

4.4 Predictors of Effective Blended Learning Outcomes

The study also sought to determine the statistical effect of certain predictors on the effectiveness of blended learning approach. The results provided in this section are based on standardized findings through bootstrapping inferential statistics. The results under this section are essentially presented in Table 4.

Paths	Effect β	SD	T-statistics	P-values	95.0% Confidence Interval	
					<i>Lower bound</i>	<i>Upper bound</i>
Age -> E-BLM	-0.261	0.072	-4.293	0.000	0.597	1.653
Marital status -> E-BLM	-0.269	0.109	-5.192	0.000	0.973	1.286
Career status -> E-BLM	-0.310	0.132	-7.302	0.000	0.529	0.946
Internet quality -> E-BLM	-0.224	0.212	-4.000	0.000	0.477	0.822
Internet cost -> E-BLM	-0.434	0.142	-8.051	0.002	0.885	1.318
Institutional support -> E-BLM	-0.341	0.158	-5.886	0.000	0.431	0.956
User friendliness of virtual classroom -> E-BLM	-0.360	0.172	5.917	0.000	0.785	1.028

Note: E-BLM= Effectiveness of Blended Learning Model Source (Field Data, 2024)

Table 4: Paths of Causal Estimations Using Bootstrap

Results from the Table 4 shows a statistically significant inverse relationship between age and effectiveness blended learning ($\beta=-0.261$, $SD=0.072$, $t=-4.293$, $P=0.000$). Essentially, the observed β of -0.261 implies that, increase in age of the postgraduate predicted 26.1% decrease in effectiveness of blended learning. As already discussed, older individuals tend to have challenges with new technologies hence it is not surprising to see an inverse effect of age on effectiveness of blended learning. Again, the results in Table 4 shows a statistically

significant inverse association between marital status ($\beta = -0.269$, $SD=0.109$, $t=-5.192$, $P=0.000$), career status ($\beta=-0.310$, $SD=0.132$, $t=-7.302$, $P=0.000$), internet quality ($\beta=-0.224$, $SD=0.212$, $t=-4.000$, $P=0.000$), internet cost ($\beta=-0.434$, $SD=0.142$, $t=8.051$, $P=0.000$), institutional support ($\beta=-0.341$, $SD=0.158$, $t=-5.886$, $P=0.000$), user friendliness of virtual classroom ($\beta=0.-360$, $SD= 0.172$, $t= -5.917$, $P=0.000$) and effectiveness of blended learning model. Results from the inferential statistics imply that, internet cost and reliability are major issues that implicate the effectiveness of blended learning. Moreover, lack of institutional support such as delayed responses on various online learning platforms also caused decline in the effectiveness of blended learning model. These are actual challenges within the blended learning frameworks of the three universities which must be remedied to achieve progressive improvement in learning outcomes.

5. Conclusion

Blended learning has become an integrated learning model which is widely implemented by universities across Ghana. Despite its affordance and flexibility, there are still complex challenges that must be addressed to enhance its effectiveness in terms of learning outcomes. Demographic characteristics such as age, marital status and career status are major predictors of the effectiveness of blended learning. Thus, older students with little knowledge on virtual learning, web browsing and internet search encounter challenges such as logging in to virtual learning classrooms, navigating virtual learning classrooms, participating in discussions and forums on virtual learning classroom, participating in online quizzes and submission of term papers and assignments. Married as well as career students also encounter role conflicts which impede their effective participation in forums, discussions and online quizzes. Cost and quality of internet services also reduce the participation of students in forums and discussions on virtual learning platforms. Factors such as limited learning materials, limited student-lecturer engagement as well as outsourcing of assignments and quizzes are key gaps that also impede the learning outcomes of hospitality blended learning across universities. Outsourcing in particular is attributed to lack of security and verification integrations in virtual learning platforms. Hence students are able to share their log-in credentials with consultants who performance and submit academic tasks such as assignments and quizzes on behalf of the latter. Enhancing the effectiveness of blended learning outcomes hospitality education requires strategic measures such as partnership with mobile network and internet service providers. This recommendation will practically remedy the implications of internet cost on effectiveness of blended learning model. Strategic partnership with mobile and internet service providers will enable universities offer dedicated as well as cheap internet services to students which in turn will boost their participation in virtual classrooms. From the national point of view, it has become imperative that the government expands internet service and coverage across the country. The government must acknowledge that, blended learning has become an integral learning model which is utilized by universities in the country. Hence it becomes imperative to further develop the internet capacity and coverage to enhance internet access to virtual students in remote areas. Universities must integrate security features for verifications such as visual cryptography to authenticate log-in to their virtual learning platforms. This will remedy impersonations on their respective virtual learning platforms. Moreover, implementation of visual cryptography will also remedy remote outsourcing of assignments and quizzes. The study could not explore the perspectives of lecturers who are key stakeholders in the implementation of blended learning model. Future studies must focus on exploring the views and opinions of lecturers to expanded the narratives on the effectiveness and challenges of blended hospitality education learning model.

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Contact email: vicom3000@gmail.com

The Impact of Electricity Blackouts on Academic Activities in South African Higher Institutions

Glory Moroosi Pitikoe-Chiloane, Tshwane University of Technology, South Africa
Hilda B. Dondolo, Tshwane University of Technology, South Africa

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Abstract

It is evident that energy plays a pivotal role in the quality of individual's everyday life. As humans rely entirely on energy for their individual lives and efforts. The availability of energy in every sector of the economy is connected to an effective high level of living. The education sector utilises energy in the majority of activities. As the emerging technology usage is expanding in the education environment Thus, it is important that the energy supply is sufficient to the needs of the developing electrical infrastructure employed in the educational system. The study investigated the impact of electricity blackouts on academic activities in higher institutions. The study employed the qualitative approach and the quantitative approach to describe the biographical information of the participants. The sample comprised of (23) students who were conveniently sampled. The snowball procedure was used. Data collection was implemented through online interviews and the thematic analysis procedure was used for data analysis. The study findings showed that most students were concerned with the issue of loadshedding as their academic activities were affected. The recommendations indicated that students must always have backup systems so that they are able to study anywhere and anytime. The institutions management must continually plan in advance the alternative sources of creating energy to safeguard continuous supply of electricity in the college for academic activities. There should be continuous supply of electricity in the lecture halls, computer laboratories, libraries, lecturer's offices and student's residence, so that teaching learning can take place without any hindrance.

Keywords: Impact, Loadshedding, Electricity Blackouts, Academic, Activities, Higher Institutions

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Introduction

Electricity plays a pivotal role in modern life because it is a requirement for obtaining the level of output and quality of life experienced in developed states (Barnes, 2014). Access to energy is significant for growth and minimising poverty (Sargsyan, 2021). Load shedding is the procedure of deliberately minimising the sections of an electrical supply to decrease the pressure on the electrical grid or network. Sometimes load shedding occurs without any notice. In other instances, the public is notified in advance so as to plan their daily activities. To avoid the electrical grid breakdown, it is essential for load shedding implementation. As the electrical grid pressure may be triggered by electricity supply interruptions (Lawson, 2021). Yet, limited literature investigates the effect and result of blackouts in countries and also the how policymakers are attending to the matter. Again, verification of the effects on blackouts on people and household results are minimal, thus further examination is required in this subject (Gertler et al., 2017).

Blackouts can differ according to their occurrence and time and they can be explained in numerous ways such as planned and unplanned. Immediate breakdowns are classified as unplanned, leading to blackouts that are taking hours for the electricity to be restored. While planned outages are scheduled in advanced and the public is notified on time. Loadshedding is a planned outage that is scheduled for certain hours or periods. Electricity generation shortages, electricity grid overload, lack of electricity facilities repairs and poor conditions of workmanship contribute to blackouts (Gertler et al., 2017). In addition, illegal electricity connections are equivalent to stealing electricity and lead to more and frequent loadshedding (Jamil, 2013; Gertler et al., 2017).

Literature has indicated that unplanned electricity outages can produce a huge economic and social expenses (Anderson and Dalgaard, 2013; Harish et al., 2014; Hensher et al., 2014). Loadshedding negative effects impacts production efficiency (Carlsson et al., 2020; Kazmi et al., 2019), affects health (Byrd and Matthewman, 2014; Gehringer et al., 2018; Ndaguba, 2017), contamination (Pretorius et al., 2015), education (Lawson; 2021) and intake performance (Abi Ghanem et al., 2016). These blackouts are the results of energy systems breakdown due to high demands and increasing insecurities in energy supply (Byrd and Matthewman, 2014). In addition, the energy supply may escalate dangerously and risky due to political insecurities, peak oil, privatisation, infrastructure collapse, global warming and the move to renewable energy materials (Byrd and Matthewman, 2014).

Network instability collapses the communication lines, network tools and convertors. Sometimes the network instability collapses due to natural causes or stealing of network parts, copper and convertor oil. These challenges may occur in areas with minimal or no security (Burney, Rosamond, Naylor and Sandra, 2013). Planned maintenance are necessary to avoid the electricity system supply overload, rearrange the network structure and to improve energy lines and tools. However, these supply side elements can be solved by improving and growing the energy grid system (Besant-Jones, 2006).

Furthermore, the distribution of electricity is a political matter because the government plays a significant part in the energy sphere (Cohen, 2006). Political misuse promotes regular blackouts that hinders the smooth running of teaching and learning (Harish, Morgan and Subrahmanian, 2014). Min and Golden revealed that in Indian politicians in Uttar Pradesh encourage the stealing of electricity with the hope of influencing elections. Olukoju, 2004 mentioned that Nigerian government does not act promptly in preserving the electricity

infrastructure, instead individuals are paying bribes for service delivery. Which ultimately negatively impacts the smooth delivery of numerous departments especially the education sectors.

Lawson (2021), Pretorius and Burger (2015) studies indicated that several countries such as Cyprus, England, Iceland, India, Sudan, Turkey, Ukraine, Chile, China, United States and Indonesia to quote a few experienced huge blackouts. Several developing states are still experiencing a shortage of access to reliable energy supply because of deteriorating infrastructure, blackouts and high economy costs (Sargsyan, 2021).

Similarly, loadshedding is a common challenge facing the South Africans on a daily basis affecting the educational institutions, other departments and households (Goldberg, 2015). The periodic loadshedding started in 2007 and 2008 when Eskom was unable to control the increasing demand for electricity without executing load shedding. Sadly, Eskom abandoned the maintenance for years (Van der Nest, 2015), which led to Eskom numerous infrastructure breakdown at their plants and shutting down several plants that supply the electricity grid. All these Eskom challenges headed to frequent black outs in 2014. Sometimes blackouts can be caused by weather (Lawson, 2021). Load shedding has various phases of blackouts strains known as stages, as the electricity networks are overloaded. Eskom increased the loadshedding stages in areas which varies from two to four hours (Lawson, 2021).

Background

Onwuegbuzie and Ojo (2021) study findings stated that several students complained about the frequent and lengthy loadshedding that negatively affects their studies and the use of technology devices during online classes. Load shedding greatly impacts students by disrupting their studies especially at night irrespective of their socio-economic classes (Bwalya Umar et al., 2022; Babajide et al., 2016). In addition, students mentioned that due to loadshedding they are unable to study at night and end up sleeping. They fall behind with their studies and unable to cope on their own. Although, distance learning offer students flexible learning but lack of electricity supply due to loadshedding negatively impacts the students learning (Gurajena et al., 2021; Samsuri et al., 2014).

The findings of Mwila et al. (2021) and Omodan and Ige (2021) reported that students' online studies are impacted negatively due to frequent loadshedding and network connection, which is an indication of the imbalances to the right to education. Students are unable to prepare and learn for their assessments, they lack behind in their studies especially during numerous load shedding every day (Bwalya Umar et al., 2022). Lodhi and Malik (2013) findings indicated that loadshedding negatively affected the daily routines of households in Pakistan, students were unable to complete their academic activities and not effectively learning.

Phiri and Phiri (2017) study findings stated that the load shedding results on students in Zambia is far above the domestic phase. Load shedding negatively affects the integration of Information Communication and Technology policy in the country. As such, ICT teaching and learning, activities and resources are affected as they rely on electricity (Abagi and Odipo, 1997). In addition, the educational institutions tuck shops are most of the time not capable of selling or providing food and school nutrition to students due to power cuts (Bwalya Umar et al., 2022). In support of the previous authors, Pasha and Saleem (2013) revealed that students in Pakistan are challenged with the completion of their academic activities, homework, projects, getting ready to go to school/college/ university and arriving late due to load shedding.

Blackouts impact revenue contributing to departments and households and multiply functioning costs for various sectors specifically the businesses in South Africa (Goldberg, 2015), in addition to fiscal expenses power outages can create other costs to the public (Andersen and Dalgaard, 2013).

Furthermore, Praktijnjo et al., (2011) findings mentioned that most households especially students in South Africa encounter challenges of lack of relaxation during evening load shedding. Academic activities relying on electricity are suspended, leading to more energy utilisation through the time of electricity supply (Ngoma et al., 2018).

South Africa is experiencing this pandemic load shedding which has negative effects on the country. Although, some respondents mentioned that load shedding has positive results of enhancing businesses (Goldberg, 2015). Cissokho and Seck (2013) concur that load shedding does not globally negatively affect. Their study findings stipulated that load shedding in Senegal had a positive impact as it motivates improved management performs to alleviate the negative effect of load shedding.

Electricity Reliability

Reliability energy is a global challenge (Lawson, 2021). Reliability energy is a problem in developed and developing countries, numerous countries that have limited access to energy and together with those that experience excessive levels of access (Gertler et al., 2017; Lawson, 2021). Reliability may be significant in cities unlike to rural areas because of high population in cities, at the same time reliability may be less in cities due to challenges such as over congestion and electricity stealing (Allcott et al., 2016). Reliability plays a pivotal role in economic growth, even though there is not enough proof in this matter. In support, Meles (2020) study findings emphasises the significance of the electricity supply reliability. Their report indicated the monthly costs of the household monthly hours of blackouts. Also, the use of backup systems due to loadshedding influences interior air contamination and global warm.

According to the World Bank (2014; 2015; 2017) during the winter season the electricity reliability is weak led by recurrent blackout and emergency shut-downs. Thus, compelling households, colleges and universities to use alternative backup systems during load shedding for various things such as cooking, heating and lighting. Compared to summer, the loadshedding is minimal.

Load Shedding and Sustainable Development

Energy is one of the keystones of sustainable growth as it confirms the global admittance reasonable, consistent, maintainable and recent energy services by 2023 (The World Bank, 2015). UNESCO pointed out that Sustainable Development Goal (SDG) 4 is affected by electricity shortages. However, SDG 4 on education needs a reliable and affordable electricity to deliver quality education in the teaching and learning environment, physical infrastructure, teaching and learning equipment and human resources (The World Bank, 2017). Access to consistent electricity could help the teachers to integrate technology in their teaching, to enhance and clarifying the new content taught in the classrooms. Also, reliable electricity can assist the students by improving and providing sufficient hours to study (Cabraal et al., 2005; Lodhi and Malik, 2013). The positive use of energy projects contributes positively on education and health because better and advanced education and health systems enhance individuals' earnings (Barkat, 2003).

Energy Alternatives During Load Shedding

In Zambia, Kitwe's households and students replaced the energy supplies during loadshedding. For example, charcoal was used for lighting and cooking (95 %), portable generators used to power the electrical appliances (less than 1%). For lighting the replacement were candles and torches. Then 4% of the respondents used solar as an alternative source of energy during load shedding (Bwalya Umar et al., 2022). In the United Kingdom the findings revealed that respondents/students bought generators, candles, battery powered devices (Abi Ghanem et al., 2016). Also, in South Africa the most alternative system used during load shedding is the generators and other substitutions that are reliable for the respondents (Pretorius et al., 2015). Unfortunately, the higher institutions, households and individuals spend more on alternative backup systems (Pretorius et al., 2015), because they are compelled due to frequent blackouts (Goldberg, 2015).

In Ethiopia, households suffer more expenses on generators, candles, charcoal, firewood, gas (LPG) due to repeated load shedding (World Bank, 2015). In support of other studies, Goldberg (2015) study findings revealed that during load shedding the respondents are using LED lamps, backup lights and generators to mitigate the impact of load shedding. During load shedding individuals /students rely on their alternative sources such as generators or postpone their academic activities until the electricity returns (Gertler et al., 2017).

In Nepal the colleges, universities and hospitals are connected to the generators to mitigate the load shedding. Load shedding affects the higher institutions negatively during teaching and learning, teachers resort to traditional teaching using black and white board. During the lessons the students are unable to use LCD projectors and audiovisual aids. While colleges and universities use alternative systems during the lessons such as inverters and solar panels (Shankar, 2012).

Research Objective

The aim of the study is determining the impact of loadshedding on academic activities in higher institutions. The study addresses the following questions:

1. How do a learner and student residing in your household adapt to the irregular power supply caused by load-shedding to ensure uninterrupted study?
2. What role does technology play in mitigating the effects of load-shedding on their learning?
3. What are the specific challenges that they face during load-shedding when trying to engage in educational activities outside the classroom?
4. What innovative pedagogical approaches or teaching methods have you observed as a response to load-shedding, and how do they affect the learning experience?

Methodology

The study employed a qualitative approach that explains and analyse individuals and collective social behaviours, beliefs, minds and perceptions (Mc Millan & Schumacher, 2012). Again, the study used the quantitative approach to describe the biographical information of the participants.

Population and Sampling

The sample comprised of twenty-five (23) students who were conveniently sampled. The participation was intentional, relying on accessibility, convenience and eager to contribute to the study (Price et al., 2017). The Snowball sampling procedure was employed in this study (also referred as “chain-referral methods”). (Cohen, Manion and Morrison, 2018), with the intention of multiplying the sample size based on the chance that participants would suggest others via their social networks to participate in the study (Gideon, 2012). The online interviewing was used to collect data (James, 2016) and the semi-structured interview questions were asked to 23 participants. Ethical clearance and permission to conduct the study was obtained from the College management. The anonymity of the participants was kept private and confidential (Cohen et al., 2018). The participants were informed that their participation is voluntary, they are at liberty to withdraw at any given period.

Results

Descriptive Analysis

Respondents Gender

The demographics of the twenty-three (23) respondents such as the gender, age and the highest level of education is indicated in Figures below. Figure 1 displays the gender, out of the twenty-three (23) respondents, fifty-two percent (52.2%) were females and forty-eight percent (47.8%) were males and others preferred not to indicate their gender.

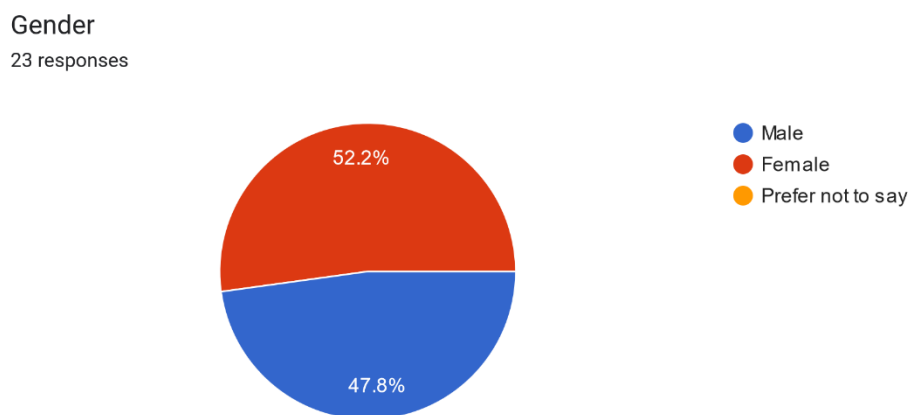


Figure 1: Gender of Respondents

Respondents Age

Table 1 indicated the respondents age as follows:

<i>Age</i>	<i>Percentage</i>
18yrs >	8.7%
27yrs>	13%
44yrs>	8.7%
51yrs>	13%

Table 1: Respondents Age

Respondents School Attendance

The results showed that the 30.4% of respondents do not have children who are currently attending school or university. Most of the participants (69.6%) have children who are attending school/university.

Do you have any children currently attending a school or university?
23 responses

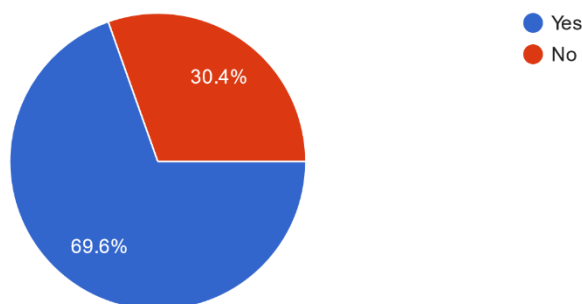


Figure 2: School Attendance

Respondents Level of Education

The findings revealed that most of respondents (17.4%) are studying Grade 12, NQF Level 4 (8.7%), Bachelor's degree (8.7%), Honours degree (8.7%) and Masters degree (4.3%).

The participants shared their challenges regarding loading as a barrier to learning. The most regular responses were grouped in themes. Some of the verbatim responses to the interview questions are categorised in themes and presented below.

Backup Systems to Loadshedding

Some respondents (n=18) indicated that in order for the learners and students to adapt to loadshedding, they have backup plans in place. It was mentioned that solar panels, solar lights and rechargeable bulbs are important during loadshedding. Some of the respondents indicated with sign of relieve that when it is loadshedding, the study time is not over. Parents and students ensure that they use their backup solar systems, inverters and Ups so that students are able to study without any challenges. While other students mentioned that they are using candles to study during load shedding. Participants pointed out that the solar panels, solar lightning and rechargeable bulbs make life easier during loadshedding, so that learners and students are able to continue with their studies. Although other backups need to be charged on time to avoid difficulties that can be encountered during loadshedding. Higher institutions in Nepal are connected to the generators to mitigate the load shedding (Shankar, 2012). Students use LED lamps, backup lights and generators to study during loadshedding (Goldberg (2015).

Technology

Most participants indicated the importance of technology and alternative sources used during loadshedding. The findings clearly stated that students check the load shedding schedule in

advance to manage time effectively. So that their technology tools such as phones and laptops are charged on time. Students revealed that they are able to communicate among themselves regarding their studies any clarification needed and what to cover in their studies through the use of technology tools. In order that no student misses the work due to loadshedding. Abi Ghanem et al. (2016) agreed that students in the United Kingdom bought generators, candles, battery powered devices and technology devices to be able to learn during blackouts.

Although, technology plays a very significance role irrespective of loadshedding. some of the respondents complained that sometimes they are unable to do their studies due technology difficulties. The students and learners cannot complete homework during loadshedding due to lack of network and electricity. There is no Wi-Fi for them to access the internet and all the work given. The electronic devices batteries die and learners and students are unable to access their work. They become clueless in knowing what to do and what work to complete where there is no electricity.

Results suggested that most of the respondents encounter various challenges when trying to engage in educational activities outside the classroom during loadshedding. It was shared that the students and learners cannot complete homework during loadshedding due to lost study time and poor lighting. Students and learners sleep during loadshedding and start to work after loadshedding. Most participants stated that they are unable to effectively study due to no light, they do not see clearly when the solar lights are not charged on time. They end up being bored, experiencing loss of concentration and having too much homework without enough practical work. Thus, it is difficult for students to study and complete homeworks during load shedding. Gurajena et al. (2021) and Samsuri et al. (2014) concurred that students are unable to study at night, they get bored and end up sleeping.

The participants comments showed that they are embracing Hybrid learning models such as synchronous online classes, asynchronous content and blended approach. The lecturers are employed innovative pedagogical approaches that minimised the challenges impacting negatively on academic activities. Lectures upload online materials, deliver lectures, provide pre-recorded lessons, online resources and self-paced learning materials that students access anytime irrespective of the load shedding. Digital learning makes teaching and learning enjoyable and easy during load shedding. However, respondents shared that most of the time loadshedding disturbs the online teaching and learning. The findings are supported by Onwuegbuzie and Ojo (2021); Mwila et al. (2021), Omodan and Ige (2021) and Bwalya Umar et al. (2022) stating that loadshedding affects the use of technology tools during online classes.

Nevertheless, few participants (n=2) indicated that they have not experienced any innovative teaching methods that positively impacted their learning experiences during loadshedding.

Absenteeism

Respondents stated that loadshedding affect them during loadshedding as they arrive late at the lecture rooms. The traffic lights are not operating and causes traffic. Conversely, other student implied that loadshedding does not affect them to be absent at school/university/college. Pasha and Saleem (2013) support the findings that students in Pakistan arrive late at the college due to blackouts.

Implications

Higher institutions need to plan ahead and have strategies in place, so as to mitigate the difficulties faced by students when learning their academic activities during loadshedding. Strategies such as provision of hybrid learning and provision of alternative backup systems that are in place at all times. So that students' academic studies are flexible, whereby students are able to study anywhere and anytime. The colleges/ universities management must continually plan in advance the alternative sources of creating energy to safeguard continuous supply of electricity in the college for academic activities. There should be continuous supply of electricity in the lecture halls, computer laboratories, libraries, lecturer's offices and student's residence, so that teaching learning can take place without any hindrance.

Conclusion

Load shedding is a hindrance to daily life, individuals need to adjust, plan in advance because they have to face it nearly every day. Literature has revealed that blackouts are expensive to manage and maintain. Higher institutions, households are obliged to have alternative backup systems almost daily, otherwise they will be left in the dark. Appropriate planning and arrangement in previous years could have assisted South Africa to mitigate the electricity challenges that are being faced currently (Pretorius and Burger, 2015).

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Contact emails: chiloanegm@tut.ac.za
moroesi.chiloane@gmail.com

Comparing Online Learning Experiences Between University Students With and Without Special Educational Needs During COVID-19

Yun Ting Lim, Nanyang Technological University, Singapore
Yong-Hwee Nah, Nanyang Technological University, Singapore
Mo Chen, University of Saint Joseph, Macao SAR

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Abstract

The aim of this study is to examine the online learning experiences of university students with Special Educational Needs (SEN), and how their experiences might differ from their typically developing peers. Fifty typically developing students (mean age = 22; 29 females) and 31 students with SEN (mean age = 22; 15 females) from a local university in Singapore participated in an online survey. Both groups reported significant increase in the proportion of online learning after the outbreak of COVID-19 pandemic. Both groups reported being moderately positive about their online learning experiences, with no significant difference between the groups (either before or after the outbreak). For both groups, Learning Activity Management System (LAMS), pre-recorded lectures, online finals/quizzes, live lectures, online assignments, and online tutorials were the common online learning formats. Laptop/desktop was the primary device used, and Zoom was the most preferred online learning software. The SEN group reported higher usage of technical accommodations. Accessibility was the top advantage of online learning reported by typically developing students while for students with SEN, it was flexibility. Lower social interaction was the top challenge encountered for both groups. These findings would be useful in making online learning more inclusive for everyone in university.

Keywords: Online Learning, Special Educational Needs, University Students

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Introduction

According to the World Health Organization (WHO), Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus (WHO, n.d.). Before the COVID-19 outbreak, the existence of online learning could be observed in relation to blended learning environments. These environments made use of both online learning and traditional face-to-face learning, maximizing the benefits brought about by each mode of learning (Vernadakis et al., 2012). During the first half of 2020, with the exponential rise in COVID-19 infection rates, many universities turned to online learning and adopted the use of video conferencing tools and digital platforms as substitutes for traditional in-class face-to-face education (Li & Lalani, 2020). Online learning is defined as the students' learning experiences in synchronous or asynchronous environments made possible by technology (Singh & Thurman, 2019). The use of video conferencing tools, online quizzes, and digital platforms are some of the methods used to facilitate online learning (Greener, 2021). Online learning facilitates the students' interactions with their instructors and peers, which is not restricted by the students' location at a point in time (Singh & Thurman, 2019). Other names for online learning include but may not be limited to web-based learning and e-learning (Maddison et al., 2017).

Distinguishing between online learning and some other closely related terms (e.g., remote learning, distance learning) is needed. Just like online learning, remote learning offers students some flexibility in terms of time and location (Biedroń et al., 2021). However, there is a slight difference between online learning and remote learning. For online learning, students and their instructors could be in the same classroom using digital materials, while remote learning would take place remotely without face-to-face contact with the instructor and their peers. Since the outbreak of the COVID-19 pandemic, remote learning has gained increasing popularity. Distance learning and remote learning are sometimes used interchangeably. Both enable learners to learn regardless of their locations (Moore et al., 2011). Unlike remote learning, distance learning usually happens asynchronously, and the learner is mainly responsible for his or her own learning (Greener, 2021). When compared with online learning, the commonality between online learning and distance learning is that learning materials are provided through digital channels (Greener, 2021). When ranking the three types of learning based on interactivity, distance learning generally involves the least interactivity while online learning would be ranked top (Greener, 2021).

With online learning becoming a pandemic reality, it would be useful to gain insights into university students' experiences with online learning. Existing studies have suggested that online learning has several advantages, such as accessibility, flexibility, and personalized learning offered (Adnan & Anwar, 2020; Dhawan, 2020; Koksal, 2020; Nambiar, 2020). At the same time, the shortcomings of online learning have also been further amplified, such as reduced social interaction with others (Adnan & Anwar, 2020; Dhawan, 2020; Nambiar, 2020; Son et al., 2020). These could be attributed to the restrictions and quarantine measures during the COVID-19 outbreak and the shift towards online learning was necessary to lower transmission risks. However, given that families and friends were the main sources of coping with stress and anxiety during the pandemic, this unprecedented period of separation has implications for the mental health of college students (Son et al., 2020). Other drawbacks of online learning included the fast pace of online classes (Nambiar, 2020), lack of motivation to participate in online classes (Adnan & Anwar, 2020; Nambiar, 2020; Son et al., 2020), physical and mental stress that have arisen due to online learning (Nambiar, 2020; Son et al., 2020), the overwhelming number of classes one has in a day (Nambiar, 2020), as well as the

lack of accountability, and distractions from social media, internet, and video games (Son et al., 2020).

As for students with Special Educational Needs (SEN), existing studies on online learning have been more geared towards K-12 students (Burdette et al., 2013; Kimmons & Smith, 2019). Burdette et al. (2013) noted that some states in the United States found it challenging to provide accommodations for students with SEN during online learning. This view was echoed by Kimmons and Smith (2019) whereby accessibility was a concern for students with SEN, especially since the lack of alternative text on images was prevalent for K-12 school websites, where the purpose of an alternative text is to make images accessible for users with visual impairment and without it, users might miss out on critical information.

Since there is limited documentation on the online learning experiences of university students with SEN, it remains unclear how well university students with SEN have been coping with this change. As such, this study aims to design an online survey to understand university students' experiences with online learning, with the focus on comparing the experiences reported by university students with SEN and those of typical development at Nanyang Technological University (NTU), Singapore. For this study, we define university students with SEN as having one or more of the following conditions: physical disabilities, sensory impairments (e.g., hearing impairment and vision impairment), diagnoses related to social or behavioural difficulties (e.g., autism spectrum disorder [ASD], attention deficit hyperactivity disorder [ADHD]), or learning disabilities (e.g., dyslexia). The rationale behind this definition was to be consistent with the conditions listed by NTU's Accessible Education Unit (AEU). This is because AEU assists NTU students with SEN by providing them with access to support services that would aid their learning. So, given that this study was focused on their online learning experiences, it would be appropriate to consider the conditions listed by the AEU.

Specifically, this study seeks to investigate the following seven research questions:

1. Was there any significant difference in the proportion of online learning versus face-to-face learning experienced in university before and after the COVID-19 outbreak for the two groups of students?
 - 1.1 Was there any significant difference in the proportion of online learning versus face-to-face learning experienced in university *before* the COVID-19 outbreak between the two groups of students?
 - 1.2 Was there any significant difference in the proportion of online learning versus face-to-face learning experienced in university *after* the COVID-19 outbreak between the two groups of students?
 - 1.3 Was there any significant difference in the proportion of online learning versus face-to-face learning experienced in university *before* and *after* the COVID-19 outbreak for the typically developing group?
 - 1.4 Was there any significant difference in the proportion of online learning versus face-to-face learning experienced in university *before* and *after* the COVID-19 outbreak for the SEN group?
2. Did the overall experiences with online learning differ between university students with SEN and those of typical development before and after the COVID-19 outbreak?
 - 2.1 Did the overall experiences with online learning differ *before* the COVID-19 outbreak between the two groups?
 - 2.2 Did the overall experience with online learning differ *after* the COVID-19 outbreak between the two groups?

- 2.3 Did the overall experience with online learning differ *before* and *after* the COVID-19 outbreak for the typically developing group?
- 2.4 Did the overall experience with online learning differ *before* and *after* the COVID-19 outbreak for the SEN group?
3. What were the most common online learning formats experienced by each group, respectively?
4. What was the device that was most often used for online learning for each group, respectively?
5. What technical accommodations were reported by each group, respectively?
6. What was the preferred online learning software or platform reported by each group, respectively?
7. What were the key advantages and challenges reported by each group, respectively?

Method

Ethical approval was obtained from NTU IRB prior to the implementation of this study. Participants' consent was required and obtained before their participation in the online survey. Parental consent was required for students who were at least 18 years old but below 21 years old. After parental consent was obtained, these students would then be directed to the survey questions.

Participants

In order to participate in this study, participants had to be current Full-Time NTU undergraduates. Fifty typically developing students (mean age = 22, SD = 1.4; 29 females) and 31 students with SEN (mean age = 22, SD = 2.3; 15 females) participated in the study.

Research Design

This study adopted a survey design. Data collection was conducted via an online survey delivered by Qualtrics. A convenience sampling approach was utilised.

Survey

The survey consisted of seventeen items (refer to Appendix). There were two screening items about whether they were current Full-Time NTU undergraduate, and if they had any diagnosed SEN (including physical, behavioural, learning difficulties). In addition, five demographics-related questions (i.e., year of study, age, gender, their school, and ethnicity) were asked. In terms of content-related questions, there were ten items. Firstly, participants were asked to compare the proportion of online learning versus traditional face-to-face learning they have experienced in university, as well as rate their overall online learning experiences in university before and after the COVID-19 outbreak (January 2020). Next, the online learning formats experienced in university, the primary type of device used for online learning in university, and whether there was any use of technical accommodations during online learning were asked. Participants were also asked to rank their preferences for different key online learning software or platform. Following that, they were also asked to rank the key advantages of online learning. Lastly, both groups of students were asked to rate the frequency of the key challenges experienced during online learning in university on a 100-point rating scale.

A quota of 50 participants was set up for each group of students in Qualtrics. Based on their responses to the screening item regarding whether they had SEN, they would be assigned to the respective group by the quota set in Qualtrics. This helped us to track the number of participants for each group and participants would be automatically redirected to the end of the survey after each quota was filled.

Procedures

Upon the IRB approval, we posted the recruitment information onto social media platforms for circulation and dissemination. Additionally, we sent the recruitment information to NTU's AEU for circulation and dissemination to students with SEN. University students who were interested in participating proceeded to click on the link and access the survey. The whole survey took no longer than 15 minutes and each participant was required to complete the survey only once at their own time and convenience.

Data Analysis

Descriptive analysis was conducted for all items. A *t*-test was conducted to see if there was a significant difference in terms of age between the two groups. A chi-square test was conducted to see if there was a significant difference in terms of gender composition between the groups. *t*-tests were also done for questions regarding the proportion of online learning versus traditional face-to-face learning experienced in university before and after the COVID-19 outbreak, their overall online learning experiences before and after the COVID-19 outbreak, and the frequency of the respective challenges they have experienced in university during online learning.

Results

Participants' Profile

A total of 81 participants took part in the study. As shown in Table 1, for the typically developing group, females made up 58% of the participants ($n = 29$); while for the SEN group, there was an equal representation of males and females ($n = 15$ respectively). A chi-square test of gender between the two groups showed no significant difference ($\chi^2 = .64, p = .43$). Most of the participants were aged 20-25 years with the mean age of 22 years old for both groups, with no significant difference ($t = -.49, p = .63$). For both groups, most of the participants were Chinese (90% and 87%, respectively), with no Malay participants. Participants in the typically developing group were roughly equally distributed across their years of study, while most participants in the SEN group were Year 1 or Year 2 students ($n = 22$; 71%). The typically developing group was mainly from the School of Social Sciences (SSS) ($n = 12$; 24%), Nanyang Business School (NBS) ($n = 9$; 18%), and the School of Humanities (SOH) ($n = 8$; 16%); while for the SEN group, it was mainly from the School of Humanities (SOH) ($n = 7$; 22.6%), Nanyang Business School (NBS) ($n = 5$; 16.1%), School of Mechanical & Aerospace Engineering (MAE) ($n = 4$; 12.9%), and School of Physical & Mathematical Sciences (SPMS) ($n = 4$; 12.9%). For the SEN group, the breakdowns of the diagnosis were: ADHD ($n = 12$), ASD ($n = 3$), behavioural ($n = 1$), dyslexia ($n = 4$), dyspraxia ($n = 1$), hearing impairment ($n = 7$), physical impairment ($n = 2$), and visual impairment ($n = 1$).

Table 1: Participants' Demographic Characteristics by Groups

	Typically Developing Group (n = 50)	SEN Group (n = 31)
Gender		
Male	20 (40%)	15 (48.4%)
Female	29 (58%)	15 (48.4%)
Prefer not to say	1 (2%)	1 (3.2%)
Age	Mean = 22 (1.4) Range: 20-25	Mean = 22 (2.3) Range: 19-28
Ethnicity		
Chinese	45 (90%)	27 (87%)
Malay	0 (0%)	0 (0%)
Indian	3 (6%)	2 (6.5%)
Others ^a	2 (4%)	2 (6.5%)
Year of Study		
Year 1	13 (26%)	11 (35.5%)
Year 2	12 (24%)	11 (35.5%)
Year 3	12 (24%)	4 (12.9%)
Year 4	13 (26%)	5 (16.1%)
School (including double major, double degree etc excluding minors)^b		
School of Art, Design & Media (ADM)	1 (2%)	0 (0%)
The Asian School of the Environment (ASE)	0 (0%)	1 (3.2%)
School of Civil & Environmental Engineering (CEE)	3 (6%)	1 (3.2%)
School of Electrical & Electronic Engineering (EEE)	5 (10%)	2 (6.5%)
Lee Kong Chian School of Medicine	1 (2%)	1 (3.2%)
School of Mechanical & Aerospace Engineering (MAE)	5 (10%)	4 (12.9%)
School of Materials Science & Engineering (MSE)	1 (2%)	0 (0%)
Nanyang Business School (NBS)	9 (18%)	5 (16.1%)
National Institute of Education (NIE)	0 (0%)	1 (3.2%)
School of Biological Sciences (SBS)	2 (4%)	1 (3.2%)
School of Chemical & Biomedical Engineering (SCBE)	0 (0%)	0 (0%)

School of Computer Science & Engineering (SCSE)	1 (2%)	3 (9.7%)
School of Humanities (SOH)	8 (16%)	7 (22.6%)
School of Physical & Mathematical Sciences (SPMS)	3 (6%)	4 (12.9%)
School of Social Sciences (SSS)	12 (24%)	2 (6.5%)
Wee Kim Wee School of Communication & Information (WKWSCI)	2 (4%)	0 (0%)

Note. ^aThe two other reported ethnicity for typically developing students were Boyanese and Eurasian while for the SEN group, they were Burmese and Pakistani. ^bPercentage may not add up to 100% as participants were allowed to select multiple options for this question.

Experiences of Online Learning Before and After the COVID-19 Outbreak in Singapore

For participants in their first or second year of study who entered the university during the COVID-19 outbreak, they were not asked about the proportion of online learning versus traditional face-to-face learning they have experienced in university and their overall online learning experiences in university before the outbreak. As such, only 25 typically developing students and eight students with SEN answered the questions related to the proportion of online learning versus traditional face-to-face learning they have experienced in university and their overall online learning experiences in university before the outbreak. Specifically, the typically developing group reported an average proportion of online learning of 27% before the COVID-19 outbreak while the SEN group reported an average proportion of online learning of 15.4% before the outbreak, with no significant difference ($t = 1.39, p = .18$). The average proportion of online learning reported by the two groups went up to 66.9% and 70.6%, respectively after the COVID-19 outbreak. Further t -test results showed a statistically significant difference in terms of the proportion of online learning versus traditional face-to-face learning experienced in university before and after the COVID-19 outbreak, for the typically developing group, $t = -6.69, p < .001$, with a Cohen's d of 1.72, and for the SEN group, $t = -7.65, p < .001$, with a Cohen's d of 3.22. Since Cohen's d of 0.20, 0.50, and 0.80 are conventionally interpreted as a small, medium, and large effect size, respectively (Cohen, 1988), the increase in the proportion of online learning after the outbreak seemed to be essentially large as reported by both groups.

On a 100-point rating scale, before the outbreak both groups' experiences with online learning were moderately positive (see Table 2), with an average rating of 62.8 by the typically developing group and an average rating of 57 by the SEN group, with no significant difference, $t = .64, p = .53$. After the outbreak, the average rating of online learning experiences decreased to 57.9 for the typically developing group. In contrast, it rose to 58.5 for the SEN group, still moderately positive for both groups and no significant difference between the two groups, $t = -.11, p = .91$. Notably, there was no significant difference in the overall experiences with online learning in university before and after the COVID-19 outbreak, for both the typically developing group, $t = .84, p = .41$, and for the SEN group, $t = -.17, p = .87$.

Table 2: Comparison of the Proportion of Online Learning and Overall Online Learning Experiences Between the Two Groups Before and After the COVID-19 Outbreak

Questions	Typically Developing Group	SEN Group	Independent samples <i>t</i> -test
What proportion of online learning vs. traditional face-to-face learning have you experienced in university <u>before</u> the COVID-19 outbreak (Jan 2020)?	Mean = 27 (25.5) (n = 25)	Mean = 15.4 (17.3) (n = 8)	<i>t</i> = 1.39 <i>p</i> = .18
Overall, how would you rate your experiences with online learning in university <u>before</u> the COVID-19 outbreak (Jan 2020)?	Mean = 62.8 (25) (n = 25)	Mean = 57 (19.9) (n = 8)	<i>t</i> = .64 <i>p</i> = .53
What proportion of online learning vs. traditional face-to-face learning have you experienced in university <u>after</u> the COVID-19 outbreak (Jan 2020)?	Mean = 66.9 (20.5) (n = 50)	Mean = 70.6 (17) (n = 31)	<i>t</i> = -.87 <i>p</i> = .39
Overall, how would you rate your experiences with online learning in university <u>after</u> the COVID-19 outbreak (Jan 2020)?	Mean = 57.9 (19.9) (n = 50)	Mean = 58.5 (23.7) (n = 31)	<i>t</i> = -.11 <i>p</i> = .91

Experiences of Online Learning: Formats, Primary Device, Technical Accommodations, and Preferred Software or Platform

As shown in Table 3, Learning Activity Management System (LAMS) (used to facilitate online collaborative learning activities), pre-recorded lectures, online finals/quizzes, live lectures, online assignments, and online tutorials were endorsed frequently by both groups. A range of 82% to 94% for the typically developing group, and a range of 80.6% to 96.8% for the SEN group reported having experienced these online learning formats.

Another similar point between the two groups was that laptop/desktop was the primary device used for online learning (n = 48 and n = 28, respectively). As for the use of technical accommodation during online learning, they were more likely to be utilized by the SEN group (n = 14), mainly through subtitles (n = 6), captions (n = 2), and larger font size (n = 2). Other technical accommodations reported by the SEN group were transcripts, headphones, speakers, and video speed changers.

Table 3: Students' Experiences of Online Learning: Online Learning Formats, Primary Device Used, and Technical Accommodation Used

Questions	Typically Developing Group (n = 50)	SEN Group (n = 31)
What type(s) of online learning in university have you experienced thus far? ^c		
Learning Activity Management System (LAMS)	47 (94%)	30 (96.8%)
Live Lectures	43 (86%)	27 (87.1%)
Online Assignments	43 (86%)	30 (96.8%)
Online Finals / Quizzes	44 (88%)	25 (80.6%)
Online Seminars	25 (50%)	17 (54.8%)
Online Tutorials	41 (82%)	30 (96.8%)
Pre-recorded Lectures	45 (90%)	30 (96.8%)
Webinars	12 (24%)	11 (35.5%)
Others ^d	0 (0%)	1 (3.2%)
What is the primary type of device do you use for online learning in university?		
Laptop / Desktop	48 (96%)	28 (90.3%)
Smartphone	0 (0%)	1 (3.2%)
Tablet / iPad	2 (4%)	2 (6.5%)
Do you use any technical accommodations (e.g., subtitles, special headphone, big font size, etc.) to support your online learning?		
No	45 (90%)	17 (54.8%)
Yes (participants were asked to specify) ^e	5 (10%)	14 (45.2%)

Note. ^cPercentage may not add up to 100% as participants were allowed to select multiple options for this question. ^dBlackboard Collaborate was indicated by one participant from the SEN group. ^eFor typically developing group, technical accommodations included subtitles (n = 3), transcripts (n = 1), earphones (n = 1), and video speed changer (n = 1). For the SEN group, technical accommodations included subtitles (n = 6), captions (n = 2), larger font size (n = 2), transcripts (n = 1), headphones (n = 1), speaker (n = 1) and video speed changer (n = 1). Percentage may not add up to 100% as the participants were allowed to specify multiple answers for this question.

As seen in Table 4, when asked to rank their preferred online learning software or platform among Blackboard/Blackboard Collaborate, Microsoft Teams, and Zoom, Zoom was the preferred online learning software for both groups of students (typically developing group: n = 32; SEN group: n = 19).

Table 4: Students' Preference for The Following Online Learning Software / Platform
(where 1 was the most preferred by students)

Question	Typically Developing Group (n = 50)			SEN Group (n = 31)		
	1	2	3	1	2	3
Please rank your preferences for the following online learning software / platform, where 1 is the most preferred software / platform.						
Blackboard/Blackboard Collaborate	n = 9 (18%)	n = 19 (38%)	n = 22 (44%)	n = 8 (25.8%)	n = 11 (35.5%)	n = 12 (38.7%)
Microsoft Teams	n = 9 (18%)	n = 20 (40%)	n = 21 (42%)	n = 4 (12.9%)	n = 13 (41.9%)	n = 14 (45.2%)
Zoom	n = 32 (64%)	n = 11 (22%)	n = 7 (14%)	n = 19 (61.3%)	n = 7 (22.6%)	n = 5 (16.1%)

Experiences of Online Learning: Advantages and Challenges

As seen from Table 5, when asked to rank the key advantages of online learning, accessibility was the top advantage of online learning endorsed by typically developing students (n = 21; 42%), followed by flexibility (n = 20; 40%), and personalized learning experience (n = 9; 18%). For students with SEN, the top advantage of online learning endorsed was flexibility (n = 16; 51.6%), followed by accessibility (n = 11; 35.5%), and personalized learning experience (n = 4; 12.9%).

Table 5: Students' Ranking for the Advantages of Online Learning
(where 1 was the most important advantage of online learning)

Question	Typically Developing Group (n = 50)			SEN Group (n = 31)		
	1	2	3	1	2	3
Please rank the following advantages of online learning, where 1 is the most important advantage of online learning.						
Accessibility	n = 21 (42%)	n = 20 (40%)	n = 9 (18%)	n = 11 (35.5%)	n = 9 (29%)	n = 11 (35.5%)
Flexibility	n = 20 (40%)	n = 25 (50%)	n = 5 (10%)	n = 16 (51.6%)	n = 13 (41.9%)	n = 2 (6.5%)
Personalized Learning Experience	n = 9 (18%)	n = 5 (10%)	n = 36 (72%)	n = 4 (12.9%)	n = 9 (29%)	n = 18 (58.1%)

From Table 6, we can see that lower social interaction was the top challenge encountered for both groups of students (an average rating of 66.3 for the typically developing group and an average rating of 68.3 for the SEN group). Following this was increased distraction/less engagement (an average rating of 61.4 for the typically developing group and an average rating of 61.7 for the SEN group), and difficulty in asking questions (an average rating of 39.8 for the typically developing group and an average rating of 38.9 for the SEN group) for both groups during online learning. In addition, no significant differences in the ratings of each challenge were found between the two groups. For typically developing students, other challenges included comprehension issues (n = 1) and worsening eyesight (n = 1). For students with SEN, other challenges were anxiety (n = 1), struggling to keep up with the content (n = 1), burnout (n = 1), difficulty in understanding the content (n = 1), and inferior teaching quality (n = 2).

Table 6: The Frequency of Each Challenge Encountered by Students During Online Learning

Question	Typically Developing Group	SEN Group	Independent sample <i>t</i> -test
Below are some challenges students may face during online learning in university AFTER the COVID-19 outbreak. Please rate how frequent you have experienced each challenge thus far where 0=Never and 100=All the time			
Accessibility Issues	Mean = 20.7 (17.4) (n = 49)	Mean = 29.6 (22.6) (n = 29)	$t = -1.79$ $p = .08$
Difficulty in asking questions	Mean = 39.8 (28.7) (n = 49)	Mean = 38.9 (31.7) (n = 30)	$t = .12$ $p = .91$
Increased Distraction/Less Engagement	Mean = 61.4 (26.4) (n = 50)	Mean = 61.7 (33) (n = 31)	$t = -.05$ $p = .96$
Lower Social Interaction	Mean = 66.3 (22.8) (n = 50)	Mean = 68.3 (31.7) (n = 31)	$t = -.29$ $p = .77$
Technical Issues	Mean = 31.4 (25.7) (n = 48)	Mean = 32.3 (25.9) (n = 31)	$t = -.15$ $p = .88$
Others ^f	n = 2 (4%)	n = 6 (19.4%)	-

Note. ^fFor typically developing students, other challenges included comprehension issues (n = 1) and worsening of eyesight (n = 1). For students with SEN, other challenges were anxiety (n = 1), struggling to keep up with the content (n = 1), burnout (n = 1), difficulty in understanding the content (n = 1), and inferior teaching quality (n = 2).

Discussion

This study was a preliminary endeavour to investigate the online learning experiences of typically developing university students and university students with SEN in one university in Singapore. With the data collected from this study, we found no significant difference between the two groups in terms of their ratings of online learning experiences before the COVID-19 outbreak, as well as after the outbreak. However, they both reported a significant increase in the proportion of online learning after the COVID-19 outbreak compared to before the outbreak. In other words, although the proportion of online learning versus traditional face-to-face learning experienced in university has increased for both groups, the overall ratings for their online learning experiences did not change drastically after the COVID-19 outbreak compared to before the outbreak. During the COVID-19 outbreak, online learning has become even more prominent such that it has become a panacea as suggested in a descriptive study by Dhawan (2020). On a positive note, from our study, students felt that the increased proportion of online learning experienced after the outbreak

was relatively comparable to what they had received before the outbreak. The significant increase in the proportion of online learning at least did not seem to have an extreme impact on their ratings of online learning. Some reasons for this could be due to the familiarity of online learning as a learning mode and how online learning enabled them to continue learning and achieve their academic goals even during the height of the unprecedented pandemic.

In terms of more specific experiences about online learning, Learning Activity Management System (LAMS), pre-recorded lectures, online finals/quizzes, live lectures, online assignments, and online tutorials were the most common online learning formats experienced by both groups. This was consistent with the report by Li and Lalani (2020) that many universities relied on video conferencing tools and platforms so that education could remain undisrupted during the pandemic.

As for the most often used device for online learning for both groups, it was laptop/desktop. Zoom was the preferred online learning software for both groups. Additionally, the SEN group was more likely to use technical accommodations during online learning. This highlights the importance of technical accommodations for this group which could influence their online learning experiences.

Finally, accessibility was the top advantage of online learning for typically developing students while for students with SEN, it was flexibility. One possibility could be due to the time flexibility being offered by online learning whereby students with SEN were able to learn at a comfortable pace to suit their learning needs. The personalized learning experience has the least number of students endorsing it as the top advantage of online learning. It might be due to the difficulties encountered when designing online learning materials to cater to a wide range of needs and preferences. As such, this might be a potential area that is lacking in online learning. Lower social interaction was the top challenge encountered for both groups of students. These advantages and challenges faced by our participants were consistent with those stated in previous studies (e.g., Adnan & Anwar, 2020; Dhawan, 2020; Koksai, 2020; Nambiar, 2020; Son et al., 2020).

Limitations and Future Research Directions

While our study seeks to address the gaps in previous studies conducted on online learning by expanding the scope to the online learning experiences of university students with SEN, our sample size for the SEN group was limited. This was especially so for questions related to before the COVID-19 outbreak where the sample size for SEN was smaller and hence, this should be considered when interpreting our data. Therefore, future studies could include a larger, more diverse sample that is representative of different ethnicities, schools, and years of study in university. In addition, it is possible to collect the survey data at different periods to investigate the changes in the students' online learning experiences across time. All of these can provide insights into the online learning experiences of the two groups of students and ensure their learning needs are adequately addressed even during online learning.

Conclusion

In conclusion, this study was conducted to better understand the online learning experience of typically developing students and students with SEN through an online survey. By doing so, we hope that the insights gained will be useful for universities and other higher education institutions in terms of assessing the type of online learning support that the respective groups

of students require. With this, online learning could be more inclusive and meaningful in university settings and the higher education sector.

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Contact email: mo.chen@usj.edu.mo

*Educational Assessment in the Time of Artificial Intelligence:
Assessing Creative and Critical Thought*

Colleen Halupa, East Texas Baptist University, United States

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Abstract

The release of artificial intelligence (AI) text generator programs, such as ChatGPT, have changed the landscape of higher education, particularly regarding assessment. Traditional assessment used to measure higher levels of learning often include research papers, case studies, analyses, and other written works. These types of assessments can often be easily completed on generative AI programs. AI detection programs have been unable to keep up with the advances in AI; this has resulted in many universities turning off the AI detection feature on plagiarism detection programs due to unreliability. This leaves faculty unsure if students are: a) completing their work without AI assistance, and b) actually learning. The purpose of this paper is to address the theories of emerging pedagogies and associated assessment techniques that are more AI-resistant, and require more critical and creative thought.

Keywords: Artificial Intelligence, Disruption in Higher Education, Emerging Pedagogies, Assessment Techniques

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Introduction

Disruption has been caused in higher education by the release of generative AI programs, particularly in regards to student assessment. ChatGPT was released to the public in December, 2022. It was created with Generative Pre-trained Transformer language which can be indistinguishable from human writing (Lund & Wang, 2023). These programs can write essays, create outlines, and solve mathematical problems. The creation of these AI programs has required higher education faculty to consider alternate forms of assessment that cannot easily be completed on an AI program. Although plagiarism detection programs such as Turnitin exist, they are by no means perfect. Walters (2023) in a study of 16 AI text detector programs found Turnitin was the most accurate; however, Annie Chechitelli, the Chief Product Office of Turnitin reported that higher false positive rates were found in documents with less than a 20% AI match (2023). Some interference has been reported when students use programs such as Grammarly, but this is likely because students do not know the difference between Grammarly and GrammarlyGo which is a generative AI program.

Higher education institutions have struggled significantly with policies and procedures regarding AI and plagiarism AI detectors. Because cheating is so difficult to prove due to problems with the detectors, some colleges have turned them off. In September 2023, Quach reported Vanderbilt, Michigan State, Northwestern and the University of Texas at Austin had opted to turn off their AI detectors. Chechitelli (2023) noted that Turnitin had a 1% false positive rate, but at large universities such as Vanderbilt where 75,000 papers are ran through Turnitin a year, this would result in 750 false positive plagiarism cases. For Vanderbilt, that risk was too high (Quach, 2023).

AI programs are not going to go away. Instead, they are likely to continue to get better. There are currently almost 100 AI programs available and the number continues to increase. Because the technology is increasing so rapidly, it is difficult for companies such as Turnitin to keep up. This leads to philosophical questions for faculty. Will anything ever be original anymore? But, was anything ever original to begin with since for centuries humans have been basing their work on the work of others that came before them? However, to deal with this disruption, faculty are going to have to assess differently if they want to know if students can apply the content being taught.

Critical Thinking, Volition, and Creativity

Critical Thinking

In 1941, Glaser in a seminal study of critical thinking (CT) noted it had three components: the ability to be thoughtful about problems within the realm of one's own experiences, the ability to understand logics and reasoning, and the ability to apply the first two. Definitions of critical thinking vary, but according to the Foundation for Critical Thinking (2023), CT is the "intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing and evaluated information gathered from, or generated by, observation, experience, reflection, reasoning or communication" (p.1). It is interesting to note that the terms used marry exactly with the last four domains of Bloom's taxonomy in education. In order for critical thinking to occur, students must be assessed beyond the knowledge and comprehension level of Bloom's. In these lower taxonomy levels, prior to AI, it was easier to cheat. AI has now impacted cheating in the higher levels of Bloom's taxonomy as well since it can be used to generate all sorts of creative and research text.

In the Delphi Report on Critical Thinking which was published in 1990, cognitive skills for critical thinking were identified and included: interpretation, analysis, evaluation, inference, explanation and self-regulation. Interpretation included the ability to decode significance and clarify meaning. Analysis included examining all aspects of an idea, identifying pros and cons, and then analyzing them. Evaluation included assessing arguments and points of view. Explanation included identifying results, arguing for or against something, and justifying procedures and points of view. Self-regulation is self-examination and correction of incorrect assumptions and behaviors (Facione, 1990). This is related to volition which will be discussed later. In order for students to attain these abstract skills, they have to practice them. That is impossible with teacher-centered methods such as lecture and multiple-choice testing. In addition, assessments that are crafted with these concepts in mind are likely less susceptible to student use of AI to complete the task.

There is significant dissention on whether CT can be taught. Socrates and Plato believed it could be taught through dialectic thinking. John Dewey (1910) believed it could be taught, but not through passively listening to a teacher lecture; he theorized it could only be done through experiential learning. Consequently, educational theorists such as Piaget and Montessori thought critical thinking could not be taught because people learn through experience. Kolb (1984) agreed with Dewey regarding experiential learning, but he did not believe CT could be taught. Sharples et al. (2017) noted students have to have knowledge first, but cannot critically think without exposure which is experiential. Willingham (2020) noted the reason it is so difficult to define CT and develop competencies and skills that reflect it is because it is different in every discipline, and there are no proven ways to teach it directly. The best known method at this time is simulations and problem-based learning which will be discussed later (Dekker, 2020; Thorndahl & Stenhof; Willingham, 2020).

Every generation seems to lament that the upcoming generations have lost the ability to critically think. However, CT is in some respect innate, or man would have died out generations ago. Technology has significantly impacted critical thought. Previous to all information being available at everyone's fingertips, a person who had a lot of knowledge about a variety of things could have been perceived as a critical thinker. This is confusing intelligence and aptitude with critical thinking which is different.

Does the availability of technology and information increase the potential for critical and also creative thought? It very well may, but AI could potentially have a negative impact on critical thought, or in the future, the perceptions of CT may in fact change. The definitions of CT has changed somewhat as information became more widely available in the last two decades with the movement to information literacy. As time goes on and AI goes into wider use, this may significantly impact how critical and creative thinkers are viewed in the future.

Volition

Frith (2013) noted volition is internally generated behavior; it implies a sense of urgency or prioritization of certain tasks (agency), such as getting an education. There is regret when a wrong action is taken, because agency includes a strong sense of responsibility. Deimann and Bastiaens (2010) said volition is the ability to maintain a course of action when obstacles arise. In today's world, it is the ability to stay focused and avoid distractions caused by technology and modern life. This is very difficult for many students since many are externally motivated (praise/grades) rather than internally motivated. However, Wrzesniewski et al. (2014), in a study of West Point Cadets that included 14 years of data and over 10,000 cadets, found

intrinsic motivation was the key to success and reaching goals. This was the case across all races, religions, gender, socioeconomic background and prior testing scores.

Volition and motivation are related, but different because a student can be motivated, but never accomplish a task. Motivation is willingness, while volition is action and not just intent. Skills needed for volition include selective attention, the ability to process and discern incoming information, emotional control, and motivational control. Students must keep an eye on the ultimate goal and foregoing instant gratification that will cause regret. In addition, a student must enact environmental control and avoid distractions and have parsimonious information processing which is knowing when to stop and when to go forward to support the current goals (Kuhl, 1985). Kuhl noted selective attention protects volition by inhibiting processing of information about competing factors and distractions. This is also maturity and the willingness of a student not to be able to have and do everything she wants now (delayed gratification) so she can meet the goal and have it in the future. Mischel from 1974 through 2014 in the Marshmallow Test experiments found that children who were willing to delay gratification had more positive cognitive abilities and success later on in life. This can be correlated to the ability to stay focused, which is a form of self-control, which is critical in volition.

Creativity

Zeng et al. (2011) noted many perceive creativity as a skill that is only present in those who favor the arts, but creative thinking is critical in fields like healthcare, business and others. Gafour and Gafour (2020) noted creative abilities are one of the most sought after skills in the 21st century workplace. Zeng et al. found most people tend to rate themselves as above average in regards to creativity; males overall, feel they are more creative than females. Yet, this is not what employers are reporting.

Creativity is very difficult to measure, but in relation to problem solving, which is a critical skill for employers, it can be facilitated. This can be done by presenting problem spaces that are not well defined (Zeng et al., 2011). Walton (2003) agreed with this, and said creativity can be encouraged by offering less structure. This leads to problem-finding, which is seeking opportunities to find different solutions to meet goals, and problem formulating which is framing a problem in a concrete way to come up with solutions. Analyzing a problem has a critical impact on the creativity of the final solution (Zeng et al., 2011).

Creativity is very difficult to define in education since it is so individualized. In addition, creations of any kind are usually built from other's creations (Tanngaard, 2012). Tanngaard notes in reality, creativity is both common and collective.

Tanngaard wrote "materials, tools, things, institutions, normative practices and "ways of doing" already in the world are taken as starting points for new creations" (p. 21). Creativity is often thought of as a higher order thinking process, which in keeping with Bloom's taxonomy, would require students to reach the evaluation and create levels in activities and assessment. Students may often feel they aren't creative, but Tanngaard notes people are constantly engaged in transformation and change. She notes humans rarely produce knowledge that is detached from themselves or others, which is also true in education.

In education, teachers concentrate on students getting the right answer. This is convergent thinking. Instead, teachers need to concentrate on encouraging students to come up with different possible solutions which is more divergent thinking if the goal is to encourage creative

thought. In 2004 Scott et al. performed a metanalysis on 70 creativity studies and found creativity could be enhanced by teaching students to link ideas which seemed to be unrelated to develop associative thinking. This leads to assessments that requires students to find multiple solutions rather than just the right solution.

However, students cannot become creative problem solvers without the required materials which Tinggaard notes are crucial for creative thought. Teachers have to provide that material in order for students to develop creative problem solving. This is done through proper design of activities and assessment in the classroom.

Assessment in Higher Education

Traditionally in higher education, psychometric model assessments were used. These included multiple-choice tests that do not usually assess higher levels of learning (Appiah, 2018; Brown & Adulnabi, 2017; Filsecker & Kerres, 2012; Lesage et al., 2013, Schroeder, 2021). Those that do are difficult to write and validate. Psychometric model assessments were easily graded; however, they have always been subject to cheating or question (Shroeder, 2021). When online learning became prevalent in the late 1990's, it became even easier to cheat on multiple choice tests that were given online. Traditionally in some fields to assess higher levels of learning, student research papers were also used. Now with AI programs, students can ask an AI program to generate a research paper at literally the drop of a hat. This means the traditional assessments that were used in the past may no longer be as effective in the future.

In 2000, Ison and Russell identified two levels of change that are driven by learning and called them first and second order change. Traditional assessment lends itself to first order learning where a student may learn something for a test, but then he or she “dumps” the knowledge and it is forgotten. It never has a true impact on the student's life or behavior. Second order change impacts the way a student thinks and acts. It is these second order assessments that are less susceptible to student's using AI rather than doing their own work. These second order assessments are tied to emerging rather than traditional pedagogies.

In the last two decades, there has also been a significant movement from teacher-centered to student-centered learning in higher education. Traditional pedagogies were based primarily on behaviorism and cognitivism and leant themselves to traditional assessment such as psychometric testing. However, student-centered pedagogies require assessment that is more complex and less likely to be generated by an AI program.

Transformative Learning (TL)

In transformative learning, assessment is based in self-reflection, as well as critical thinking. Assessment in TL often requires the student to relay personal experiences to show how changes in meaning schemes and thought have transpired. Students are required to identify and evaluate the process of their learning to demonstrate critical thinking (Mezirow, (1978, 1985, 1990, 1991, 1997, 1998, 2000a, 2000b, 2003, 2006). In addition, the self-reflective practices used in TL spur more creative thought. This creative thought requires students to address the process of learning and how their thinking was transformed.

Romano (2018) suggested several assessment types that can be used in the transformative learning framework. These include self-evaluation methods where students take a self-assessment and then evaluate their potential strengths and weaknesses and how these may relate

to future performance. Other assessment techniques include the creation of journals and case studies on a topic. Metaphor analysis is another example that is often used in the social science. Since a metaphor can mean different things to different people in different contexts, it is an assessment where it may be difficult to use AI. Art-based techniques including creative writing, music composition, improvisation, photography and collages where images represent contexts of learning are another example. Critical discussion where students evaluate pros and cons of an issue and debate these issues is a commonly used assessment tool in transformative learning (Western Governors University, 2020).

All of these examples are from the humanities which by their very nature are more open to creative assessment. Esterhazy and Fiksen (2019) discussed a portfolio approach in the sciences (ecology) which required students to evaluate aspects of physical chemistry and science and reflect on how this challenged their assumptions of the work. More research needs to be done to provide higher education faculty concrete examples of TL assessment in order for these techniques to be more widely used.

Assessment in TL often an ill-defined problem where actions must be evaluated. However, students are not used to these types of assessments because they have not been exposed to them. At this point, generative AI programs still sound somewhat “machine-like” and are not as adept as sounding like humans who are engaged in self-reflective thought. Therefore, these types of assessments may be a deterrent in student use of AI.

Heutagogy

A second emerging pedagogy where the assessment style is less amenable to the use of AI programs is the concept of heutagogy as posited by Hase and Kenyon in 2002. The goal of heutagogy is to create learners who can function at higher levels of thinking on their own. Assessment that uses heutagogical principles are complex. Students must clearly evaluate several potential scenarios to come up with the best outcome. This includes identification of variables and causative relationships. In this type of assessment, the teacher supplies the material and students decide how to solve the problem. But when faculty are stretched thin in higher education, these types of assessment can be very difficult and time consuming to write. In addition, they are very time consuming to grade which is why faculty who are teaching overload or have a large number of students in a class tend to use traditional assessment.

Assessment in heutagogy is not “an attempt at some finite measurement of learning...or how well we have learned something” (Booth., 2014, p. 64). Booth (2014) outlines two assessment approaches that are effective in heutagogy. The first is reflection and critical reflection which is a hallmark of transformative learning. The second is assessment where students must seek guidance and feedback from others. This includes group work, as well as formative assessment. Lynch et al. (2021) recommends having students create computer content for other audiences, including websites. This is also a type of problem-based assessment which will be discussed later. Such assessments can enhance technology capabilities, as well as incorporate problem solving and formative feedback.

Stoten (2020) noted in business education, heutagogical assessment allows students to experience real world problems that do not always have a distinct solution. He notes this is a type of experiential learning where more emphasis is placed on evaluating possible solutions. He notes, however, that assessment in heutagogy is problematic. This is because the education

of students is still measured by traditional pedagogical and psychometric measures by credentialing and licensure agencies, as well as accreditation bodies.

Richardson et al. (2017) discussed a heutagogical case study approach that was used in Australia in masters' program in business. Case studies can be an effective assessment technique in many fields. However, assessment has to be carefully crafted so the student has to demonstrate the process of decision-making, rather than just giving a potential correct answer which can be obtained through the use of AI programs.

Psychometric assessments identify a specific knowledge level and assess all students using the same measure. Transformative and heutagogical assessments are very personalized and the learning process is different for everyone. This can make it very difficult for the educator to assess adequate performance. Mohammed et al. (2019), in using a heutagogical basis for structural steel design in civil engineering, recommended that assessment be conducted throughout to ensure that students are meeting minimum levels.

Because of the difficulties in incorporating both transformative and heutagogical assessment and the time faculty must spend creating and grading these types of assessments, it is recommended that faculty start slow and perhaps incorporate one of these types of assessments in a class. Using these techniques can allow a faculty member to know if a student is truly learning and is capable of critical and creative thought.

Problem-Based Learning (PBL) and Experiential Learning (EL)

There are no hard and fast rules for creating assessments that are AI-resistant, but perhaps one of the most AI-resistant types of assessment is problem-based learning. In addition, problem-based learning can provide assessments that reflect the lack of structure and a wide problem space required for creativity as noted by Zeng et al. (2011) and Walton (2003). PBL teaches student multiplicity which is the ability to look at problems differently (Dekker, 2020). The answers to real-life questions cannot easily, at this point be found in AI programs when there are many possible answers and the problem is complex. However, the major problem with PBL assessments is they are very discipline specific, they are not commonly found in many textbooks, they are difficult to create, and very time consuming to grade. These are the reasons overtaxed faculty may not utilize them as readily as they should.

However, as recommended previously, a good starting point is to include at least one problem-based learning activity and assessment in each course that is high value for students (worth a significant enough part of their grade that they will do it). In higher education, this should be introduced at the freshman level so students can adjust to this different type of thinking and learning. Then, as students progress through a program of study, additional problem-based assessments can be incorporated, this can increase student CT and volition since these types of assessments cannot be put off until the last minute. It also increases creativity (Ersoy & Baser, 2014; Yu, 2014), as well as motivation (Blumenfield, 1991; Ulger, 2018; Yu, 2024).

In addition to PBL, experiential learning is also an effective tool to increase critical thinking and deter concerns of cheating and use of AI. Ayab et al (2011) found experiential education in engineering increased student creativity and problem solving abilities. This has also occurred in business education (Gemmell & Kolb, 2020) as well as other disciplines. However, experiential learning opportunities such as practicums and internships are not available in every program of study. Simulations can be used in some disciplines. Assessment that is more

experiential in nature can be crafted for use in the classroom, but many faculty find this difficult.

Overall, assessing students using PBL or EL is more meaningful and more applicable to skills students will need in the future workplace, and in life. It also makes students more responsible for their own learning.

Conclusion

Assessing differently in higher education using emerging pedagogies and strategies to promote problem solving and critical thinking can help increase student creativity, critical thinking, and problem solving which are crucial 21st century job skills. Assessing in such a manner helps prevent cheating and the use of AI in the classroom. These types of assessments should be incorporated when students enter college, and the numbers of these types of assessments should increase in upper level classes. It is important to acknowledge, however, that these types of assessments are very time consuming for faculty to create and grade.

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***Revitalizing Tried and Tested Student Support Practices in Open Distance Learning:
A Case Study of UNISA***

Stephina Modiegi Ntsoane, University of South Africa, South Africa

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Abstract

The purpose of this case study was to revitalize tried and tested student support practices in open distance learning at the University of South Africa (UNISA) which is a Comprehensive Open Distance Electronic Learning (CODEL) institution. The approach involved a review of the literature on student support practices. The study found that UNISA had a range of support practices that were effective but needed to be improved and better integrated. The study recommended that UNISA implement an integrated student support model that is responsive to students' needs, enhances student engagement, and enables students to succeed in their academic pursuits. The study concluded that UNISA should leverage its existing student support practices, such as tutoring and mentoring, while also implementing new initiatives, such as a student success center and an online support portal, to provide comprehensive and accessible student support services.

Keywords: Open Distance Learning, Revitalization, Learner Support

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Introduction and Background

Open distance Learning (ODL) offers a unique opportunity for students who are not able to pursue their education through traditional means. The flexibility and convenience of ODL make it an attractive option for many learners; however, this mode of learning comes with its set of challenges. One of the most significant issues faced by ODL institutions is providing adequate support to students. At the University of South Africa (UNISA), this challenge has been a persistent one. Despite having several student support services in place, students continue to struggle with academic progress and completion rates, leading to concerns about the quality of education delivered through ODL (Rovai, 2003). This paper seeks to discuss ways of revitalizing tried and tested student support practices at UNISA that have the potential to improve student performance and demonstration of learning outcomes.

Open Distance Learning (ODL) is a mode of education that allows students to pursue their studies at their own pace, time, and place. It is often seen as an alternative to traditional universities, especially for students who cannot attend regular classes due to work or family commitments. Over the years, ODL institutions have faced numerous challenges, including low student completion rates and poor support systems. To address these challenges, several student support practices have been developed and implemented by ODL institutions, including UNISA. These practices aim to enhance student engagement, academic performance and retention rates. However, despite the success of these practices, many ODL institutions are still struggling to retain and adequately support their students. This paper discusses the need to revitalize student support practices and explores a case study of UNISA's efforts in this direction.

ODL institutions such as UNISA can significantly benefit from the revitalization of tried and tested student support practices. The lack of adequate student support services is widely recognized as a significant challenge faced by students in ODL institutions globally. Despite the existence of many support systems, students often face numerous challenges such as insufficient academic support, limited interaction with lecturers, inadequate access to resources, and a lack of a supportive environment. This study explored the efficacy of revitalizing tried and tested student support practices by examining the case of UNISA. The case study investigated how the implementation of a more supportive environment, increased academic support, and improved access to resources can contribute to the overall success of students in ODL institutions, with specific reference to UNISA (Ormond, 2012).

The Importance of Student Support in Open Distance Learning and Its Challenges

Student support services are crucial in open distance learning, as they provide students with the necessary tools and resources to succeed in their studies. UNISA's revitalization of tried and tested student support practices serve as an excellent example of how institutions can improve their student services and ultimately, the success of their students. By implementing a comprehensive range of services such as counselling, tuition, and electronic support, UNISA addressed the needs of its students proactively (Henning, 2010). Additionally, the institution's commitment to ensuring that all students have access to these services is commendable as it provides a level playing field for all learners regardless of their background. Overall, UNISA's approach to student support services is a model that other institutions could benefit from emulating, especially during these trying times when the COVID-19 pandemic has disrupted traditional teaching and learning methods.

Open distance learning (ODL) is a student-centered, technology-enhanced education system that aims to provide access to quality education for learners who are unable to attend traditional classroom-based education. Distance learning is a generic term that includes all the approaches and strategies designed to deliver education to students who are not present in a traditional classroom environment. ODL is delivered through online platforms, print-based material, teleconferencing, audio-visual media, and other multimedia technologies. Students enrolled in ODL programs have the flexibility to learn at their own pace and can study from any location, at any time. ODL also provides a supportive learning environment that encourages learners to collaborate with peers and engage with course facilitators. UNISA has been a pioneer in ODL in South Africa and is committed to enhancing the quality of its ODL programs and student support services (Letseka & Pitsoe, 2013).

As mentioned earlier, one of the challenges faced by students in ODL is the lack of face-to-face interaction with peers and educators. This creates challenges in terms of building a sense of community and belonging and also limits opportunities for real-time feedback and support. Additionally, the flexibility of open distance learning can also be a challenge for some students, as it requires a high level of self-discipline and time management skills. Without the structure of traditional classroom settings, students may struggle to stay motivated and on task, leading to procrastination and poor performance. Finally, access to technology and reliable internet connectivity can also pose a challenge for students in open distance learning programs, particularly those in rural or low-income areas who may not have the resources to support their studies. These challenges must be addressed through targeted student support programs and innovative approaches to remote learning to ensure that all learners have equal opportunities for success.

Student support services are a crucial element in ensuring the success of ODL students, and UNISA has demonstrated this through its revitalization of tried and tested support practices. By offering a range of services including academic, emotional, and financial support, students are empowered to overcome challenges and fulfil their potential. The provision of access to dedicated advisors and tutors, study materials and resources, and regular feedback on assessments and progress helps to foster a sense of belonging and motivation. In addition, by recognizing and addressing the diverse needs of students, such as accommodating those with disabilities or caring responsibilities, UNISA is able to create a supportive environment that promotes inclusivity and equity. This approach has not only been shown to increase student retention and satisfaction but has also helped to enhance the reputation of the institution. Therefore, investing in and prioritizing student support services is crucial for the success of open distance learning (Dikshit, 2002).

Another tried and tested support practice is peer mentoring. Peer mentoring capitalizes on the social and academic support provided for students by their peers. According to Thomas (2012), peer mentoring consists of relationships that "involve a more experienced peer mentoring, a less experienced one with the aim of achieving specific goals or outcomes". Peer mentoring programs have been implemented in universities across the world and have demonstrated to have positive effects on student satisfaction, retention, and academic achievement (Kuh, Hu, & Vesper, 2000; Thomas, 2012). In UNISA, peer mentoring is facilitated through the e-tutoring program, led by senior students and/or alumni who have shown academic excellence in their studies. These sessions are designed to provide additional support to students who need help with course material and to help students develop skills needed for academic success. Students who attend e-tutor sessions consistently have shown a

notable improvement in their academic performance. Peer mentoring programs provide an additional resource for students who need academic and emotional support.

Student Support Practices in Open Distance Learning

UNISA has a well-developed student support system that ensures that students receive support throughout their academic journey. The student support system includes various services such as academic advising, library facilities, counselling, and mentorship programs. UNISA's academic advising service assists students in making informed academic decisions by providing guidance on course selection, scheduling, and planning. The library facilities offer access to a large collection of virtual resources, including e-books, journals, and databases, enabling students to conduct research and complete their assignments (Bernhardt, 2013). The counselling services focus on providing emotional and psychological support to students, while mentorship programs aim to connect students with experienced alumni and industry professionals. Additionally, UNISA has an online student portal, which offers students access to various resources, including e-learning materials and support services. Overall, UNISA's comprehensive student support system plays a crucial role in ensuring the success of its ODL students.

In addition to traditional academic support, including tutoring and academic advising, there are numerous other types of student support services offered by universities to ensure student success. One such service is career counselling and job placement assistance, which can help students navigate the job market and find meaningful employment following graduation. Another important support service is mental health counselling, which can aid students in coping with the stress and pressures of academic life (Lustig, 2012). Financial aid counselling and assistance is also crucial for many students, particularly those from low-income backgrounds, to ensure they have access to the resources they need to succeed and make the most of their NSFAS funding if they are recipients. Finally, support for students with disabilities is an essential component of ensuring equal access and opportunity for all students. These various student support services work together to create a comprehensive network of assistance tailored to meet the unique needs of each student (Parker & Szymanski, 2003).

UNISA's student support services encompass various initiatives specifically designed to provide academic, emotional, and administrative assistance to its students. Some of these services include the provision of study materials, academic guidance through modules and assignments, specialized tutoring, and access to e-resources. UNISA has also established a virtual learning environment through which students can interact with their lecturers and peers seamlessly. This system allows students to participate in online tutorials, discussion forums, and chat rooms. Additionally, specialized support services are available for students with disabilities or chronic illnesses. Furthermore, UNISA encourages student participation in extra-curricular activities such as sports and cultural events, helping students to connect with one another and with the broader university community. These initiatives demonstrate UNISA's commitment to providing equitable education services to all students, regardless of their geographic location or personal circumstances.

In comparison to other institutions, UNISA's student support services stand out for their comprehensiveness and accessibility. For instance, the institution offers online resources such as discussion forums and virtual classrooms, which provide students with opportunities to interact with peers and tutors. This mirrors the practice at other Universities abroad like the

Peer-Assisted Study Sessions (PASS) program as well as University of Cape Town in South Africa among others (Pham, 2022). Additionally, UNISA's student advisors are readily available to offer guidance on academic and extra-curricular issues. The institution also provides career services, which include job listings and counselling sessions. Furthermore, UNISA's flexible academic structures enable students to complete their studies at their own pace, which can be adjusted to suit their personal commitments. Although these services are similar to those offered by other institutions, UNISA's approach to support is more holistic and personalized. The institution's support mechanisms are geared towards addressing the unique needs of individual students, which is critical in ensuring student success in open distance learning.

One of the most crucial components of effective student support within open distance learning (ODL) is constructive and timely feedback. Research has shown that students who receive feedback on their work are more motivated to continue their studies and more likely to achieve higher grades. UNISA, like many other ODL institutions, faces the unique challenge of providing feedback to a large number of students who are geographically dispersed. To address this challenge, UNISA has implemented an automated feedback system that utilizes machine learning algorithms to provide tailored feedback to students. This system allows for immediate and personalized feedback, reducing the workload of academic staff and providing a more efficient way to engage with students. The success of this system has been evident in increased student satisfaction and academic achievement, demonstrating the importance of utilizing innovative technologies to enhance student support in ODL (Bhattacharya, Komarraju & Musulkin, 2010).

Challenges Faced in Implementing Student Support Services at UNISA

The implementation of student support services at UNISA also presents a significant challenge. One of the primary hurdles is the limited resources available for student support, such as counselling and academic support services (Chiwanza, Mapuranga, Musingafi & Zebron, 2015). UNISA has decentralized its support services, making it difficult to monitor the quality and effectiveness of the services offered. The lack of strategic planning and coordination also hinders the effective implementation of support services. Additionally, the student population is diverse, with varying needs and preferences. Therefore, UNISA must tailor its support services to meet the needs of individual students. Moreover, poor internet connectivity and power outages in some areas also hinder the effective implementation of online student support services. To overcome these challenges, UNISA may need to restructure its support services to make them more accessible and personalized, provide adequate resources, and adopt a strategic approach to implementation and monitoring.

Budget constraints can have a significant impact on the quality of student support services provided in open distance learning institutions. UNISA faced significant budgetary challenges in terms of resourcing student support services, which impacted negatively on the academic outcomes of students. Lack of financial resources often leads to a dilution of the quality of support services offered or limits the range of student support initiatives that are offered. For UNISA, the tight budget led to a reduction in the range of off-campus tutorial classes, reduced face-to-face advising, and a decrease in academic support services. Budget constraints have a cascading effect on student success outcomes, which cannot be fully mitigated by staff and student resourcefulness alone. The challenge, therefore, would be for UNISA to optimize budget utilization, which is critical to achieving better student outcomes during their journey of learning and development (Wang & Yang, (2013).

Distance and time barriers are among the most significant obstacles facing open distance learning institutions. Due to the inherent nature of open distance learning, learners are often physically separated from their instructors and peers, which can lead to feelings of isolation and disengagement. Moreover, many students enrolled in open distance learning programs have work and family obligations that make it difficult for them to adhere to a standard course schedule. To address these constraints, UNISA has implemented a range of student support practices aimed at overcoming distance and time barriers. Support services, such as virtual tutoring sessions and peer-to-peer collaboration tools, are available to help students stay on track and make progress in their studies. By leveraging technology and offering flexible learning options, UNISA is able to support learners who might otherwise be unable to pursue their academic goals (Doyumgaz, Kiymaz & Tanhan, 2021).

The *staffing limitation* at UNISA is another important issue that hinders the successful implementation of the revitalization project. The institution relies to some extent on part-time lecturers who are not always available to contribute to the support services. Most of the part-time lecturers are not participating in student support programs because they lack the necessary skills to provide such services (Ongolo, 2018). Moreover, the institution has a limited number of permanent staff members tasked with providing support to students, despite the increasing enrolment numbers. It would be beneficial for UNISA to prioritize the recruitment and training of staff members with the necessary skills to provide student support services. Additionally, the institution should seek to retain experienced and knowledgeable staff to ensure the continuity of student support programs. However, the challenge of budget constraints may hamper the recruitment and training of additional staff, and UNISA needs to find ways to overcome this limitation.

One of the most effective ways to provide academic support to open distance learning students is through the establishment of online communities of practice. These communities provide a space for students to collaborate, share resources and strategies, and offer each other feedback and support. Online communities of practice have been shown to improve students' sense of connectedness with their peers and their learning institution, and to promote deeper learning and higher levels of academic achievement. To establish successful online communities, it is necessary to have clear guidelines and expectations for participation, adequate resources and support, and skilled community leaders who can facilitate discussions and foster a positive learning environment (Chen & Sun, 2016). By embracing this tried and tested student support practice, UNISA can revitalize its approach to distance learning and improve outcomes for its students.

In order to revitalize tried and tested student support practices in open distance learning, institutions must focus on improving the quality and accessibility of their support services. One effective strategy is to establish a comprehensive and integrated support system that addresses the diverse needs of students. This approach involves providing a range of services that cater to different aspects of the student experience, such as academic mentoring, social networking, career guidance, and personal counselling. Institutions can also utilize modern technology and digital tools to enhance their support offerings and reach students in new and innovative ways. However, it is important to recognize that student support is a complex and ongoing process that requires ongoing assessment and evaluation. By continually monitoring and adapting their support interventions, institutions can stay responsive to the changing needs of students and ensure that they remain effective and impactful.

Recommendations for Improvements in UNISA's Student Support Services

In light of the challenges faced by students at UNISA, strategic recommendations for the improvement of their support services are vital. To begin with, the university should establish various forms of support services, including online and telephone coaching programs, and career guidance programs. Similarly, the recruitment and training of support staff should be prioritized to maintain a cordial student-support team. Frequent review of support mechanisms through continuous evaluation of student feedback is another strategy that can enhance the efficiency and quality of support services. Moreover, in an effort to improve the delivery of support services, UNISA can invest in new technological resources and software applications that allow real-time interaction between support staff and students. Ultimately, the university should seek to establish partnerships with various stakeholders to ensure a holistic approach to addressing the unique and diverse student needs.

Enhancing access to services is an essential element of any successful student support system. This entails identifying crucial areas where students could struggle and putting procedures in place to guarantee that support services are accessible to everyone who requires them. In the case of UNISA, the university has taken a number of actions to improve access to services for its students, such as the creation of a special student support center, the implementation of a mentorship program and peer support networks, and the provision of online tools and resources to support student success. These steps have made it possible for students to get the assistance they require when they need it, regardless of their location or situation. By enhancing and boosting accessibility to support services, UNISA would show its dedication to offering all of its students thorough and effective support, enhancing student retention, achievement, and general learning experience satisfaction.

To ensure effective student support, it is crucial to improve communication channels between students and support staff. UNISA has taken numerous steps to strengthen this aspect, including organizing regular interactive sessions that enable students to communicate with support staff. The aim is to make the interaction between students and support staff open and transparent. The support staff at UNISA must be highly motivated to ensure that there is a clear understanding of students' problems and academic needs. Furthermore, the support staff must undergo rigorous training to sharpen their communication skills and enhance their competencies in handling the diverse needs of students. As a result, there will be significant improvement in the satisfaction level of students with regard to the support services received. It is therefore essential to continue to prioritize this area of student support in order to foster a positive and productive learning environment.

One crucial component of enhancing student support practices in open distance learning is providing adequate information to students. UNISA's Student Portal is an essential resource for students seeking information on their courses, assignments, and examinations. However, access to the Student Portal is not always easy for students, who faced challenges such as poor internet connectivity and limited computer resources. Moreover, some students experience difficulties in navigating the portal's complex interface and finding the information they needed. To address these challenges, the study recommends that UNISA should strengthen its information dissemination strategies, including improving the accessibility and usability of the Student Portal, providing students with user guides and video tutorials, and offering support services such as online chat and helplines. By providing students with clear and comprehensive information, UNISA can enhance the effectiveness of

its student support practices and improve students' academic performance and overall satisfaction.

Providing career guidance and job placements is a critical component of student support practices in open distance learning institutions like UNISA. Through career guidance, students can identify their skills, interests, and strengths, and match them to appropriate career opportunities. Career guidance services also help students to make informed decisions about their academic choices and help them to develop essential job search skills such as resume writing, interview techniques, and networking. Additionally, UNISA provides job placement services, which assist students in finding employment opportunities beyond university, either locally or internationally. Through such services, students are prepared for the job market, which helps to improve their careers and also contributes to the development of the local or international workforce. UNISA's career guidance and job placement services are an essential aspect of the University's student support, which ensures the success of students beyond the classroom.

In addition to technological innovations, the study recommends a revitalization of tried and tested student support practices in open distance learning. These practices include regular communication, timely feedback, and personalized support. The study found that students who received regular communication and feedback had a better understanding of course materials and were more likely to complete courses. Similarly, personalized support, such as academic advising, counselling, and mentorship, significantly improved students' satisfaction with their learning experience. These practices require a significant investment in resources and training, but the study argues that the benefits outweigh the costs. By enhancing student support, institutions can improve retention and graduation rates, boost student success, and foster a culture of care and support. Ultimately, the study suggests that a holistic student support approach is crucial for open distance learning institutions to reach their full potential.

With an emphasis on UNISA's experience, this paper sought to give a case study on the revival of tried-and-tested student support techniques in open distance learning. This paper made the case that giving open distance learning students enough support is essential for their performance in school and general satisfaction. The essay covered the value of support systems like peer support, counselling, and open lines of communication. The effectiveness of UNISA's student support activities was also assessed in this research, and problem areas were noted. The value of this essay comes from the fact that it offers a useful roadmap for institutions looking to implement or enhance their student support initiatives for open distance learning. Institutions must prioritize the creation and implementation of successful student support initiatives if they want to guarantee that students participating in open distance learning succeed academically. The study also made the point that an organized effort from all parties involved is needed to revive tried-and-tested student support techniques in open distance learning. The literature has shown that student support services when done effectively, can enhance student retention, engagement, and success. Thus, this study recommends the implementation of a comprehensive student support system that encompasses academic, administrative, and social support relevant to the needs of distance learners. Additionally, the institution should ensure that the support system is user-friendly, accessible, timely, and personalized to cater to the unique needs of distance learners. Finally, an evaluation of the effectiveness of the support services should be conducted regularly to ensure continuous improvement and feedback from students. Hence, UNISA must prioritize the holistic support of its students to maintain a high standard of academic excellence and reputation in the higher education sector.

The study highlights the importance of revitalizing tried and tested student support practices in open distance learning. The case study of UNISA serves as an example of how effective student support can improve student retention and academic success rates. The implementation of interventions such as the Health Check, the Mentorship Programme, and the Virtual Meeting Points can yield positive results and provide a supportive environment for students. Collaborative efforts between students, academic staff, and administrative staff can ensure that students receive the necessary support at the right time. The implementation of technology-driven interventions may also facilitate ease of communication and access to resources. Overall, the study emphasizes the need for continuous improvement and innovation in student support practices to cater to the ever-changing needs of ODL students. Further research is needed to explore the sustainability of these interventions over time and determine their effectiveness in other contexts.

Conclusion

This paper has highlighted the importance of revitalizing tried and tested student support practices in open distance learning. The case study of UNISA has shown that successful student support entails multiple interventions, such as face-to-face consultations, online forums, and peer-to-peer support. Furthermore, UNISA's use of analytics to identify students who are at risk of dropping out has enabled them to intervene and provide targeted support. The study has also emphasized the need for student support interventions to be tailored to specific student groups, such as first-year students or those studying online for the first time. Finally, the study highlights the importance of evaluating the effectiveness of student support interventions, through methods such as student satisfaction surveys and analysis of student success rates. By implementing these key elements, open distance learning institutions can provide effective and comprehensive student support, ultimately leading to improved student retention and success rates.

The revitalization of tried and tested student support practices in open distance learning can significantly improve student outcomes. UNISA has demonstrated the effectiveness of utilizing a combination of face-to-face and online support mechanisms to enhance student engagement and success. The institution has also shown that increased investment in support structures such as peer mentoring, counselling services, and virtual communities can lead to improved retention rates. Additionally, the use of predictive analytics and early interventions can provide timely assistance to struggling students. The study highlights the importance of a student-centered approach in open distance learning and the need for ongoing evaluation and adaptation of support systems to meet students' evolving needs. Ultimately, investing in student support should be a priority for all institutions engaged in open distance learning to improve student outcomes and ensure academic success.

The research findings highlight the need for additional research to explore the effectiveness of student support practices in open distance learning. While this study focused on the experiences of UNISA students, the findings suggest that similar challenges and expectations exist across multiple open distance learning institutions. Further research could expand on the current study by examining how student support practices influence student retention, academic success, and overall satisfaction with the learning experience. This additional research could also explore the effectiveness of newer forms of student support, such as virtual academic advising and online tutoring. Furthermore, future research could investigate whether student support practices need to be tailored to specific student populations, such as non-traditional students or those from under-resourced communities (Bannister, 2009).

Ultimately, additional research will help to ensure that open distance learning institutions are providing the best possible support to their students and will contribute to the ongoing effort to improve the overall quality of higher education.

This study has highlighted the need for UNISA to revitalize its tried and tested student support practices in open distance learning. The analysis has shown that despite the university's implementation of a range of student support services, a number of challenges persist, impeding academic performance and success rates. These obstacles include inadequate communication regarding student support services, ineffective use of technology, insufficient capacity building for support staff, and a lack of proactive outreach initiatives. To address these challenges, UNISA should adopt a comprehensive support strategy that is integrated with course development, delivery, and assessment processes. This strategy should also prioritize the use of technology to reach students, invest in capacity building for support staff, and establish proactive measures to ensure students are fully aware of and engaged with support services. By embracing these recommendations, UNISA can effectively maximize the potential of its open distance learning model and enhance student success rates.

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Contact email: mothsm@unisa.ac.za

Influence of Parent-Teacher Partnership on Students' Academic Engagement and Mathematics Achievement in Nigeria

Taiwo Omorinola Oladipo-Abodunwa, The Polytechnic, Ibadan, Nigeria
Joshua Oluwatoyin Adeleke, University of Ibadan, Nigeria

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Abstract

Many students' dread of mathematics all over the world necessitates efforts to evolve strategies to arouse students' interest, improve students' engagement with the subject, enhance performance and consequently impact positively on the national growth of the country. The provision of home and classroom environments that are conducive to mathematics learning through Parent-Teacher Partnership (PTP) might be a step in this direction. A sample of 4146 SSS3 students with their parents, and 74 mathematics teachers from 72 schools (public=48 and private=24) selected from 12 Local Government Areas (LGAs) in the three senatorial districts in Oyo State, Nigeria provided data used in investigating the causal effect of PTP on student's academic engagement and mathematics achievement. One rural LGA was purposively selected and three LGAs randomly picked from each senatorial district. Intact classes were sampled from the six randomly selected schools from each LGA sampled. Analysis revealed that the PTP (knowledge $t=7.437$ & $t=6.543$; attitude $t=2.096$ & $t=4.361$; and practice $t=6.554$ & $t=6.604$) of parents influenced students' academic engagement and achievement in mathematics. To the mathematics teacher, only PTP (attitude $t=6.234$ & $t=4.817$; and practice $t=8.009$ & $t=6.476$) influenced students' academic engagement and achievement in mathematics in senior secondary schools in Oyo State, Nigeria while teacher PTP knowledge (knowledge $t=1.208$ & $t=5.787$); is significant only for mathematics achievement. In addition, student's mathematics engagement ($t=7.260$) is significant on mathematics achievement. School authorities and stakeholders in education should, therefore, encourage teachers to partner with parents to heighten achievement in mathematics.

Keywords: Parent-Teacher-Partnership, Academic Engagement, Mathematics Achievement

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Introduction

The need, in the early societies, to feed groups of people, and construct structures for religious purposes and habitation necessitated the emergence of trade and exchange of goods. This translated into counting and calculation which brought mathematics into limelight. Today, mathematics is not only considered a field of study but an essential tool in science, engineering and humanities. It is a prerequisite to understanding the world and innovative technologies around us (The Math Learning Centre, 2023). This explains why the technological advancement of any nation is hinged on the application of mathematical principles to real life situations. Conscious of the relevance of mathematics to national development, the Nigerian government and stakeholders in education, organize regular training programmes through federal and state ministries of education to improve the teaching and learning of mathematics and ensure that students perform well in the subject.

Sa'ad, Adamu and Sadiq, (2014) lamented the poor performance recorded by Nigerian students despite the importance attached to the subject in the country's educational system. The results of students in the West African Senior School Certificate Examination shown on Table 1.1 below confirm the low performance of secondary school students in mathematics in Oyo State between 2016 and 2021, particularly in public secondary schools.

Table 1: *Summary of Mathematics Results of Public and Private School Students for May/June WASSCE 2016 and 2021 in Oyo State, Nigeria*

Year	School Type	Total number that sat for the exam in public senior secondary schools			5 credits and above including English & Mathematics			Percentage %
		Male	Female	Total	Male	Female	Total	
2016	Public	34,361	36,679	71,040	12,408	13,199	25,607	36.1
	Private	6934	7080	14,014	1533	1377	2,910	20.08
2017	Public	25,148	28,702	53,850	13,755	15,097	28,852	53.58
	Private	5702	5600	11,302	1024	749	1773	15.7
2018	Public	31,245	34,095	65,340	11,688	13,054	24,742	37.41
	Private	4478	4568	9046	700	562	1262	13.95
2019	Public	24,627	25,455	50,082	10,644	10,866	21,510	42.95
	Private	15,783	17,397	33,180	11,524	12,820	24,344	73.36
2020	Public	21,939	23,799	45,738	7,499	8,234	15,733	34.39
	Private	16,159	17,610	33,769	11,217	12,360	23,577	69.81
2021	Public	27,040	28,017	55,057	14,381	15,774	30,155	54.77
	Private	18,503	20,200	38,703	14,750	16,187	30,937	79.93

Source: WASSCE results extracted from National Bureau of Statistics (NBS) (2019 & 2022) 2016-2018 and 2019-2021 respectively

Table 1 shows that within six years, public school students had less than 50% credit pass, except in 2017 (53.58) and 2021 (54.77). Private schools suffered a decline in performance between 2016 and 2018. Their performance rate of 20.08 % in 2016, reduced to 15.7% in 2017 and 13.95% in 2018. There was an appreciable improvement in 2019 with 73.36% followed by a slight decrease in 2020 with 69.63%, attributed to COVID '19 pandemic, and picked again to 79.93% in 2021. If the low performance in mathematics in public secondary schools is not addressed on time, it may be difficult for Nigeria to position herself for national and sustainable development in science and technology since most Nigerians cannot afford private schools for their children. Support systems to boost mathematics learning, such

as Parent-Teacher-Partnership (PTP), could be adopted to complement classroom mathematics teaching.

Literature Review

Partnership is a cooperative relationship between people or groups who agree to share responsibilities for achieving specific goals (vocabulary.com). Basset (2010) noted that educators who form partnership with parents are among the most successful in their work with children. This notion is reinforced by Oladipo-Abodunwa (2019) and Lekli and Kaloti (2015)'s description of parent-teacher-partnership (PTP) as a relationship characterized by mutual cooperation and responsibilities aimed at achieving specified goals. Therefore, synergy between parents and teachers should enhance academic achievement in mathematics. Loughran (2008) revealed that PTP provides a link between classroom learning activities and home learning engagements. PTP is, according to Owen and Taylor (2010), a convergence on the child, parents and teachers that gives learners a sense of belonging in the classroom and promotes students' classroom participation. Christendon and Sheridan (2001) stressed that parents and teachers have different roles and expectations and the effectiveness of PTP relationship depends on the competence of both parents and teachers in the discharge of their roles. This implies that the knowledge of, attitude to, and the practice of PTP are important factors to consider in the effectiveness of the relationship.

Generally, behaviour is significantly influenced by knowledge as the first step in behaviour change (Digital Response Ability, 2024). The common saying that 'knowledge is power' alludes to the importance of knowledge in making achievements in any aspect of life. (Loewen and Sato, 2017). Hornby (2006) defines knowledge as 'facts, information and skills acquired through experience and education.' This suggests that knowledge is gained through, association and experience. In line with this, Oladipo-Abodunwa, (2019) defined PTP knowledge as awareness of the expected collaboration that exists between parents and teachers. The value that people attach to a particular object or phenomenon is hinged on the sum total of what is known and it determines the behaviour (attitude) to the object or phenomenon. This implies that PTP knowledge, to a great extent, regulates the attitude of parents and mathematics teachers to PTP. PTP attitude is the degree of openness to collaborative activities between parents and mathematics teachers (Oladipo-Abodunwa, 2019). Knowledge of PTP will shape the views, feelings and behaviour tendencies of parents and teachers towards PTP. Part of the attitude expected in PTP is for the parties to see themselves as true partners by being open with each other to discuss concerns and not to see the relationship as a waste of time. PTP transcends parents doing homework, reading together with the child, visiting school on open days, attending school functions or being members of school organizations. It extends to the relationship formed with the teacher that helps the child to function adequately in school, develop life skills and networks, and builds the capacity of parents to participate in their children's learning (Sheridan, 2016).

A phone call from either the parent or the teacher can set the stage for an effective PTP. Loughran (2008), opined that following up with a phone call after a concerned parent has contacted can confirm to the parent that the teacher cares. It means, then, that PTP can be described as a structured form of parental involvement. Within a partnership, the teacher creates more family-like schools where individual differences of each learner is taken into consideration, thereby giving every learner a sense of belonging. The parents, on the other hand, provide a home environment that facilitates mathematics learning. Fredricks, Blumenfield, and Paris (2004) asserted that 'if students are to benefit from what schools offer

and acquire the capabilities needed to succeed in the global market, students need to establish a commitment to education in addition to school attendance.’ The child must be engaged academically to complement the efforts of the parents and teachers in the partnership.

Deneen, (2010) sees engagement as a strategic process for learning in the classroom while Oladipo-Abodunwa (2019) believes it is the daily commitment to school work in a way that leads to improved academic achievement for students. In other words, it is the duty of learners to acquire additional knowledge. These definitions show that, students need to establish a commitment to education, in addition to school attendance, for academic excellence. Academic engagement establishes a relationship between non-cognitive factors (i.e. motivation, interest, curiosity, responsibility, determination, perseverance, and attitude) and cognitive learning outcomes (improved academic performance, information recall and skill acquisition). Fredricks et al (2004) pointed out that academic engagement can be categorized into behaviour, cognitive and emotional engagements. Behavioural engagement is the participation of learners in roles that may foster behaviour conducive to learning (Deneen, 2010). Cognitive engagement exists when students make personal investment in learning in a focused, strategic and self-regulating manner while emotional engagement deals with positive attitudes and reactions towards school, teacher, learning and peers (Parsons et al, 2011). Orozco, Pimentel and Martin (2009) remarked that behavioural engagement was found to be a robust predictor of academic performance. Against this background, the study investigated the extent to which parent-teacher-partnership can predict achievement of students in senior secondary school mathematics in Oyo State, Nigeria.

Statement of Problem

Many students dread mathematics and find mathematics instruction difficult. As a result, low performance is recorded by Nigerian students (Sa’ad, Adamu and Sadiq, 2014) in spite of numerous studies (Olutola, Ogunjinmi & Daramola, 2021; Oladipo-Abodunwa, 2019 and Owolabi & Etuk-iren, 2014) conducted to mitigate the problem. Existing literature (Basset, 2010; Oladipo-Abodunwa, 2019; Loughran, 2008 & Paswan et al, 2002) reveals that regular communication between teachers and parents promotes academic development and justifies the need to evolve support strategies such as PTP (Lekli and Kaloti, 2015) to promote student academic engagement to enhance and sustain student’s performance in mathematics. This study explored the individual and joint causal effects of parent-teacher-partnership (PTP) on students’ academic engagement and mathematics achievement in senior secondary schools in Oyo State, Nigeria.

Research Questions

- 1) How valid and reliable are the data emanating from the measurement models of the latent constructs (PTPK, PTPA, PTPP, SAES and MATS) of the study?
- 2) What is the causal effect of:
 - a. PTPK, PTPA & PTPP on Student Academic Engagement and mathematics achievement?
 - b. Student Academic Engagement on mathematics achievement?

Theoretical Framework

The study is guided by the social Cognitive Theory (SCT) which submits that mental processes are influenced by intrinsic and extrinsic factors. SCT considered that the behaviour

of an individual is hinged on the interaction between three variables: behavioural patterns, personal attributes and environmental characteristics. The study is based on SCT because cognitive development (achievement), a personal and intrinsic characteristic, is influenced by the interaction between the external factors (students' behaviour referred to as student academic engagement in this study) and the environment (PTP). Figure 1 illustrates SCT with the variables: personal attributes, behavioural patterns and environmental characteristics.

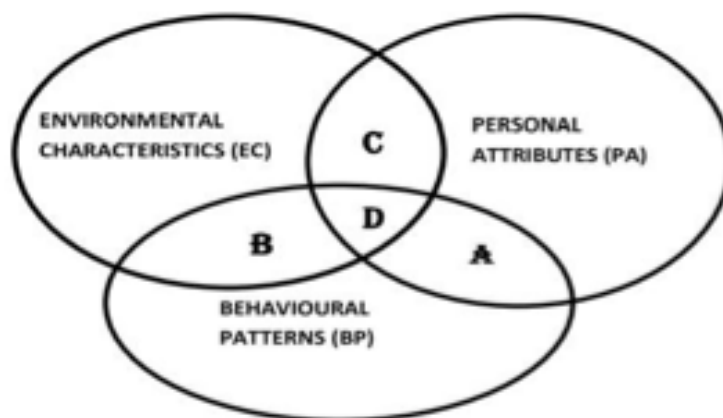


Figure 1: *Pictorial Representation of SCT*
(Source: Wikipedia. <https://en.m.wikipedia.org/wiki/social>)

Figure 1 illustrates that interactions between BP, EC and PA determine D (behaviour of an individual), which also depends on A (interaction between BP & PA), B (interaction between BP& EC) and C (interaction between EC & PA).

Method

a) Sampling and Sample

The study adopted multistage sampling procedure at the senatorial district, Local Government Area (LGA), school and classroom levels. Four (4) LGAs were sampled from each of the three (3) senatorial districts in Oyo State. One (1) rural LGA without basic amenities like electricity, banks without Automated Teller Machine (ATM) was purposively selected and three (3) urban LGAs with the facilities were randomly picked from the remaining LGAs in each senatorial district. Rural and urban schools were used to have heterogeneous groups for the sample. Intact classes of one (1) arm of science, arts and commercial classes of senior secondary school three (SS3) students were sampled from four (4) public and two (2) private schools from each LGA. A total of 4,146 students, their parents from 12 LGAs and 74 mathematics teachers of the classes formed the sample for the study.

b) Instrumentation

Eight instruments were used to collect data for this study. They are: Mathematics Achievement Test for Students (MATS), Students' Academic Engagement Scale (SAES), Parent-Teacher Partnership Knowledge for Parents (PTPKQP), Parent-Teacher Partnership Knowledge for Teachers (PTPKQT), Parent-Teacher Partnership Attitude for Parents

(PTPAQP), Parent-Teacher Partnership Attitude for Teachers (PTPAQT), Parent-Teacher Partnership Practice for Parents (PTPPQP) and Parent-Teacher Partnership Practice for Teachers (PTPPQT) MATS and SAES with 21 and 13 items respectively were administered to students to collect data on students' achievement in mathematics and academic engagement while PTP questionnaires with 8, 12 and 16 items for knowledge, attitude and practice were administered, through the students sampled, to parents and mathematics teachers of the classes sampled to gather information on PTP (knowledge, attitude and practice). A table of specification was used to establish the content validity of MATS while Kuder-Richardson formula 20 (KR-20) was adopted to establish its reliability of 0.89. Cronbach Alpha in SPSS was used to establish the reliability indices of the PTP questionnaires for knowledge, attitude and practice.

Method of Analysis

Model Specification

Partial Least Squares Structural Equation Modelling (PLS-SEM) was adopted for the analysis of data. PLS-SEM uses the measurement and structural models for analysis. Variables/constructs in Structural Equation Modelling (SEM) are specified based on theoretical assumptions, logical reasoning and literature (Hair et al, 2017). Based on theoretical assumptions and literature, it was hypothesized that knowledge may exert influence on attitude and attitude may impact on practice (Digital Response Ability, 2020; Vitello, Grotorex & Shaw, 2021). On this premise, the study hypothesized that, T-PTPK that may exert influence on P-PTPK since, according to Hornby (2006), knowledge can be acquired through education or experience; P-PTPK may have causal effect on T-PTPA. T-PTPA may influence P-PTPA and this (P-PTPA) has causality on T-PTPP which, may also have causal effect on P-PTPP.

Exploratory factor analysis in R was used to establish the factors (academic challenge $r=0.79$; active learning $r=0.78$ and determination $r=0.81$) of Students' Academic Engagement (ENG). The endogenous variables in the study are, PTP knowledge of parent and mathematics teachers (T-PTPK & P-PTPK), attitude of parents and mathematics teachers to PTP (T-PTPA & P-PTPA), practice of PTP by parent and mathematics teachers (P-PTPP & T-PTPP) and Students' Academic Engagement (ENG). The criterion variable is Mathematics Achievement (MATH ACH). Items of mathematics achievement scale cover the four sections (number & numeration, algebraic process, geometry & mensuration and probability & statistics) as contained in the mathematics curriculum for both junior and senior secondary schools in Nigeria.

Results

How Valid and Reliable Are the Data Emanating From the Measurement Models of the Latent Constructs (PTPK, PTPA, PTPP, SAES and MATS) of the Study?

The measurement model (Figure 2) was estimated to ensure the validity and reliability of the latent constructs (PTPK, PTPA, PTPP, SAES and MATS) in the study. Tables 2 presents the results of the analysis.

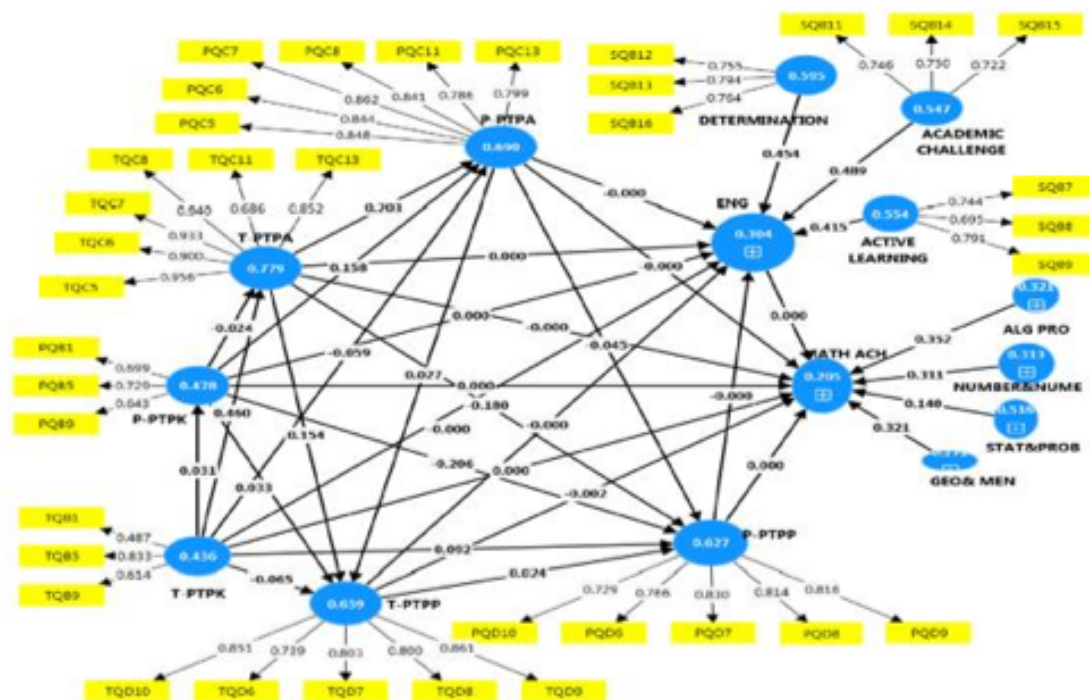


Figure 2: Reflective Measurement/Outer Model for PTPK, PTPA, PTPP, ENG With AVE on the Endogenous Construct and Factor Loading for Each Indicator on the Arrow Between Each Indicator and Its Construct

Table 2: Summary of Assessment of the Reflective Measurement Model for PTPK, PTPA, PTPP and ENG

	Construct		Convergent Validity		Internal Consistency		
	Factors	Indicator	Loadings ≥ 0.7	AVE ≥ 0.5	Cronbach's alpha	Composite reliability	Construct
Student Academic Engagement (ENG)	Academic Challenge	SQB11	0.746	0.547	0.59	0.78	0.71(0.80)
		SQB14	0.749				
		SQB15	0.723				
	Active Learning	SQB7	0.744	0.554	0.60	0.79	
		SQB8	0.695				
		SQB9	0.791				
	Determination	SQB12	0.755	0.595	0.66	0.82	
		SQB13	0.794				
		SQB16	0.764				
Teacher PTP Knowledge (T-PTPK)	TQB 1	0.487	0.44	0.35	0.69		
	TQB 5	0.833					
	TQB 9	0.614					
Parent PTP Knowledge (P-PTPK)	PQB1	0.699	0.48	0.45	0.73		
	PQB 5	0.729					
	PQB 9	0.643					
Teacher PTP Attitude (T-PTPA)	TQC5	0.956	0.78	0.94	0.95		
	TQC6	0.900					
	TQC7	0.933					
	TQC8	0.940					
	TQC11	0.686					
	TQC13	0.852					

Parent PTP Attitude (P-PTPA)	PQC5	0.848	0.69	0.91	0.93
	PQC6	0.844			
	PQC7	0.862			
	PQC8	0.841			
	PQC11	0.786			
	PQC13	0.799			
Teacher PTP Practice (T-PTPP)	TQD6	0.739	0.66	0.88	0.91
	TQD7	0.803			
	TQD8	0.800			
	TQD9	0.861			
	TQD10	0.851			
Parent PTP Practice (P-PTPP)	PQD6	0.766	0.63	0.85	0.89
	PQD7	0.830			
	PQD8	0.814			
	PQD9	0.816			
	PQD10	0.729			

The internal consistencies of the variables in the study were confirmed with Cronbach Alpha and composite reliabilities as it is considered and reported in PLS since there is a general assumption that Cronbach Alpha over estimates reliability and composite under estimates, hence it is believed in PLS that the true measure of internal consistency lies between them (Hair, Hult, Ringle and Sarstedt, 2017; Hoffman & Birnbrich, 2012 and Herath & Rao, 2009). Table 3 reveals acceptable values of internal consistencies of 0.7 and above for all the endogenous latent constructs in the study except for those of P-PTPK (0.45), T-PTPK (0.35), active learning (0.60) and academic challenge (≈ 0.60) below the bench mark for Cronbach Alpha but their composite indices are all approximately 0.7.

Convergent validity was established by estimating the factor loadings and the AVE for the constructs in the outer model. It can be observed from Table 2 and Figure 2 that nearly all the indicators of the construct loaded above 0.708 bench mark (Hair et al, 2017) on their corresponding constructs; except SQB 8(0.695 \approx 0.7); TQB1(0.487), TQB9(0.614), PQB1(0.699 \approx 0.7), PQB(0.643) and TQC11(0.686 \approx 0.7). Factor loading of 0.7 and above suggests a very strong positive relationship between a construct/factor and its indicators. In other words, the indicators reflect the construct effectively. Indicators with low factor loading (< 0.7) were retained since a scale is only viable if it has at least three indicators/ items. In addition, Ping (2009), opined that indicators with low factor loading may be retained if the variables are important to the study. In line with this view, PTP knowledge of both parents and teachers is germane to its practice and also important in determining attitude to it (Oladipo-Abodunwa, 2019) since according to Willingham (2017), the richer the knowledge base, the easier the operation. To establish convergent validity of the indicators of a construct in the model, the AVEs were also estimated.

The discriminant validity of the constructs in the model was also estimated using the Hetro-Trait Mono-Trait (HTMT) ratio proposed by Henseler (2015). In PLS-SEM, discriminant validity is established, if the HTMT ratio between every pair of latent constructs in a reflective measurement model is less than 0.85. Table 3 displays the HTMT ratios for all pairs constructs in the measurement model.

Table 3: *HTMT Ratios of Pairs Constructs in the Measurement Model*

	Academic challenge	Active learning	Determination	P-PTPA	P-PTPK	P-PTPP	T-PTPA	T-PTPK
Active learning	0.623							
Determination	0.604	0.283						
P-PTPA	0.12	0.16	0.101					
P-PTPK	0.354	0.253	0.121	0.237				
P-PTPP	0.181	0.103	0.109	0.113	0.334			
T-PTPA	0.037	0.044	0.102	0.184	0.044	0.144		
T-PTPK	0.049	0.089	0.056	0.102	0.109	0.053	0.605	
T-PTPP	0.093	0.073	0.154	0.064	0.062	0.044	0.152	0.28

Results on Table 3 show that the ratios are below the cut-off of 0.85 (Henseler, 2015), therefore establishing the discriminant validities of the constructs in the reflective measurement model. The assessment of the measurement model shows that the scales are valid and reliable, hence data emanating from them can be used for further analysis in the structural model. The latent scores for all the constructs were therefore obtained and used in building the structural model for the study. Figure 3 presents the structural model for the study.

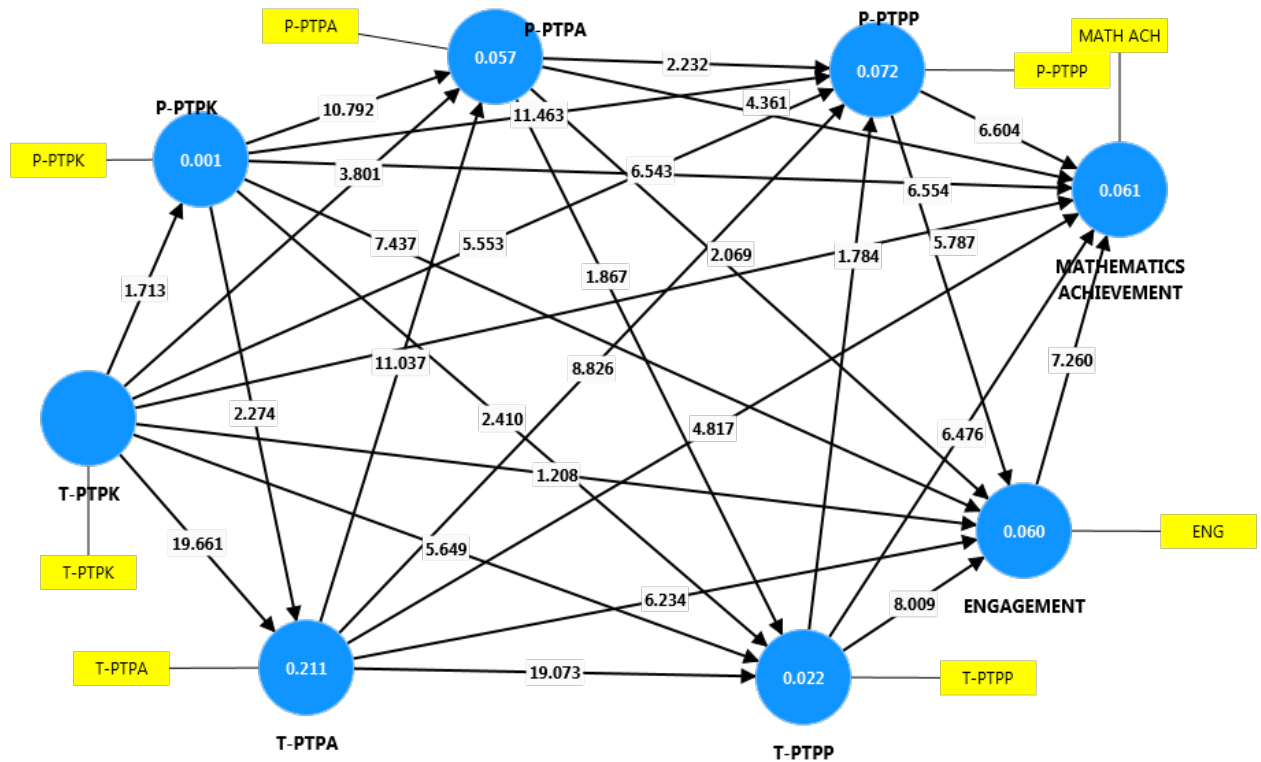


Figure 3: *Structural Model for T-PTPK, P-PTPK, T-PTPA, P-PTPA, T-PTPP, P-PTPP, Engagement & Math Achievement With T-values*

What Is the Causal Effect of:

a) PTPK, PTPA & PTPP on Student Academic Engagement and Mathematics Achievement?

Paths in a structural model may be distorted, if there are strong positive relationships between constructs in the model. High correlations among constructs in a model will result in collinearity (Hair et al, 2017); as a result it is important to estimate the Variance Inflation Factor (VIF) to ascertain that collinearity between all pairs of predictor variables (constructs listed on the first column) in the model are not at critical (i.e. VIF value ≥ 5). Table 4 presents the VIF values for all predictor variables in the model.

Table 4: *VIF Values of All Pairs of Predictor Variables in The Model*

	Engage Ment	Math Ach	P- PTPA	P- PTPK	P- PTPP	T- PTPA	T- PTPP
Engage ment		1.064					
P-PTPA	1.064	1.065			1.062		1.061
P-PTPK	1.075	1.096	1.002		1.029	1.001	1.028
P-PTPP	1.078	1.091					
T-PTPA	1.371	1.383	1.268		1.336		1.311
T-PTPK	1.286	1.286	1.269	1	1.277	1.001	1.272
T-PTPP	1.023	1.037			1.022		

Collinearity is established between two predictor variables if the VIF value is greater than or equal to 5. Results on Table 4 range between 1.002 and 1.191, which are all less than the critical point of 5 (Glenn, 2015 & Bock, 2019), confirming that collinearity among the constructs in the structural model is not at critical level. The result implies that each construct in the structural model is unique, independent and perfectly different from each other. Each construct can stand alone. Hence, paths in the model are not biased. The structural model was subjected to test of significance at 0.05 level with two tails to assess the level of relationship among the constructs. Table 5 shows the path coefficients in the model.

Table 5: *Significance of Path Coefficients in the Structural Model*

	Paths	Path Coeff β - Values	Standard deviation	t- Values	P- values	95% confidence interval BCa	
1	ENGAGEMENT -> MATHEMATICS_ACHIEVEMENT	-0.108	0.015	7.26	0	[-0.137, -0.078]	YES
2	P-PTPA -> ENGAGEMENT	-0.035	0.017	2.069	0.039	[-0.066, -0.001]	YES
3	P-PTPA -> MATHEMATICS_ACHIEVEMENT	0.068	0.016	4.361	0	[0.038, 0.099]	YES
4	P-PTPA -> P-PTPP	-0.045	0.02	2.232	0.026	[-0.084, -0.006]	YES
5	P-PTPA -> T-PTPP	0.027	0.014	1.867	0.062	[-0.001, 0.054]	NO
6	P-PTPK -> ENGAGEMENT	-0.142	0.019	7.437	0	[-0.180, -0.107]	YES
7	P-PTPK -> MATHEMATICS_ACHIEVEMENT	0.097	0.015	6.543	0	[0.068, 0.125]	YES
8	P-PTPK -> P-PTPA	0.158	0.015	10.792	0	[0.13, 0.186]	YES
9	P-PTPK -> P-PTPP	-0.206	0.018	11.463	0	[-0.241, -0.172]	YES
10	P-PTPK -> T-PTPA	-0.024	0.011	2.274	0.023	[-0.045, -0.003]	YES

11	P-PTPK -> T-PTPP	0.033	0.014	2.41	0.016	[0.005, 0.059]	YES
12	P-PTPP -> ENGAGEMENT	0.11	0.017	6.554	0	[0.078, 0.144]	YES
13	P-PTPP -> MATHEMATICS ACHIEVEMENT	0.11	0.017	6.604	0	[0.077, 0.142]	YES
14	T-PTPA -> ENGAGEMENT	0.108	0.017	6.234	0	[0.072, 0.14]	YES
15	T-PTPA -> MATHEMATICS ACHIEVEMENT	-0.098	0.02	4.817	0	[-0.138, -0.058]	YES
16	T-PTPA -> P-PTPA	0.203	0.018	11.037	0	[0.167, 0.239]	YES
17	T-PTPA -> P-PTPP	-0.18	0.02	8.826	0	[-0.219, -0.139]	YES
18	T-PTPA -> T-PTPP	0.154	0.008	19.073	0	[0.137, 0.169]	YES
19	T-PTPK -> ENGAGEMENT	-0.021	0.017	1.208	0.227	[-0.055, 0.012]	NO
20	T-PTPK -> MATHEMATICS ACHIEVEMENT	0.098	0.017	5.787	0	[0.064, 0.13]	YES
21	T-PTPK -> P-PTPA	-0.059	0.016	4.361	0	[-0.088, -0.028]	YES
22	T-PTPK -> P-PTPK	0.031	0.018	1.713	0.087	[-0.001, 0.071]	NO
23	T-PTPK -> P-PTPP	0.092	0.017	5.553	0	[0.06, 0.124]	YES
24	T-PTPK -> T-PTPA	0.46	0.023	19.661	0	[0.412, 0.504]	YES
25	T-PTPK -> T-PTPP	-0.065	0.012	5.649	0	[-0.088, -0.043]	YES
26	T-PTPP -> ENGAGEMENT	-0.116	0.015	8.009	0	[-0.143, -0.088]	YES
27	T-PTPP -> MATHEMATICS ACHIEVEMENT	0.106	0.016	6.476	0	[0.073, 0.139]	YES
28	T-PTPP -> P-PTPP	0.024	0.014	1.784	0.074	[-0.002, 0.052]	NO

It can be observed from Table 5 that, parent knowledge of PTP (P-PTPK) is significant on both mathematics achievement ($t=6.543$) and engagement ($t=7.437$) while T-PTPK is not engagement ($t=1.208$) but significant on mathematics achievement ($t=5.787$). Parent attitude to PTP (P-PTPA) is significant on both mathematics achievement ($t=4.361$) and engagement ($t=2.069$). In like manner, T-PTPA is significant on both engagement ($t=6.234$) and mathematics achievement ($t=4.817$). In the same vein, practice of PTP by both parents (P-PTPP {ENG $t=6.554$; Math ach $t=6.604$ }) and teachers (T-PTPP {ENG $t=8.009$; Math ach $t=6.476$ }) are significant both on engagement and mathematics achievement.

b) Student Academic Engagement on mathematics achievement?

Table 5 further reveals that, student academic engagement is significant of mathematics achievement ($t=7.26$). In all out of the 28 paths in the structural model, 24 are significant while 4 are not (Table 5).

Discussion

How valid and reliable are the data emanating from the measurement models of the latent constructs (PTPK, PTPA, PTPP, SAES and MATS) of the study?

Acceptable values of 0.7 and above for reliability (Hoffmann and Birnbrinch, 2012 & Herath, & Rao, 2009) confirm that endogenous constructs (*T-PTPK, P-PTPK, T-PTPA, P-PTPA, T-PTPP, P-PTPP, Engagement*) in the model all have internal consistencies even for those with low Cronbach Alpha reliabilities (i.e. P-PTPK, 0.45; T-PTPK, 0.35; active learning, 0.60; & academic challenge, ≈ 0.60) but composite reliabilities above 0.7. This is because the true reliability of a variable lies between Cronbach Alpha, as the lower bound, and composite index, as the upper bound (Hair, Hult, Ringle and Sarstedt, 2017). The finding

therefore means that the factors/constructs in the model for this study are stable, strong and reliable.

Constructs in the measurement model for the study all have Average Variance Extracted (AVE) values above the threshold of 0.5 (50%), excluding T-PTPK with AVE value of 0.44 < 0.5. This is still acceptable because slightly low AVE might be acceptable for first time studies (Ping (2009) if it will not create major discriminant validity issues. Fortunately, as shown in the result section of this write-up, this is not a problem. The construct (T-TPTK) is therefore retained for relevance and significance as the parent version of the construct has AVEs above the cut-off. An AVE of 0.5 means that the indicators share at least 50% of the variance in the construct, hence each subscale is measuring what it is intended to measure. Factor loading of 0.7 and above is an indication that there is very strong relationship between that indicator and the attached construct and that the indicators of a construct correlate highly. This affirms the convergent validities of the indicators of all the constructs since the indicators loaded on or above 0.7 and are with acceptable AVEs (Bagozzi & Yi, 1988).

Constructs in the measurement model were assessed for discriminant validity using the HTMT ratio (Henseler et al, 2015). Results of the estimates show that the ratio among every two constructs in the model are below 0.85 bench mark. This affirms the uniqueness and independence of each latent construct in the measurement model for this study.

What Is the Causal Effect of:

a) PTPK, PTPA & PTPP on Student Academic Engagement and Mathematics Achievement?

Two out of the findings of this study show that P-PTPK & T-PTPK have influence on P-PTPA & T-PTPA and T-PTPA, and that P-PTPA has causal linkages with P-PTPP, and T-PTPP. These findings agree with the view of Willingham (2017) that the richer the knowledge base, the easier the operation. This means that knowledge helps a person to be the best version of oneself (Loewen and Sato, 2017), helps in developing positive attitude, and aids its practice. Also, P-PTPK has causal effect on engagement and achievement in mathematics. The simple explanation of this is that knowledge of PTP may propel parents into having regular communication with teachers over children's mathematics learning, and according to Little, Geo, and Bell (2009), it may increase student engagement through homework completion rates, on task behaviour, as well as classroom participation. All these impact positively on mathematics achievement.

T-PTPA and P-PTPA have causal linkages with student mathematics engagement and mathematics achievement. This finding corroborates the fact that when children are aware that parents and teachers give attention to their learning, they become interested and motivated to learn. This promotes engagement and enhances achievement in mathematics (Paswan et al, 2002). P-PTPP & T-PTPP are significant on engagement and mathematics achievement. The findings of this study corroborate the results of Robert (2015) that various involvement practices of parents in children education promote intrinsic motivation and increase academic engagement with positive impact on achievement. It is also in tandem with the fact that PTP is a protective factor and a home school strategy that enhances school success (Christenson, 2003).

b) Student Academic Engagement on Mathematics Achievement?

The present study also reveals that engagement can predict mathematics achievement. This is in tandem with the findings of Orozco et al (2009) and Fredricks et al (2004) that engagement is a robust predictor of academic performance; it checks low achievement that may result in high dropout rates in schools. In the same vein, the finding corroborates Deneen (2010)'s discovery that academic engagement not only improves school attendance and classroom behaviour but promotes learners' ability to enhance classroom learning.

Conclusion

Mathematics is an essential tool in almost every field of human endeavour yet many students find it difficult. Effort must therefore be made to evolve support systems that will enhance mathematics achievement. The findings of this study affirm that partnership between parents and mathematics teachers influence student's academic engagement and achievement in mathematics. The PTP knowledge, attitude and practice of both parents and mathematics teacher promoted learning outcomes in mathematics. In other words, a home and classroom environment conducive to mathematics learning may help to mitigate the problem of low achievement in this important subject. As students become engaged with mathematics, interest in the subject will be aroused and sustained. This will invariably change their perception of mathematics.

Recommendations

Qualified mathematics teachers should be engaged to teach mathematics in schools to ensure a good foundation for students.

School authorities should educate and encourage parents on the importance of going into PTP with mathematics teachers to promote mathematics learning in children.

Limitations

Due to the constraints of finance and time, only four local government areas were sampled from each of the three senatorial districts in Oyo State.

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Contact emails: taye.abodunwa@gmail.com
oladipo.abodunwa@polyibadan.edu.ng
joadeleke@yahoo.com

Intercultural Listening Among Vietnamese EFL Students

Huyen Thanh Nguyen, Hanoi University, Vietnam

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Abstract

A good background in culture and listening is believed to help students successfully interact in the global community. This study, hence, quantitatively explored the levels of intercultural listening among Vietnamese students, as well as the relationship between students' intercultural listening and listening strategies. Following the sequential explanatory mixed-methods design, the study employs a survey questionnaire and semi-structured interviews with a sample of 80 undergraduate EFL students from a public higher education institution. The findings demonstrated that Vietnamese EFL students have high levels of intercultural listening, with a positive association between students' intercultural listening and listening strategies. The present study's qualitative data revealed that despite having never heard of 'intercultural listening' before participating in the present study, all EFL students perceived intercultural listening as a significant stimulant of listening skills and intercultural knowledge. Also, the current study showed disparities in strategies undertaken by L2 learners to boost their competence depending on students' study levels and intercultural awareness. In other words, senior students, who have been taught the subject of intercultural competence, embrace their discretion in (seeking) communication with others. In contrast, junior students primarily deploy relevant resources found on the media and Internet due to their perceived limited ability in both listening and intercultural backgrounds. Accordingly, the current study recommends the integration of intercultural listening instruction into the curriculum to assist Vietnamese EFL students build up their competence from the early stage of study.

Keywords: Intercultural Listening, Intercultural Competence, Intercultural Communication, Vietnamese EFL Students

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Background Information and Problem Statement

The linguistic background is considered indispensable to second language (L2) learners (Nunan & Lamb, 1996), and of language skills, listening is considered the primary means for L2 learners to acquire a language (Rost, 2013). Also, listening is the fundamental element of communication skills because the establishment of communication may not be ongoing if comprehension of utterance is not achieved among listeners (Rivers, 1966). However, simply having a linguistic background may not be enough to ensure success when talking with people from other cultures (Bennett & Bennett, 2004). Language, according to social science, is thought to play an important role in intercultural communication due to its unique association with culture (Bennett, 1993; Hofstede & Bond, 1991; Ting-Toomey & Chung, 2012; Yunlong, 2014), which could impossibly be separable (Yu et al., 2014), resulting in the necessity for solid knowledge of a given culture to aid the learning process of a (foreign) language (Kim, 2001) and improve one's intercultural communicative competence (Bennett, 1993; Chen & Starosta, 2000). A social or cultural blunder, once happened, can become far more serious and may bring bitter experiences to interlocutors than linguistic mistakes in (inter)cultural communication (Bennett, 1984; Celce-Murcia, 2007). Because language and culture share a unique affinity, Bennet & Bennet (2003) claimed that language transmits culture, and culture feeds language with its contents. Also, since "language starts as a social speech, as dialogue" (Walqui, 2006, p. 161), learning a second language should require interaction between interlocutors so that the sophistication of the language can be inter-culturally communicated (Bennett, 1993), resulting in the achievement of intercultural sensitivity (Chen & Starosta, 2000) and effective intercultural communication among culturally-distinct people (Deardorff et al., 2012). Considering the importance of intercultural communicative competence, which can be acquired through listening and comprehending cultural meanings in intercultural contexts, the present study places its focus on exploring Vietnamese L2 learners' listening to others in intercultural communication contexts and their awareness of listening comprehension.

Research Questions

In an attempt to explore the levels of intercultural listening among Vietnamese EFL students, the present study quantitatively and qualitatively examines the following research questions:

- Research question 1: What is the intercultural listening level of Vietnamese students?
- Research question 2: What is Vietnamese students' level of listening strategies?
- Research question 3: What is the relationship between intercultural listening and listening strategies?
- Research question 4: How do EFL students perceive the relationship between intercultural listening and listening strategies?
- Research question 5: How do students develop their intercultural listening?

Literature Review

The increasing need for intercultural communication might be because of distinct cultural values that differentiate one culture from others (Nguyen et al., 2006), shaping peculiar characteristics within a continuum of cultures (Irwin, 1996) and differences in meanings while listening to others (Ostermeier, 1995), but also causing differences in individuals' language consciousness and behavior (Brunfaut, n.d.; Ufimtseva, 2014). Based on the perspective of the fact that knowledge, attitude, and skills (ASK) can be constituted to

produce a global listener, Beall (2010) proposed necessary guidelines for effective intercultural communication, including (1) Being prepared to listen; (2) Learning to control internal and external distractions; (3) Behaving as a good listener: stop talking, let others have a chance, do not interrupt, concentrate on what is said, not who is saying it, or what the speaker is doing; (4) Being good listeners by maintaining eye contact with speakers if it is a part of their culture; (5) Being good listeners by learning the “rules” of the culture; (6) Being good listeners by asking questions at appropriate times and maintaining flexibility as they carefully listen to the speaker’s views; (7) Remembering that dialects, accents, and “different” vocal dynamics can but should not distract, learn to focus on the message; (8) Learning to ask appropriate questions; (9) Remembering that all cultures and co-cultures have both similarities and differences, we should not focus on differences; and (10) Enjoying the journey.

Research has suggested that listening comprehension and context are related (Ridgway, 2000; Selamat & Sidhu, 2011; Shabani & Malekdar, 2016). Students, who are from Confucian Heritage Culture nations, become non-native speakers of English and may face various challenges (Ho, 2020), including listening comprehension probably due to differences in cultural values (Chiu, 2009). One of the main reasons for this is that listening comprehension requires more than just understanding the words spoken because literal meanings announced through words may challenge listeners in comprehending the intended meaning (Guan, 2019). Rather than that, meanings are also constructed based on listeners’ prior knowledge, and especially the context of interaction (Vandergrift & Goh, 2009). Listening comprehension in such cases requires listeners to possess ‘sociocultural competence’ to achieve intercultural communicative competence (Celce-Murcia, 2007), not merely literal meanings through words, sounds, grammar, or other linguistic backgrounds (Guan, 2019). In other words, with a rich understanding of the social life, history, and literature of the target community, listeners can understand sociocultural meanings expressed in that native context (Celce-Murcia, 2007). Language difficulties and cultural differences are two of the various challenges encountered by students (Campbell & Li, 2008; Ho, 2021), listening comprehension can be approached as a means to diagnose the cultural domains possessed by students before necessary academic support can be offered to optimize their cultural and academic experiences. Based on the theory of metacognition, Vandergrift et al. (2006) developed and validated a framework underpinned by the model of metacognitive knowledge to produce a listening questionnaire and perceived uses of strategies while listening to oral texts, comprising five factors: problem-solving, planning and evaluation, translation, person knowledge, and directed attention.

Problem-solving refers to a group of strategies used by listeners to infer meanings they do not understand. While listening, to deduce the meaning of unknown words, it is essential to deploy techniques such as using the known words, a general idea of a text, or personal experience and general knowledge to interpret the communicated texts. These strategies are about the problem-solving processes of an individual while listening and conversing with others. *Planning and evaluation* represent necessary strategies listeners use to prepare themselves for listening, and then evaluate the outcomes of their endeavors. In this case, one should have a plan for listening so that s/he can think about similar texts to guide their listening comprehension, have a goal in mind while listening, and periodically check her/his satisfaction with the ongoing interpretation while listening before the evaluation can proceed.

The use of language is considered an instrument to facilitate inner thoughts to be transferred into outer words (Vygotsky, 1962); i.e. one thinks in an inner language before externalizing

the outcomes of thoughts, so this mental process probably influences the first language in listening comprehension of the target language (Brunfaut, n.d.). It seems the dynamic process of the inner and outer language relates to the third factor offered by Vandergrift et al. (2006), namely *mental translation*. However, this factor should be avoided by L2 learners if they want to become skilled listeners.

Person knowledge refers to the inclusion of judgments about one's learning abilities and knowledge about internal and external factors that affect the success or failure of one's learning, which then results in learners' linguistic confidence in L2 listening, the level of anxiety, and self-efficacy. Finally, *directed attention* represents strategies used by listeners to concentrate and stay on task. For this to be successful, listeners should have an understanding of the purpose or demands of learning tasks, getting back on track whenever concentration is lost. More importantly, one should not give up when encountering understanding problems. According to Harris (2003), as texts and utterances are interpreted in a communicative context, culturally-bound cues or other non-verbal clues involved may add or change the literal meaning of an utterance in face-to-face communication. The use of the same outer language (i.e. English), hence, may not be successful, especially when listening comprehension over cultural differences may not be considered. According to Bao and Guan (2019), metacognitive listening strategies are significant to L2 learners because they help build up one's ability to understand her/his mental processes in a learning context, manage and supervise the use of strategies, and evaluate mental processes for managing difficulties during listening. Such manipulation functions are believed to help L2 learners define task objectives and direct their attention to accomplish listening tasks. In consideration of cultural differences resulting in possible difficulties in listening among culturally distinct interlocutors, yet mutual understanding is necessary and becomes a desirable achievement among L2 students, the framework of Vandergrift et al. (2006), hence, is suitable and chosen for the present study.

Methods

Research Setting and Participants

The research was carried out at a public institution in Hanoi, Vietnam. Eighty students took part in the first phase during the first semester of the academic year 2023-2024, as shown in the table below.

Number of Participants				Total	Gender of Participants		
1 st year	2 nd year	3 rd year	4 th year		-	Female	Male
15	25	15	25	80	68	10	2

Table 1: Survey Participants

In the qualitative phase, nine students joined the interviews, as stated in the table below:

No.	Participants	Abbreviation	Gender	Year of Study
1	Student 1	S1	Female	1 st
2	Student 2	S2	Female	2 nd
3	Student 3	S3	Female	2 nd
4	Student 4	S4	Female	2 nd
5	Student 5	S5	Female	4 th
6	Student 6	S6	Female	4 th
7	Student 7	S7	Female	2 nd
8	Student 8	S8	Female	4 th
9	Student 9	S9	Female	4 th

Table 2: Participants of the Interview

Instrument

Rationale for Questionnaire

A questionnaire was used in the current study to serve three purposes: (1) to evaluate intercultural listening among EFL learners, (2) to assess their listening strategy, and (3) to investigate the relationship between students' intercultural listening and listening strategy. In this regard, a questionnaire (Table 3) with two components of a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used for the study purposes.

Both sets of questionnaires included in the study were designed by renowned researchers including the *Efficient Listening Behavior* of Imhof (1998), the *guidelines* of Beall (2010), and the *Metacognitive knowledge about listening* of Vandergrift et al. (2006), so its reliability was recognized. Moreover, the study context focuses on EFL learners although the ideas discussed are aimed at foreign language students. Section 3 included questions on respondents' personal information, such as their age, gender grade level, and desire to participate in the interview. Finally, Section 4 invited respondents to give personal contact details in case they wanted to participate in the semi-structured interview in the second phase.

	Constructs	Items	Sum	Total
Section 1 Intercultural listening	Knowledge	1, 3, 4, 6, 8, 9, 11, 14, 21, 22, 24, 26, 31, 32, 41	15	43
	Skill	2, 13, 19, 25, 28, 30, 33, 34, 35, 36, 42, 43	12	
	Attitude	5, 7, 10, 12, 15, 16, 17, 18, 20, 23, 27, 29, 37, 38, 39, 40	16	
Section 2 Listening strategy	Directed attention	2, 6, 12, 16	4	21
	Mental translation	4, 11, 18	3	
	Person knowledge	3, 8, 15	3	
	Planning/evaluation	1, 10, 14, 20, 21	5	
	Problem-solving	5, 7, 9, 13, 17, 19	6	

Table 3: Constructs of the Questionnaire

The study's interview includes open-ended questions to explore EFL students' perspectives of intercultural listening and the potential relationship between intercultural listening and listening strategy. The interview guide was created and used for each interview. According to Creswell (2009), qualitative interviews require an interview guide comprising a heading, interviewer instructions, interviewee questions, and a thank-you message, aiming to explore the qualitative data in the second phase and provide extensive explanations and reasons for initial quantitative findings (Creswell, 2014, 2015). In this case, the semi-structured interview questions delve into students' thoughts on intercultural listening and the relationship between intercultural listening and listening ability.

Data Collection and Analysis

In the first phase, quantitative data acquired by questionnaire survey were statistically evaluated using the guidelines of Pallant (2013). The process involved three steps: (1) screening and cleaning the data, (2) preparing the variables for analysis, and (3) selecting and applying statistical techniques to the study.

To seek the proper answers to the research questions, descriptive and inferential statistics analyses were employed.

Research questions	Tools	Aim to find	Type of analysis
What is the intercultural listening level of Vietnamese students?	Questionnaire, Section 1	EFL students' ability to intercultural listening	Descriptive
What is the listening strategy level of Vietnamese students?	Questionnaire, Section 2	EFL students' degree in listening strategy	Descriptive
What is the relationship between intercultural listening and listening comprehension of L2 students?	Questionnaire, Sections 1 & 2	The correlation between intercultural listening and listening strategy	Descriptive and inferential analysis
What are EFL students' perceptions of the relationship between intercultural listening and listening strategies?	Interview	EFL students' perceptions of the relationship between intercultural listening and listening strategies	Inferential analysis
How do students develop their intercultural listening?	Interview	EFL students' development strategies for intercultural listening	Inferential analysis

Table 4: Research Questions and Corresponding Analysis Techniques

To investigate the level of intercultural listening and listening strategy among EFL students, the respondents were asked to rate their level of agreement using a five-point Likert scale; in particular, the highest mean score (=5) indicated the most agreeable items, while the lowest mean score (=1) indicated the least agreeable ones. Paige et al. (2003) referred to the Likert scaling technique score statement, which indicated the level of agreement.

Rating	Mean	Agreement level
5	4.51 – 5.00	Very high
4	3.51 – 4.50	High
3	2.51 – 3.50	Not sure
2	1.51 – 2.50	Low
1	1.00 – 1.50	Very low

Source: Paige et al. (2003)

Table 5: Interpretation of Five-Point Likert Scale

Variable	Number of items	Cronbach's alpha
Intercultural listening	43	.946
Listening strategy	21	.891

Table 6: Results of Cronbach's Alpha Coefficient

Cronbach's alpha reliability coefficients for the intercultural listening scale and listening strategy were characterized as 'excellent' and 'good' respectively, indicating that the items are reliable (Cohen et al., 2007).

The second phase of interview data management preparation consisted of two major steps: transcribing and organizing data. First, all the recorded interviews were transcribed from the form of audio files into text data files. In the next step, all recorded interviews were transcribed from audio files to text files for the analysis step.

The current study's qualitative data were examined and grouped into themes (Braun & Clarke, 2006), and participants' responses to research questions were generated as a result of thematic analysis.

Summary of Findings

The Intercultural Listening of EFL Students

The results of this section are reported by mean score. In the Intercultural Listening Scale (ILS), language learners scored 167.81.

Dimensions	Mean	Agreement
Attitude	3.88	High
Skill	3.86	High
Knowledge	3.95	High
Total	3.89	High

Table 7: Mean Scores of Dimensions of the Intercultural Listening Scale

Table 7 sums up the mean scores for each dimension of the intercultural listening scale, showing that the participants had high scores for the three constructs. The total mean score on the intercultural listening scale is 3.89, making the agreement level of 'high'. Each construct of intercultural listening is analyzed in detail.

Attitude

Item	Attitude	Mean	Std. Deviation	Label
5	I think listening to what is <i>not</i> said is more important than what is said.	3.63	.946	High
7	I often try to find a seat for the purpose of optimal listening.	3.94	.752	High
10	I tend to listen to others with open body posture.	3.95	.778	High
12	I tend to be less concerned about what I would like to say.	2.91	1.070	Not sure
15	I think listening to the intended meaning is more important than listening to just the words.	4.14	.725	High
16	I suppose one's behavior might not be fully understood only by means of listening.	3.79	.741	High
17	I tend to stop activities on the side to pay complete attention to others.	3.84	.863	High
18	I will concentrate on topics which I am interested in.	4.05	.855	High
20	I think while listening, I should pay attention with my heart, eyes, and ears.	4.06	.752	High
23	I believe listening with an open mind helps one communicate more effectively.	4.34	.711	High
27	I often stop talking so that others can talk.	3.89	.763	High
29	To me, maintaining eye-contact while listening to others is important.	4.01	.864	High
37	I try not to focus on cultural differences while listening to others.	3.69	.894	High
38	I always enjoy the chances to listen to culturally distinct people.	3.91	.732	High
39	I believe that one can learn to be a good listener in intercultural contexts.	4.01	.864	High
40	I think it is necessary for listeners to signal interest to the speaker.	3.96	.849	High
Overall mean score		3.88		High

N=80

Table 8: Descriptive Results of Attitude

Skill

Item	Skill	Mean	Std. Deviation	Label
2	I am taught (by my parents) to be a good listener.	3.73	.886	High
13	I often practice listening skills (e.g. with computer-aided listening apps).	3.87	.769	High
19	While listening, I often structure the information heard.	3.82	.776	High
25	I often learn to control or avoid possible distractions while listening to culturally distinct people.	3.96	.737	High
28	I often pay attention to what the speaker is talking about instead of what s/he is doing.	3.69	.866	High
30	I try to avoid making personal judgements on cultural differences while listening to culturally distinct people.	4.02	.826	High
33	I think good listeners know how to maintain flexibility while listening to the speaker's views.	4.14	.807	High
34	As a good listener, one should know to focus on the message communicated, rather than avoid differences in dialects or accents.	3.96	.803	High
35	I often try to avoid being distracted by cultural factors while listening to culturally distinct people.	3.75	.834	High
36	I can ask appropriate questions while listening to others.	3.75	.819	High
42	I tend to be patient and do not challenge the speaker with questions before s/he has a chance to develop her/his ideas fully.	3.98	.795	High
43	I often give feedback both verbally and nonverbally to others regardless of her/his cultural differences.	3.71	.930	High
Overall mean score		3.86		High

N=80

Table 9: Descriptive Results of Skill

Knowledge

Item	Knowledge	Mean	Std. Deviation	Label
1	I think listening is important in my own culture.	4.39	.684	High
3	I think listening is the most important skill in intercultural communication.	3.96	.702	High
4	I make my expectations clear to myself before listening.	3.75	.849	High
6	I suppose someone may have bitter experiences due to the inability of intercultural listening.	3.94	.801	High
8	I think intercultural listening gives clues to one's behavior.	4.07	.652	High
9	To me, listening can be taught through EFL classes.	4.01	.720	High
11	I believe that I am expected (e.g. by my parents or teachers) to become a good listener.	4.06	.876	High
14	In my culture, one might be punished (e.g. by parents or teachers) for her/his failure to listen.	3.15	1.126	Not sure
21	I think listening ability in intercultural contexts requires sensitivity to others' cultural practices and traditions.	4.17	.708	High
22	I suppose by listening to the other's cultural values, one can achieve effective intercultural communication.	4.09	.697	High
24	I like to prepare the necessary background knowledge prior to listening to others.	3.92	.808	High
26	I think intercultural listening can be more effective with background on others' cultural practices and traditions.	4.19	.713	High
31	I think to become a good listener, one should learn the rules of the culture.	3.85	.797	High
32	I suppose good listeners know appropriate times to ask questions.	4.10	.836	High
41	I keep in mind that what one believes to understand is not necessarily what the speaker wants to say.	3.66	.980	High
Overall mean score		3.95		High

N=80

Table 10: Descriptive Results of Knowledge

The Listening Strategy of EFL Students

The results of this section are reported by mean score. In the Listening Strategy Scale (LSS), language learners scored 79.90.

Dimensions	Mean	Agreement
Directed attention	3.76	High
Mental translation	3.56	High
Person knowledge	3.48	Not sure
Planning/evaluation	3.82	High
Problem-solving	4.10	High
Total	3.80	High

Table 11: Mean Score of the Listening Strategy of EFL Students

Table 11 sums up the mean scores for each dimension of the listening strategies of EFL students, showing that the participants had high scores for the five constructs. The total mean score on the listening strategies is 3.80, making the agreement level of 'high'. Each construct of the listening strategies is analyzed in detail.

Directed Attention

Item	Directed attention	Mean	Std. Deviation	Label
2	I focus harder on the text when I have trouble understanding it.	4.11	.656	High
6	When my mind wanders, I recover my concentration right away.	3.84	.787	High
12	I try to get back on track when I lose concentration.	4.06	.681	High
16	When I have difficulty understanding what I hear, I give up and stop listening.	3.04	1.195	Not sure
Overall mean score		3.76		High

N=80

Table 12: Descriptive Results of Directed Attention

Mental Translation

Item	Mental translation	Mean	Std. Deviation	Label
4	I translate in my head as I listen.	3.74	.868	High
11	I translate keywords as I listen.	3.89	.827	High
18	I translate word by word, as I listen.	3.06	1.140	Not sure
Overall mean score		3.76		High

N=80

Table 13: Descriptive Results of Mental Translation

Person Knowledge

Item	Person knowledge	Mean	Std. Deviation	Label
3	I find that listening in English is more difficult than reading, speaking, or writing in English.	3.54	.885	High
8	I feel that listening comprehension in English is a challenge for me.	3.59	1.015	High
15	I don't feel nervous when I listen to English.	3.32	1.041	Not sure
Overall mean score		3.48		Not sure

N=80

Table 14: Descriptive Results of Person Knowledge

Planning/Evaluation

Item	Planning/evaluation	Mean	Std. Deviation	Label
1	Before I start to listen, I have a plan in my head for how I am going to listen.	3.79	.867	High
10	Before listening, I think of similar texts that I may have listened to.	3.79	.822	High
14	After listening, I think back to how I listened, and about what I might do differently next time.	3.90	.851	High
20	As I listen, I periodically ask myself if I am satisfied with my level of comprehension.	3.79	.882	High
21	I have a goal in mind as I listen.	3.85	.858	High
Overall mean score		3.82		High

N=80

Table 15: Descriptive Results of Planning/Evaluation

Problem-Solving

Item	Problem-solving	Mean	Std. Deviation	Label
5	I use the words I understand to guess the meaning of the words I don't understand.	4.24	.621	High
7	As I listen, I compare what I understand with what I know about the topic.	4.10	.608	High
9	I use my experience and knowledge to help me understand.	4.20	.582	High
13	As I listen, I quickly adjust my interpretation if I realize that it is not correct.	3.98	.763	High
17	I use the general idea of the text to help me guess the meaning of the words that I don't understand.	4.14	.631	High
19	When I guess the meaning of a word, I think back to everything else that I have heard, to see if my guess makes sense.	3.95	.778	High
Overall mean score		4.10		High

N=80

Table 16: Descriptive Results of Problem-Solving

The Correlation Between Students' Intercultural Listening and Listening Strategy

Based on the results of the Pearson correlation, it was found that intercultural listening and listening strategy were positively related ($r = .556$, $p = .000$).

		IL	LS
IL	Pearson Correlation	1	.556**
	Sig. (2-tailed)		.000
	N	80	80
LS	Pearson Correlation	.556**	1
	Sig. (2-tailed)	.000	
	N	80	80

**Correlation is significant at the 0.01 level (2-tailed).

Table 17: Pearson Correlation Between Intercultural Listening and Listening Strategy

Next, the correlations between the constructs of each variable should be meticulously considered. Regarding intercultural listening, there were significant relations between the dimensions (shown in Table 18). Noticeably, there were strong, significant correlations between knowledge and skill ($r=.821$, $p=.000$), skill and attitude ($r=.897$, $p=.000$), and knowledge and attitude ($r=.904$, $p=.000$). It shows that the qualifications of intercultural listening among EFL students are interrelated so that their competence to become global listeners is accomplished.

Furthermore, significant correlations can be seen between the constructs of listening strategy and ones of intercultural listening, including (a) directed attention and knowledge ($r=.507$, $p=.000$), directed attention and skill ($r=.436$, $p=.000$), and directed attention and attitude ($r=.519$, $p=.000$); (b) the similar patterns could be applied for the correlation for mental translation, planning/evaluation and problem solving with the sig figures of 95% confidence interval for p .

		Knowledge	Skill	Attitude	Directed attention	Mental translation	Person knowledge	Planning evaluation	Problem-solving
Knowledge	Pearson Correlation	1	.821**	.904**	.507**	.271*	.246*	.442	.609**
	Sig. (2-tailed)		.000	.000	.000	.015	.028	.000	.000
	N	80	80	80	80	80	80	80	80
Skill	Pearson Correlation	.821**	1	.897**	.436**	.357**	.255*	.507**	.505
	Sig. (2-tailed)	.000		.000	.000	.001	.023	.000	.000
	N	80	80	80	80	80	80	80	80
Attitude	Pearson Correlation	.904**	.897**	1	.519**	.324**	.300**	.456**	.562**
	Sig. (2-tailed)	.000	.000		.000	.003	.007	.000	.000
	N	80	80	80	80	80	80	80	80
Directed attention	Pearson Correlation	.507**	.436**	.519**	1	.539**	.653**	.674**	.672**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000
	N	80	80	80	80	80	80	80	80
Mental translation	Pearson Correlation	.271*	.357**	.324**	.539**	1	.654**	.577*	.406**
	Sig. (2-tailed)	.015	.001	.003	.000		.000	.000	.000
	N	80	80	80	80	80	80	80	80
Person knowledge	Pearson Correlation	.246*	.255*	.300**	.653**	.654**	1	.514*	.325*
	Sig. (2-tailed)	.028	.023	.007	.000	.000		.000	.003
	N	80	80	80	80	80	80	80	80
Planning evaluation	Pearson Correlation	.442**	.507**	.456**	.674**	.577**	.514**	1**	.662**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.000
	N	80	80	80	80	80	80	80	80
Problem-solving	Pearson Correlation	.609**	.505**	.562**	.672**	.406**	.325**	.662**	1**
	Sig. (2-tailed)	.000	.000**	.000**	.000**	.000*	.003*	.000**	
	N	80	80	80	80	80	80	80	80
** . Correlation is significant at the 0.01 level (2-tailed).									
* . Correlation is significant at the 0.05 level (2-tailed).									

Table 18: Pearson Correlation Between Dimensions of Intercultural Listening and Listening Strategy

However, there was a medium correlation between person knowledge and attitude, person knowledge and skill, and person knowledge and knowledge with Pearson coefficients of less than .300 and sig numbers of more than .005. This reveals that the constructs of listening strategy and intercultural listening mostly have strong correlations. This uncovers the fact that an individual who possesses high levels of listening ability can have a high degree of intercultural listening and vice versa.

Students’ Perceptions Towards the Relationship Between Intercultural Listening and Listening Strategy and Their Development of Intercultural Listening

In the follow-up interviews, participants were asked to give further explanations and viewpoints on the relationship between intercultural listening and listening strategies. The results were as follows.

All participants interviewed, who admitted that they did not know about ‘intercultural listening’ until they participated in the survey and interviews, agreed that there was a close relationship between intercultural listening and listening strategies. First- and second-year students, who studied English at the University for a few semesters, seemed to emphasize the skills and knowledge of listening and consider that intercultural listening appears to be a stimulant to enhance their listening ability for some reasons. First, with good listening strategies, one can boost vocabulary and background knowledge in various topics, resulting in her/his better performance on the listening tests at school. In that case, their listening

scores can be improved owing to their competence in intercultural listening. This can be seen in the following interview extracts:

Intercultural listening can help me perform better at the listening test because I can grasp ideas more quickly thanks to my understanding of background knowledge. A good listener doesn't mean a good intercultural listener because one may focus on words or keywords only instead of getting the general meanings of the speech. (S2/44)

When you are listening to people, you should understand the 'deep meaning', not only the surface language. You need to look at their behaviors, and manners, not just listening to words. So I think if we have good intercultural listening, we have a high level of listening ability as well. (S4/52)

Fourth-year students, however, who have much more experience in L2 learning, stated their ideas with a strong focus on knowledge and attitude.

When you have good listening ability, it means that you can listen to others' pronunciation and understand the words or literal meanings of their talk. But without knowledge of culture, you may misunderstand or not know how to denote the meanings to understand what they say. (S6/48)

A person can be good at intercultural listening because s/he has broad knowledge about that culture... On the other hand, one can be good at listening ability but not good at intercultural listening because if they only listen well but don't have the same mind or open mind, they can make judgments right away, and that prevents them from listening well the rest of the information communicated. (S5/55)

Noticeably, through the perspectives of senior students who had some work experiences, they paid plenty of concern to accents of culturally distinct people whose strong voices may become inhibiting factors of their intercultural listening. To develop their intercultural listening competence, participants shared different approaches. Junior EFL students commonly utilize abundant sources of media widely available on social channels, aiming to enrich their background knowledge of cultures. For instance, they tend to watch movies from native cultures or non-native cultures (e.g. Korea, China), listen to daily news in English or podcasts on topics such as exploration of new lands and cultures, or read plenty of culture-related materials in the library, etc. Also, as they were in the middle of intensive language programs, junior EFL students stated they made use of current learning materials to acquire further cultural knowledge and listening skills. For example, through the reading exercises, they could enhance personal background on the cultures of nations.

Nevertheless, senior EFL students sought more practical approaches to develop their intercultural listening. As mentioned in the interviews, they stated that assignments given by teachers became a stimulant for their mandatory acquisition of cultural knowledge. Besides, communicating with foreign peers (native and non-native ones) could be a good opportunity for their enhancement of intercultural competence. Additionally, to continually enrich their background, fourth-year EFL students thought that self-learning knowledge should be frequently equipped by students even after graduation so that their attitudes can be further enhanced. Once one can have an open-minded attitude and nurture her/his curiosity,

knowledge can be excitedly acquired throughout their whole life. In that way, their intercultural listening can be sustained and boosted.

Discussion and Recommendation

As the present study aims to explore EFL students' intercultural listening and its relationship with their listening strategies, necessary findings could be discussed.

First, the fact that participants of the study possess a high level of intercultural listening with high degrees of attitude, skill, and knowledge shows that the training programs delivered to EFL students have been effective since they have been acquiring intercultural listening through their second language learning process. However, upon their confession of having never heard or known about 'intercultural listening' until they joined the survey and interview, the difference between the two groups (junior vs. senior EFL students) can be seen in terms of knowledge, skill, and attitude. When one can be introduced to the subject of an intercultural topic, her/his knowledge can be academically strengthened, and then that individual's preparation for intercultural listening can be consolidated consequently. Meanwhile, as cultural values are acquired, their attitude and sensitivity can be remarkably improved (Nguyen, 2023a).

The finding aligns with the studies conducted by Zhou and Griffiths (2011) and Chen and Wang (2018) which revealed that students seem to lack knowledge of common Western customs and values and cannot differentiate between local and Western culture, resulting in their avoidance of communication and low level of confidence. Furthermore, students in such studies considered inhibiting factors of their smooth communication over cultures were due to poor listening comprehension and habit of thinking in Chinese (Zhou & Griffiths, 2011). This raises the notion that junior students' training classes should focus on intercultural listening skills so that intercultural learning can begin early in the program rather than waiting until the third or fourth year. To enrich students' intercultural knowledge and listening skills, a purposeful curriculum and experiential learning should be considered and embedded in the programs (Deardorff, 2014). This not only benefits EFL students' competence but also sustains their learning motivation (Nguyen, 2023c) as they dynamically seek related sources for self-practice and improve attitudes and confidence in intercultural communication settings.

Second, participants of the present study have a high level of listening strategies. In particular, they possess high degrees of problem-solving, planning/evaluation, directed attention, and mental translation. Those are indispensable for one to accomplish listening tasks (Bao & Guan, 2019; Boonkit, N.d.; Graham, 2006). However, the last factor of listening strategies, namely *person knowledge*, is at the lowest level compared to the other factors. Reflecting this in the literature, 'person knowledge' as a technique of listening refers to learners' linguistic confidence and their level of anxiety experienced in L2 listening (Vandergrift et al., 2006). This finding, indeed, is in line with the present study's qualitative data as the majority of them (including senior students) confessed that fear of listening to others, regardless of the recorded materials or culturally different interlocutors, is an inhibiting factor of intercultural listening.

Third, it is worth noticing that junior EFL students acknowledge their inadequate proficiency in English (e.g. grammar, vocabulary), which makes them reluctant to listen and converse with foreign peers. The fact that students of the present study have the propensity to be timid

or demotivated to communicate with others may lead to the furtherance of limited knowledge and experience in intercultural communication consequently. Meanwhile, because culture is regarded as the fifth dimension of the language besides the other four language skills (Yu et al., 2014), the integration of culture in language instruction can help build up students' intercultural communication, which is believed to be a stimulant of language learning motivation [see *Mirzaei and Forouzandeh (2013)*, *Badrkoohi (2018)*, *Nguyen (2023a)*, *Nguyen (2023b)*].

Also, students may misunderstand or fail to comprehend words or the body language of others, which is another deterrent. This may be because their comprehension of verbal communication with others is still limited. From this perspective, it can be inferred that EFL students' background knowledge of (inter)cultural listening and communication has not been strong enough, resulting in limitations in their attitudes, skills, and adaptation to new communication settings (Akhtar et al., 2015; Bodycott, 2012). This finding leads to a recommendation that first-year students should be required to take intercultural listening courses as a part of the language programs; i.e. the dimension of culture should be an indispensable component of the language teaching and learning to develop L2 learners' cultural knowledge and gain awareness of listening in various contexts.

Fourth, upon their self-evaluation of intercultural listening levels, EFL students have a variety of approaches to develop their competence. Junior students primarily use the free and easily accessible Internet and media to develop their cultural knowledge and skills. Some are interested in watching movies from non-native cultures (such as Korea or China) to enhance their cultural background. Senior students, on the other hand, are looking for more practical techniques to help facilitate their employment prospects. In particular, they primarily gain on-the-job experience in real-life communication with international (native and non-native) peers to explore other people's cognition and communication patterns. This allows students to establish themselves in the so-called English communication environment, and they feel that their intercultural listening abilities will increase dramatically. Furthermore, some of them believe that assignments given by teachers might be a useful motivator for improving their intercultural listening skills. Under academic pressure, individuals must complete the specified duties to undertake associated activities, which will result in personal competence growth. This leads to a recommendation for 'culturally responsive teaching', which can be established to boost students' competence by cultivating human values and incorporating non-linguistic and extracurricular activities (Valeeva et al., 2020). Guo et al. (2022) emphasized the significance of a de-Westernization strategy, in which indigenous epistemology, language, and culture should be integrated into the teaching curriculum. This sheds light on the curriculum development for EFL students, in which learning materials are available for cultural acquisition, and various assignments are given to foster their practical learning and contrast cultural values.

Finally, all participants in this study believe that there is a close relationship between intercultural listening and listening abilities. Most participants interviewed consider that intercultural listening is an extension of listening ability. Through listening competence, an individual's language knowledge can be remarkably improved, such as grammar, vocabulary, pronunciation, etc. so they can perform quite well on various language tests. However, with intercultural listening, EFL students can not only understand the literal meanings of communicated texts but also denote the meanings of the (intercultural) contexts. In other words, misunderstandings due to listening can be mitigated owing to improved intercultural listening competence. Some senior EFL students assert that intercultural listening is not

merely about listening to what is stated, but cultural knowledge, attitude, and skills should be involved to achieve mutual understanding among interlocutors.

The fact that EFL students have a high level of intercultural listening and listening strategies in the survey whereas they give their competencies at the medium levels should also be considered. That may reveal the curriculum, to some extent, introduces related topics but might not yet be at an intensive level to boost their ability. Hence, the present study suggests there should be academic instructions given by ELT teachers on how to stimulate intercultural listening so that students can actively self-practice to improve and enrich their attitudes, knowledge, and skills.

Conclusion

This study investigated EFL students' intercultural listening and their perspectives on the topic at a public higher education institution in Hanoi, Vietnam. The study's quantitative findings demonstrate a high degree of intercultural listening among EFL students and a positive relationship with their listening strategies. However, qualitative results reveal that EFL students propose a medium level of intercultural listening mostly owing to a lack of knowledge in intercultural listening and cultural background. Upon their perceptions of the importance of intercultural listening, EFL students adopt a variety of techniques to improve their proficiency.

The findings of the present study show the programs delivered to EFL students have been effective since EFL students have been acquiring intercultural listening through their second language learning process, resulting in their high level of competence. Nevertheless, the fact that EFL students are unfamiliar with intercultural listening until their participation in the study should be a concern. The main findings of the study are supposed to be useful to the university's managers because the principle of the training program with the inclusion of intercultural communication and intercultural listening can help produce highly qualified graduates for society, especially in the globalization context. Furthermore, the findings are allegedly helpful to the department's leaders in the design of the culturally responsive curriculum purposefully dedicated to boosting EFL students' intercultural listening. Finally, the present study hopes to increase EFL students' enthusiasm to acquire and strategize their learning process to foster intercultural listening (besides linguistic backgrounds), enabling them to become intercultural interactants in the new era. More studies on these with the employment of other data collecting techniques (e.g. class observation, interview with ELT teachers) and the correlation with intercultural communication may yield further meaningful findings to the literature.

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Contact email: huyen.nguyen@hanu.edu.vn

***Implementing Online Internalization Experiences in Higher Education Within COIL
Method: The Case of Interdisciplinary Mexico-Ecuador Collaborations***

Maritza Peña Becerril, Tecnológico de Monterrey, Mexico
Alan Joel Miralrio Pineda, Tecnológico de Monterrey, Mexico
Isaac Juárez Acosta, Tecnológico de Monterrey, Mexico
Viviana Guerrero Benalcázar, Universidad San Francisco de Quito, Ecuador
Daniela Ziritt, Universidad San Francisco de Quito, Ecuador
Andrea Ayala, Universidad San Francisco de Quito, Ecuador

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Abstract

The impact and importance of online internationalization, as proposed by Collaborative Online International Learning (COIL) initiative, were implemented and analyzed. It emphasized the influence in academic development, intercultural competencies as well as the preparation of the students towards globalization. Three implementations of COIL collaborations were performed between Ecuadorian Universidad San Francisco de Quito (USFQ), in collaboration with the Mexican higher education institution Tecnológico de Monterrey (ITESM), Campus Toluca. Six different courses were selected, each one with a head professor. The topics discussed by the professor included migration, decision-making, and volcano modeling. To validate the implementations, a survey written in Spanish, was applied to 108 students enrolled in COIL courses. This instrument included 12 closed questions, in Likert scale, as well as 2 open ones. Two variables were analyzed: 1) Sense of usefulness of COIL activities. 2) Effectiveness of international teams. The results showed that students consider time zones and communication are the most important limitations to face online, and international collaboration. Additionally, in student's opinion, compromise and responsibility are valuable as well as necessary features to achieve a successful international collaboration. Moreover, there is a clear relationship between the liking of the COIL activity and the sense of usefulness identified by students. It was shown that COIL activities promoted collaboration between international universities as well as global citizens. In fact, it is perceived that COIL is a more democratic way to promote international collaborations beyond the physical limitations.

Keywords: Educational Innovation, Higher Education, Global Perspective, Professional Education, COIL

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Introduction

The International Online Collaborative Learning (COIL) initiative emerges in higher education to cultivate global students, capable of creating intercultural learning networks through integrated curricula between courses from universities in different countries (Zhang & Pearlman, 2018). Zhang & Pearlman (2018) mention that higher education nowadays seeks interactive and effective methodologies that promote new forms of learning, instead of programs that generate new study topics. In this way, the COIL methodology emerges as an approach that allows internationalization and interdisciplinarity in the classroom, building global learning communities (Zhang & Pearlman, 2018; Vahed, 2022), and overcoming the barrier of geographical distance by the possibility of teaching synchronously and asynchronously through virtual means, which Naicker, Singh & Genugten (2022) mention as the experience of studying abroad without leaving your home.

The success of the COIL methodology lies in collaboration both in planning and in execution and evaluation of results, ensuring that students take ownership of their learning, demonstrating autonomy, and expanding their opportunities (Zhang & Pearlman, 2018; Naicker, Singh & Genugten, 2022). Additionally, Naicker, Singh & Genugten (2022) mention that in collaborative learning, students acquire knowledge through processes of assimilating and comprehending information that requires sharing, investigating, and actively engaging. They also develop interpersonal skills and teamwork abilities.

However, one of the biggest challenges facing the COIL methodology is to ensure that this international collaboration is efficient through effective and cost-effective means (Zhang & Pearlman, 2018), increasing awareness of the importance of interculturality and diversity in learning, as well as the development of cultural competencies (Vahed, 2022). Additionally, it is mentioned as one of the most frequently studied factors that hinder the achievement of these objectives the inconsistency in interaction among students from different geographical locations (Vahed, 2022), hence the importance mentioned by Naicker, Singh & Genugten (2022) of nurturing students' autonomy and commitment in implementing this methodology.

Interdisciplinarity in the COIL methodology strengthens its learning objectives: the creation of shared experiences and the acquisition of common knowledge that enables students to solve problems with cultural sensitivity and greater flexibility in their education (Petrova, Steffen, Piumatti & Lingán, 2022); in addition to nurturing the dimensions of interculturality and internationalization in learning.

Methodology

In the semester of August-December 2023, three different COIL collaborations between Universidad San Francisco de Quito, Ecuador (USFQ), and Tecnológico de Monterrey Campus Toluca (ITESM) were simultaneously implemented. Table 1 summarizes the information about the participating professors, courses, topics addressed, and the number of participating students.

Table 1: *Summary of information on the three COIL implementations between USFQ and ITESM.*

Topic	Dates	Course	Professor	Number of students
Migration	Start: October 30	Quantitative methods II. (ITESM)	Maritza Peña (ITESM)	11
	End: December 03	Learning service (USFQ)	Viviana Guerrero (USFQ)	25
Decision making	Start: September 18	Modeling in engineering by dynamic systems (ITESM)	Alan Miralrio (ITESM)	26
	End: November 16	Cognitive Psychology (USFQ)	Daniela Ziritt (USFQ)	27
Volcano modelling	Start: September 18	Computational modeling of the movement (ITESM)	Isaac Juárez (ITESM)	18
	End: October 20	Cosmos (USFQ)	Andrea Ayala (USFQ)	24

The design and implementation of each COIL collaboration were exclusively handled by the professors. There was no interaction or communication between the professors from different collaborations during these processes. At the end of the collaboration, a survey was delivered to all students from the three collaborations. The survey was conducted in Spanish and consisted of 12 closed-ended questions on a Likert scale and two open-ended questions. The survey instrument was designed to assess students' perceptions of the international COIL experience, without considering the topic studied, the courses, or the professors. The aim was to validate two general variables:

1. The sense of utility of the COIL collaboration.
2. The effectiveness of international teams.

To analyze these variables, a subset of questions was chosen. In the case of the sense of the utility of the collaboration, questions 4 and 8 of the instrument were considered:

- Question 4. How significant was it to carry out this collaboration project in an international group?
- Question 8. How much would you recommend taking a course that includes the international attribute "global classroom"?

To analyze the variable of effectiveness of international teams, closed-ended questions 9 and 10, and open-ended questions 13 and 14 were selected.

Close-ended questions 9 and 10 respectively:

- Question 9. How challenging was it for you to organize within an international team?
- Question 10. To what extent were agreements respected within your international team?

Open-ended questions 13 and 14 respectively:

- Question 13. What limitations did you find when collaborating in an international and multidisciplinary team?
- Question 14. What qualities should a student have to succeed in an international and multidisciplinary collaboration?

The analysis of the aforementioned questions was conducted using a mixed-method approach. For the quantitative aspect, descriptive and inferential statistics were employed, whereas for the qualitative aspect, traditional response classification analysis was implemented. The text analysis was performed using Voyant Tools, an open-source web environment to analyze the corpus of digital texts.

Results and Discussion

To analyze the effectiveness of the international teams we used the qualitative methodology of text analysis. The 108 student responses were analyzed through the free Voyant Tools application. Figure 1 displays the word cloud with the 25 most recurrently used words by students in response to the question "What limitations did you encounter when collaborating in an international and multidisciplinary team?" The size of the words is related to their frequency. It can be appreciated that communication and scheduling are the most frequently mentioned limitations.

In Figure 2, the network graph presented shows the strength in the occurrence of words mentioned by students in response to question 13 too. It confirms once again that if someone mentioned a communication problem, it was immediately associated with scheduling or tasks.



Note. The size of the words is related to their frequency.

Figure 1: Word cloud with the 25 most mentioned words in response to question 13.

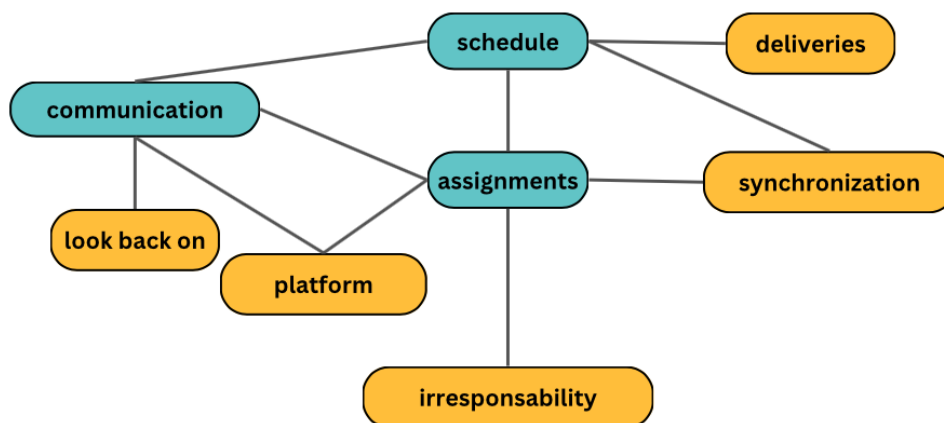
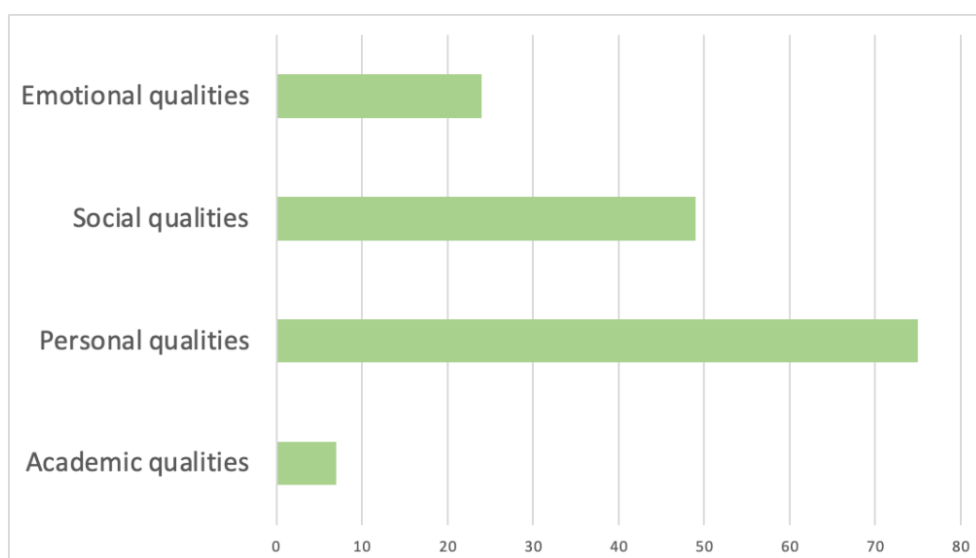


Figure 2: Network graph displaying the strength of the relationship between words, derived from students' responses to question 13.

On the other hand, question 14 was analyzed and peer-ranked using traditional qualitative methodology. The authors decided to classify these responses into 4 groups of qualities: academic, personal, social, and emotional (OECD, 2020).

Academic qualities include those related to cognitive abilities, knowledge, and academic performance. Personal qualities refer to motivation, attitude, responsibility, perseverance, and autonomy. Social qualities include communication skills, teamwork, leadership, empathy, and respect. Finally, emotional qualities include self-esteem, self-control, resilience, and emotional well-being. Figure 3 summarizes the results of this classification in terms of a bar graph, where it can be seen that students consider personal qualities to be the most valuable tool for success in a COIL course (OECD, 2020). Thus, personal characteristics, such as attitude and responsibility, surpass social and even academic ones. It is pertinent to mention that all the groups were formed randomly, without any previous personality or attitude test.

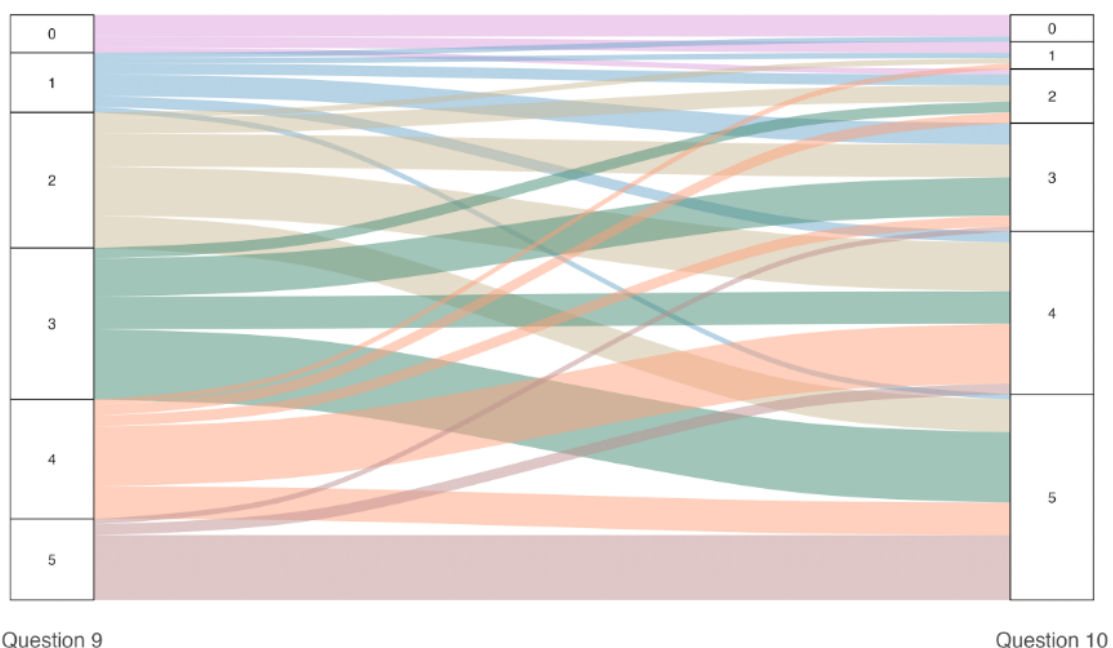


Note. Responses are categorized into academic, personal, social, and emotional qualities.

Figure 3: Classification of students' responses to the question 14.

Relating the answers given by the students to questions 9 and 10 contributes to the analysis of the variable effectiveness of international teams. Consequently, a cross-check was made to

find out if in the teams where there was difficulty in organizing themselves, as well as how much of the agreements made by the members were respected. The resultant Sankey diagram, plotted in Figure 4, shows the relationship between the answers to the questions "How difficult was it for you to organize yourself in an international work team?" and "How well were the agreements in your international work team respected?". As can be seen, there is no clear relationship between self-organization and the accomplishments of the agreements within the group. However, it is noticeable that personal qualities are perceived as the most notable ones to produce a successful collaboration.



Note. Line width is proportional to the importance of the relationship between responses.

Figure 4: Sankey Diagram, illustrating the relationship between responses to questions 9 and 10.

For the variable sense of usefulness of international collaboration COIL, questions 4 and 8 were analyzed, which are, respectively: How meaningful was it to carry out this collaborative project in an international group? And How much would you recommend taking a subject that contains the attribute international global classroom? However, there is a potential hidden variable that can be taken into consideration, gender. For this purpose, a hypothesis test was carried out to find a relationship between the sense of usefulness of the project and the student's gender.

Table 2: Organized data from student responses to question 4.

Gender	Level of sense of usefulness					
-	0	1	2	3	4	5
H	1	3	5	20	13	16
M	2	4	2	7	21	14

Table 2 shows the organized data for question 4 concerning student gender and the level of sense of usefulness. In contrast, matrix A contains the observed frequencies of the relationship between question 4 and students' gender, and matrix B the expected frequencies. In the current case, the level of significance was assumed as 5 %. The null and alternative

hypotheses are stated as follows: H_0 = There is no relationship between gender and the level of significance of the COIL project, whereas H_1 = Gender and the level of significance of the COIL project are related.

$$A = \begin{bmatrix} 1 & 3 & 5 & 20 & 13 & 16 \\ 2 & 4 & 2 & 7 & 21 & 14 \end{bmatrix}$$

$$B = \begin{bmatrix} 1.61 & 3.75 & 3.75 & 14.5 & 18.25 & 16.11 \\ 1.39 & 3.24 & 3.24 & 12.5 & 15.74 & 13.88 \end{bmatrix}$$

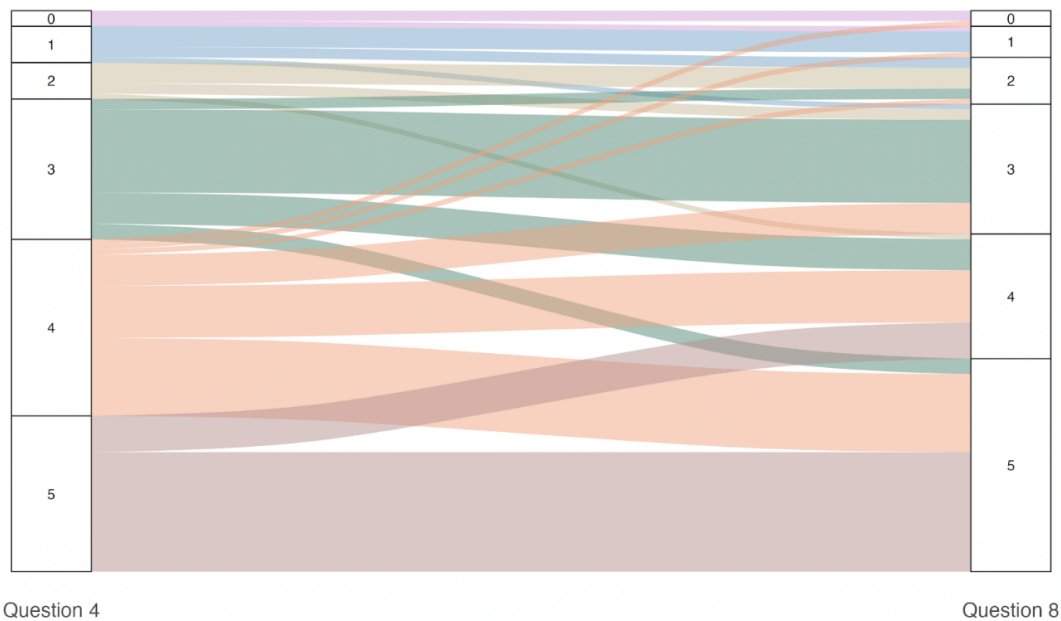
The Pearson’s chi-square was computed as follows:

$$\chi^2 = \sum (f_0 - f_e)^2 / f_e \tag{1}$$

Where f_0 are the observed frequencies, and f_e the expected ones.

Consequently, the chi-square statistic is obtained as $\chi^2 = 9.72$. Besides, the critical value of the chi-square distribution χ_c^2 , with 5 degrees of freedom, was found as 11.07. Comparing the two quantities, the calculated Chi-square statistics is lower than the test statistic, so it is affirmed that there is statistical evidence to affirm that we do not reject H_0 . This means that there is no relationship between gender and the significance level of the COIL project. Therefore, the analysis of the relationship in questions 4 and 8 should be performed without considering the gender of the students.

Finally, Figure 5 shows the Sankey diagram relative to the ratio of students for whom the COIL implementation was significant and their willingness to recommend it. For the vast majority, it was significant, but the range of students who would recommend it is greater. It is noticeable that students attributing the highest meaning to international collaborations are also those with the highest tendency to recommend it. Thus, designing highly significant COIL experiences is a way to promote virtual international collaborations.



Note. Line width is proportional to the importance of the relationship between responses.

Figure 5: Sankey Diagram, illustrating the relationship between responses to questions 4 and 8.

Conclusions

Three COIL experiences, at the higher education level, were carried out by the collaboration of pairs of professors from the Ecuadorian Universidad San Francisco de Quito and the Mexican Tecnológico de Monterrey. These implementations were reported and analyzed in terms of two variables, related to the sense of usefulness and effectiveness of the international collaboration. The impact of the international collaborations, in the aforementioned variables, was evaluated through a mixed methodology, by the analysis of the student's responses to open-ended and close-ended questions in a written survey. According to the students, the most important limitations, in the case of an international and multidisciplinary collaboration, are the communication among participants as well as the scheduling. It is important to note that there is only an hour of difference between the Mexican and Ecuadorian time zones. Through a network graph, it is highlighted that communication and scheduling problems were related to the performance of the tasks and assignments required. Besides, personal qualities were identified as those crucial to succeed in the COIL experience. These qualities include motivation, attitude, responsibility, perseverance, and autonomy. Thus, personal attributes are perceived as more important than emotional, social, and even academic ones. Through the chi-squared tests, it was determined that gender is not related to the sense of usefulness of the collaboration. In addition, for the majority of the students, the COIL collaboration was significant as well as they recommended it in a greater extent.

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From Fluency to Flourishing: The Influence of English Language Proficiency on Research Student Success

Bonginkosi Hardy Mutongoza, University of Fort Hare, South Africa

Manthekeleng Agnes Linake, University of Fort Hare, South Africa

Sive Makeleni, University of Fort Hare, South Africa

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Abstract

In most post-colonial African states, colonial languages occupy prominent teaching, learning, and research spaces. While South Africa has made significant strides in recognising Indigenous languages through policies and restorative legislation, the level of uptake of Indigenous languages has remained a thorny issue. The marginalisation of indigenous languages can have dire consequences for research students in particular, for example, cultural disconnection and biases, linguistic barriers, and identity conflict, among other things. On this basis, this study sought to explore how proficiency in English influences Indigenous student success in postgraduate student research programmes. To achieve this aim, the study employed a qualitative research approach and a case study design. Data were collected from 21 participants comprising nine Indigenous PhD students, seven Indigenous Master's students, and five supervisors who were purposively sampled. The study's findings reveal that proficiency in English significantly influences the success of postgraduate students at the selected university in several ways, including communication skills, engagement with supervisors and peers, and networking and collaboration with researchers from different linguistic and cultural backgrounds. The study recommends language support programs, intercultural competence training, mentorship and support structures, and facilitating networking opportunities. Through promoting inclusive practices, the university can enhance the academic success of postgraduate students.

Keywords: Cultural Disconnection, Inclusive Practices, Linguistic Barriers, Postgraduate Research, Supervision

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Introduction

In post-colonial African states, the legacy of colonialism continues to exert a profound influence on education systems, with colonial languages occupying dominant roles in teaching, learning, and research (Meighan, 2023; Mutongoza et al., 2023a). This dominance of colonial languages permeates all levels of the education system, from primary schools to universities (Makhanya & Zibane, 2020; Mutongoza et al., 2023b). Textbooks, instructional materials, and academic resources are predominantly available in colonial languages, limiting access for students who may be more proficient in their indigenous languages (Bokana, 2014; Tewari & Ilesanmi, 2020). Despite efforts to recognise and promote Indigenous languages, the uptake of these languages in academic settings remains a contentious issue (Mwaniki, 2012; Mkhize, 2018). While South Africa stands as an exception, having made significant strides in acknowledging Indigenous languages through policies and restorative legislation, the degree of adoption and integration of Indigenous languages into academic discourse has been limited, posing challenges for students and scholars alike (Mdzanga & Moeng, 2021; Joubert & Sibanda, 2022).

Completing postgraduate research degrees in South Africa is not without systemic and institutional challenges that hinder the progress of research students as well as affect the country's overall innovation capacity. Desmennu and Owoaje (2018) reveal that the chronic underfunding of higher education institutions translates into limited resources for research, such as inadequate lab equipment, restricted access to academic journals, and insufficient opportunities for fieldwork. Additionally, the infrastructure at many universities, including research facilities and libraries, often falls short of what is needed to support high-level research activities (Olawale & Mutongoza, 2021). Another significant challenge is the high student-to-supervisor ratio. According to Mavundla (2023), supervisors report being overburdened with large numbers of students, limiting the amount of individual attention and guidance they can provide. Lategan et al. (2023) add that the administrative responsibilities placed on supervisors reduce the time available for effective mentorship. Moreover, supervisors lack professional development opportunities, which can lead to outdated or less effective supervision practices (Ramnund-Masingh & Seedat-Khan, 2020). Mutongoza (2023) adds that students' and supervisors' mental health and well-being is also frequently overlooked, further complicating the supervision dynamic.

Additionally, because students from marginalised communities are systematically excluded, they often appear to lack the foundational knowledge or research skills necessary for postgraduate studies, putting them at a disadvantage (Ramnund-Masingh & Seedat-Khan, 2020). As such, even where scholarship and funding opportunities are available, they often systematically exclude these mostly Black student populations. The dynamics of supervision itself present further complications because some supervisors are not adequately trained in mentorship, which can lead to a variance in the quality of supervision provided (Lategan, Nel, & Bitzer, 2023). Mutongoza (2023) argues that the organisation of power in academia also results in reports of exploitation and a chronic lack of support for the student's independent research interests. Moreover, the diverse cultural backgrounds of students and supervisors can lead to misunderstandings or communication issues, while gender biases may affect the supervision experience, particularly for female students in male-dominated fields (Herman, 2011; Ramnund-Masingh & Seedat-Khan, 2020).

The marginalisation of Indigenous languages in academia can have far-reaching consequences, particularly for postgraduate research students. Cultural disconnection, biases,

linguistic barriers, and identity conflicts have been found to impede these students' academic progress and personal development (Rose et al., 2020; Mabena et al., 2021). These issues can potentially limit access to knowledge and opportunities for Indigenous students and further perpetuate systematic inequalities that undermine the diversity of the academic landscape (Jeyaraj, 2018; Quinto, 2022; Mutongoza et al., 2023b). Against this backdrop, there is a pressing need to explore the role of language proficiency, particularly in English, in shaping the success of postgraduate research students (Makhanya & Zibane, 2020; Amalia & Jaya, 2023). This study sought to address this gap by investigating how proficiency in English influences the academic journey of Indigenous postgraduate students at a selected university.

Framing the Concept of Indigeneity

Defining the concept of Indigeneity remains a hotly contested undertaking in academic and theoretical debates. Trigger and Dalley (2010) remind us that while the field involves a passionate commitment to advocacy among scholars, theoretical clarity is needed to understand who might be considered Indigenous and why this is so. 'Indigenous' refers to peoples engaged in an often-desperate struggle for political rights, land, a place and space within a modern nation's economy and society (Guenther et al., 2006; Gomes, 2012). After a comprehensive review of the attempts at defining this concept, Corntassel (2003) proposed four criteria for defining indigenous peoples. Firstly, Corntassel (2003) believed that Indigenous peoples are peoples who believe they are ancestrally related and identify themselves, based on oral and/or written histories, as descendants of the original inhabitants of their ancestral lands. In addition, Corntassel (2003) argues that Indigenous peoples have their own informal or formal political, economic, and social institutions, which tend to be communal-based and reflect their distinct ceremonial cycles, kinship networks, and continuously evolving cultural traditions. Thirdly, Indigenous people speak (or once spoke) an indigenous language different from the dominant society's language, with distinct dialects and uniquely indigenous expressions often persisting as a form of identity even when the language is no longer spoken. Finally, the fourth criterion Corntassel (2003) established is that Indigenous peoples distinguish themselves from the dominant society and other cultural groups while maintaining a close relationship with their ancestral lands and sacred sites.

This study domesticates Corntassel's four criteria for defining Indigeneity in the context of South Africa. Regarding ancestral heritage as a pointer of Indigeneity, we draw from studies such as Adams et al. (2014), who depose that Indigenous South Africans consist primarily of the Khoikhoi, San and Bantu peoples. Regarding communal organisation, we rely on Seroto (2011), who identified the Khoi, the San and the Bantu groups of South Africa as indigents. In the context of South Africa, scholars such as Ngcobo and Nomdebevana (2010) define Indigeneity in terms of the nine constitutionally recognised languages, namely isiZulu, isiXhosa, isiNdebele, sePedi, Sesotho, SeTswana, siSwati, and TshiVenda. We further acknowledge Ngulube (2012), who considers the Khoi and San languages endangered Indigenous languages. Finally, concerning ties to ancestral homes, Skosana (2022) argues that the Indigenous struggle against apartheid was premised on undoing the land dispossession that was facilitated by a series of colonial and apartheid laws that intended to deepen segregation and confer material gains for a portion of South Africa's population.

Methodology

Located within a qualitative approach, the study was grounded in a single case study design in which the case was a selected faculty at a university in South Africa. The case selection

was based on self-reported struggles in postgraduate research studies that delayed the completion of degrees. Within the selected case, the study began with an envisaged sample of ten Master's students, ten PhD students, and five supervisors purposively sampled for participation. The criteria for inclusion in the study were the participants' first language being an indigenous language other than English, having been enrolled at least for two years for their studies, and the supervisors had to have supervised students who are not English first speakers over at least two years. The sample of participants comprised seven Master's students, nine PhD students, and five supervisors, totalling 21 participants. Having obtained the required permissions, the researcher collected data using focus group discussions with the students and semi-structured interviews with the supervisors and analysed it thematically as prescribed by Braun and Clarke (2006). To enhance the credibility and validity of the findings, the analysed data from the three participant groups were triangulated.

Presentation and Discussion of Findings

When asked about how proficiency in English influences the academic success of postgraduate research students at the university, the participants' responses revealed three main categories: language and communication limitations, resource and accessibility challenges, and social and networking challenges. Below is a more detailed presentation and discussion of these findings.

Language and Communication Limitations

Several participants revealed language and communication-related challenges, such as difficulty with academic jargon, language mastery, comprehension, communication skills, and understanding feedback. A case can be drawn from a Master's student who revealed,

Being a second speaker of English sets me up for greater difficulty in my research. Some technical and discipline-specific aspects are really confusing for me because English is not my language. I often have to ask for help from my peers, but sometimes, I feel like I am becoming a burden to them. It is tough being a second-language speaker. (Master's Student 5)

Similar sentiments were also echoed by a PhD student who commented,

The technical elements of academic writing are challenging for us, who are not native speakers of English. Fortunately, I have a very patient supervisor – I get corrected more graciously, and we tend not to focus on the grammar but the depth of the arguments and reasoning. (PhD Student 3)

A supervisor also weighed in and said,

We are in a linguistically diverse country where, in principle, we all agree that all languages are important, but the system does not seem to appreciate this. As a supervisor, one needs to be considerate, especially of groups whose languages are neglected in university education, where English and Afrikaans have been leading. If one is not careful, one may fall into the trap of becoming a language editor instead of guiding the student on a research journey. You may also make the mistake of losing sight of the main aim – helping the student make progress. Indigenous students tend

to be mistreated on account of their command of the language of writing their research. (Supervisor 2)

Another PhD student also revealed the following,

It is difficult to understand concepts taught with a language you have not mastered. Some of the key struggles I have faced include the challenge of communicating and writing effectively...I particularly face the challenge in Social Science theories. Many of them are complex to understand, and I often have to read more in order to understand them. (PhD Student 7)

This was corroborated by a Master's student who argued,

If you are fluent in English here, you can almost say that you have done half of the work. I have been supervised by a native English speaker who I could tell was being offended by my lack of command of English...I felt like I was annoying the supervisor, so I requested the responsible officials to change me to an Indigenous supervisor. It was an uncomfortable experience that I felt dealt a blow to my confidence as a postgraduate student. (Master's Student 1)

The findings above reveal that Indigenous postgraduate students face significant challenges with academic jargon, language mastery, comprehension, and communication, impacting their academic progress and confidence. Participants described the burden of frequently seeking help, the emotional toll of perceived insensitivity from supervisors, and the extra effort needed to understand complex theories, particularly in social sciences. These findings corroborate with Nachatar Singh and Jack (2022), who reveal that academic success reflects the extent to which they are given opportunities to engage in linguistic development in their new educational setting. In fact, it is normal for some students, as reported here, to feel like they are burdening their colleagues when they seek assistance understanding language (Gutierrez et al., 2021; Walton et al., 2020). Dobinson and Mercieca (2020) warn that the relegation of some languages to the periphery at the expense of others is linguistic racism, and it often results in disconnection. As with the findings presented here, Rodríguez et al. (2016) argue that less proficient students are significantly disadvantaged by pedagogies that emphasise a 'standard language' of communication and expression. These findings reveal the urgent need for a more inclusive academic environment that embraces linguistic diversity to prevent feelings of isolation, inadequacy and compromised academic performance among non-native English speakers.

Resource and Accessibility Challenges

Participants also revealed that they grappled with challenges related to resource accessibility and time management, stemming from the need for extended efforts to understand the material. This can be noted from a PhD student who highlighted,

Regarding material, our colleagues who speak proper English and were taught English as a home language have a head start on us. Never mind that I am doing a PhD right now, I still have to think in my native language, process things in my language, and then mentally translate those things into English. Before coming to university, it was always said that we must value our identity, including language, but since my first year, the reality has been that we are sometimes marginalised on

account of our identities. The reality is that you find no material written by someone like you or in your home language...that is the sad reality we live with. (PhD Student 9)

This was supported by a supervisor who added,

In these days, when decolonisation has become a buzzword, it is regrettable that our students – Indigenous students – are still excluded linguistically from pursuing postgraduate studies. It is traumatic for a Black child from rural areas, whose native language is isiXhosa, for example, to come here and battle it out academically with their peers. It is unacceptable that English still gets prioritised, and it almost seems like speaking good English is the standard tested – I say this because excellent English speakers understand texts better and express themselves better. I can bluntly say that the system is not designed for Indigenous students to succeed. (Supervisor 1)

Additional insights can be gleaned from a Master's student who said,

The struggle is real; we tend to spend most of our time trying to understand certain things and work almost twice as much as our colleagues from abroad and those from here but speak English as a home language. A lot of time is wasted trying to rewrite and edit the language to meet the supervisor's readability requirements – online tools like Grammarly have become some go-to tools for helping me and my friends cope. I will not talk about other AI tools that people are now using to help them write well. (Master's Student 7)

A PhD student also added insights on how limited resources in Indigenous South African languages were a significant barrier both because of what that represents and the actual consequences by noting,

When White scholars dominate the field that you study in, it sends the unfortunate message that this is not for you. For me, it is a form of gatekeeping that we still grapple with because the representation there is undoubtedly of an untransformed field that is difficult for an Indigenous student to traverse. We cannot escape the fact that language is a genuine problem for many students; you suffer and have to do more than a native language speaker. Anything that is learnt in a language other than your own forces you out of your comfort zone – if it were all of us being pushed out of our comfort zones, it would be better. However, it is curiously, the previously disadvantaged Black populations that are being expected to run the extra mile. (PhD student 9)

A Master's student noted similar experiences and highlighted,

I had a rude awakening when I started my postgraduate research – here, you have to have an excellent command of English. You are suddenly overloaded with theories and arguments that are written in English – I mean proper English, not our version of English [English as a First Additional Language]. Even the supervisor expects you to know your story in English – that means expressing yourself eloquently and with no hiccups. The language of research here just punishes the indigenous students – as a result, people like me generally do not go beyond the first degree. You have to be

tough to survive, and you need additional support from supervisors to survive.
(Master's Student 4)

From the sentiments of a supervisor, one could note that language was a significant challenge that the institution was aware of and was trying to help with, although there remained some significant challenges. The supervisor noted,

The university recognises that we are a historic institution that mainly services and attracts the rural population – our province is rural. We still face challenges regardless of the centre for language assistance that was set up – they have consultants there, but for students, especially part-time ones, making effective use of the centre is quite challenging. The challenges still persist regardless of the centre's existence – the students complain about failing to read and comprehend articles and struggle with critical writing, which is double jeopardy for Indigenous students. We try our best to help nurture them, but the reality is that we lose a lot of sharp minds – daresay I, the cream of this country's future – on account of language proficiency. (Supervisor 5)

These findings indicate that non-native English-speaking postgraduate students face significant obstacles related to resource accessibility and time management, primarily due to the extra effort required to understand and process academic material in a non-native language. As Mutongoza et al. (2023a) report, Indigenous students who are taught in a language other than their native language often feel marginalised and disadvantaged at the expense of their native English-speaking peers due to the lack of resources in Indigenous languages. Joubert and Sibanda (2022) validate our results here by noting the perpetuation of systemic bias favouring English proficiency while exacerbating the struggles of Indigenous students. The lack of representation and resources in their native languages that the findings report in our study is viewed by Kriekle (2022) and King and Brigham (2022) as a form of academic gatekeeping that makes it harder for Indigenous students to succeed and progress beyond their first degrees. Because English excludes the majority of Black students in South Africa (Ndlangamandla, 2024), it is not surprising that participants noted that they constantly grapple with an 'undeclared additional workload' of trying to attempt and improve their grammar and flow of ideas as was noted in the findings. One can, therefore, concede that despite the institutional efforts to provide language assistance, significant challenges remain, leading to the loss of potential talent due to inadequate language support.

Social and Networking Challenges

Another aspect that became evident from the participants' responses was that non-native English speakers faced significant challenges related to collaborations and networking, primarily due to their lack of confidence due to language barriers and cultural differences in communication. One can consider the views of a Master's student who said,

I struggle to speak with other students who are not from around here...even lecturers who do not speak my language. The thing is that I was not taught English as a first language, so when I meet someone who cannot understand my own language, it is difficult for me to express myself. I find myself sticking to the people I know, students who speak my language, and even Professors from around. For someone who does not understand me, it certainly looks like I discriminate, but in reality, I am afraid of not being understood. The result is that I rarely benefit from people with

experiences other than my own. I am better now, but there is still work to be done.
(Master's Student 4)

These views were confirmed by a supervisor who argued,

I always urge my students to interact with people they are not used to, people who have different life experiences, and people who come from backgrounds that are different from them because this helps them to learn more and see the world differently. In most situations, I find that English is usually the barrier, and as a result they shy away and hide themselves, but we always gently push them into interacting and networking. It takes time, but I have found that this always works for me.
(Supervisor 3)

A PhD student added their experiences of language as a barrier when it came to collaboration and networking, noting,

Conferences and academic events are some of the scariest for me. I know that these events are meant to facilitate connections with other authors in the same field, but they are not that easy. I can simply say that if you cannot speak well, chances are that you will struggle to present and respond meaningfully, let alone converse with others. I know many students who would instead not present their work, which in most cases is really good – they fear that their lack of good English will make it look like the work is not theirs... (PhD Student 1)

Another PhD student also revealed that the lack of proficiency in English was significantly hampering peer work and peer support. The student noted,

Language has the effect of knocking your confidence...I once attended a workshop with some Master's and Doctoral students from other institutions. I really felt looked down on because my English is not that good, as you can tell. I could sense that they were being judgemental and looked at me like they were doubting how I was doing a PhD. My participation in these events is now minimal; I work with other Indigenous students only...and only those who understand that language is not supposed to be seen as a measure of intelligence. I do this for my good – I hate being looked down on. (PhD Student 6)

Similar sentiments were also expressed by another Master's student who revealed,

When you cannot clearly express your ideas, it is not easy to participate in peer learning activities. My supervisor does these monthly meetings and urges us to exchange each other's work for feedback. When the work is exchanged between two people from different linguistic backgrounds, there are usually problems with understanding and giving feedback. This has helped us be more confident and expressive, but for others who do not have such support, you can imagine how isolated they may quickly become. (Master's Student 2)

The findings reveal that non-native English-speaking postgraduate students face significant challenges in collaborations and networking due to language barriers and cultural differences in communication, which undermine their confidence. The participants' view that they faced difficulties in interacting with peers and lecturers who do not speak their native language,

leading to isolation and missed opportunities for broader academic engagement, is similar to previous studies such as Nasiri and Mafakheri (2015) and Ramchander (2021). As confirmed by Tlali et al. (2022), language barriers often cause students to shy away from diverse interactions. This was validated when participants highlighted the anxiety and avoidance of presenting at conferences due to fears of poor English undermining their work. The work by King and Brigham (2022) is instructional in demonstrating that a lack of language proficiency significantly decreases the potential to seek peer support and collaboration and usually results in social isolation and eventual dropout. This validates the views of participants who revealed that language issues hinder effective participation in peer learning activities, potentially causing non-native speakers to feel excluded and less confident. These experiences underscore the need for more inclusive strategies to support non-native English speakers in academic collaborations and networking.

Conclusion and Recommendations

We set out to explore how proficiency in English influences the academic success of postgraduate research students at a university in South Africa. Our findings revealed three main categories of how language proficiency was influential in postgraduate studies: language and communication challenges, resource and accessibility challenges, and social and networking challenges that restricted the students' progression. Consistent with the call for a transformed higher education landscape, this study demonstrates that universities are not yet as inclusive as they sometimes appear to be because postgraduate experiences somewhat depend on one's ability to express themselves in English fluently. This calls for further efforts towards decolonising postgraduate studies in a way that recognises and dismantles the embedded forms of exclusion. Therefore, to create a more inclusive and supportive academic environment for Indigenous postgraduate students, institutions should provide robust language support services, such as language courses, writing centres, tutoring, and developing multilingual resources. Training programs for staff on cultural sensitivity and effective communication will also be as essential as adopting inclusive pedagogies that respect linguistic and cultural diversity. Universities must also work to review policies to ensure equitable access and offer targeted scholarships and funding to alleviate financial burdens. Facilitating peer networks and mentorship programs can enhance social integration, while counselling services and community-building activities can address emotional and psychological needs.

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Contact email: bmutongoza@outlook.com

English Learning Policy in Indonesia: A Public Administration Perspective

Suryani Jihad, Hasanuddin University, Indonesia
Juanda Nawawi, Hasanuddin University, Indonesia
Nur Indrayati Nur Indar, Hasanuddin University, Indonesia
Muhammad Tang, Hasanuddin University, Indonesia
Muhammad Akmal Ibrahim, Hasanuddin University, Indonesia

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Abstract

This research aims to analyze various English language learning policies in Indonesia through the lens of public administration, recognizing the imperative of equipping future generations with the linguistic skills necessary to navigate an increasingly interconnected world. Employing a qualitative approach with document analysis techniques, the study scrutinizes various of documents including books, research articles, and curriculum documents. Findings reveal a consistent allocation of resources for foreign language learning in Indonesian curricula, spanning from the earliest iterations in the 1947 curriculum to the present-day emancipated curriculum (Merdeka Belajar). However, there is a discernible trend of diminishing emphasis on language education over time, despite the escalating demands of globalization for multilingual competencies. The discrepancy between the evolving demands of global citizenship and the static nature of language education within the dynamics of Indonesian public administration underscores the need for initiative-taking measures. Practical competencies, supported by participatory contributions from key stakeholders including government, teachers, curriculum developers, and provision of adequate facilities are essential to meet the evolving linguistic demands of an interconnected world. Such measures are pivotal in aligning government policies with the aspirations of the Indonesian nation, fostering intercultural competence, participatory engagement, and competitive public administration practices.

Keywords: Policy, English Education, Public Administration, Culture

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1. Introduction

Throughout history, English as a language that has become global has become essential for students to continue studying, both elementary school students and those at universities. Something that is not taboo is no longer a reason not to include English language learning in the curriculum. Additionally, it is evident in several nations that have adopted the practice of teaching English as a first language, also known as English as a Native Language (ENL), which is a language that infants learn from birth. First languages are also known as mother tongues, native tongues, or L1. Second languages, also known as English as a Second Language (ESL), denote the use of the language in a more formal setting, such as during instruction. Finally, a foreign language, also known as English as a Foreign Language (EFL), is a language that a person learns and speaks after acquiring their first and second languages. In everyday life, the phrase is not used.

This, of course, cannot be separated from the curriculum framework implemented in Indonesia. where the national school curriculum in Indonesia itself has changed on the following occasions: 1947, 1952, 1964, 1968, 1975, 1984, 1994, 1999, and 2004. Between 2006 and 2013. These modifications make sense given shifts in national and state society's political, sociocultural, and economic structures as well as in science and technology (*Pengembangan Kurikulum*, n.d.).

Then, in Indonesia itself, several curricula have been implemented since 1974 until the current curriculum, which is known as the Merdeka curriculum. This curriculum change did not happen suddenly but rather was the result of the thoughts of education experts who prioritize the presence of learning nuances that are always interesting and continue to innovate which are closely related to curriculum policy, pedagogical practices, and teaching and learning processes that involve the learner's perspective (Moore, 2012).

In addition, basic English language proficiency for middle and high school students in Indonesia has been prioritized as a means of acquiring the language and as a means of international communication. The goal of English lessons for SMP/MTs is to help students understand the significance of English in boosting the country's competitiveness in a global society. Globalization has been covered in the previous curriculum. This also holds true for other foreign language courses, such French and German.

This, however, is not entirely consistent with the speed at which technology is developing, which has eliminated national boundaries and created new avenues for international communication. This is well reflected in government policy in the 2013 curriculum. English language instruction has been curtailed in middle and high schools, and English language instruction hours have decreased, all of which go against the goal of producing a generation that can compete globally in the age of globalization.

According to Alfarisy, 2020 , the government's motto is to master foreign languages, protect regional languages, and give priority to Indonesian. This demonstrates the value placed on foreign language proficiency, even though less hours are being spent learning English, which is seen to impede Indonesians from becoming global citizens. Naturally, there is an imbalance in this situation because there are less class hours despite the need for students to learn English language skills at all levels being stressed more.

Being able to communicate in another language is not sufficient to become a global citizen; one should also be required when it comes to facilities, human resources, and particularly local government regulations. If we look at it, the bureaucracy of the Indonesian government must promote English language education in order for it to be fulfilled. Thus, the purpose of this paper is to examine English education policies in Indonesia from the standpoint of public administration to create global citizens.

2. Literature Review

2-1. English Language Education Policy in Indonesia

a. A Brief History of English Language Education Policy in Indonesia

The Indonesian government has issued various policies related to English education since the independence era. Here are some important milestones (Ball, 1982):

- 1) Lesson Plan Curriculum 1947-1968: English is taught from elementary school with a focus on developing reading and writing skills.
- 2) 1975 Curriculum: Emphasis on developing communication skills in English.
- 3) 1984 Curriculum: The communicative approach began to be applied in English language learning.
- 4) 2003 Curriculum: English is a mandatory subject at all levels of education.
- 5) 2013 Curriculum: Emphasis on developing 21st-century skills, including the ability to communicate in English.
- 6) Independent Curriculum: Gives autonomy to schools to design a curriculum that is more appropriate to local needs, including English language learning (Nina Simmons-Mackie, 2004).

b. Current English Language Education Policy

The current English language education policy in Indonesia is regulated in several documents, including (Zein et al., 2020):

- 1) Law Number 20 of 2003 concerning the National Education System
- 2) Government Regulation Number 32 of 2013 concerning National Education Standards
- 3) Minister of Education and Culture Regulation Number 80 of 2013 concerning the Implementation of the 2013 Curriculum

Based on these documents, the main aim of English language education in Indonesia is to equip students with the ability to communicate in English effectively and efficiently for various purposes, both in academic and non-academic contexts.

c. Challenges and Issues in English Language Education Policy

Even though various efforts have been made to improve the quality of English education in Indonesia, there are still several challenges and issues that need to be considered, namely (Wambua et al., 2018):

- 1) Limited quality teachers: There are still many English teachers who do not have adequate qualifications and competencies.

- 2) Lack of facilities and infrastructure: Schools still lack facilities and infrastructure that support English language learning, such as textbooks, language laboratories, and internet access.
- 3) Less effective learning methods: Many English learning methods are still traditional and do not emphasize developing communication skills.
- 4) Lack of motivation to learn English: Many students still lack motivation to learn English.

English education in Indonesia has experienced significant development. However, there are still several challenges and issues that need to be addressed. With various appropriate solutions and recommendations, it is hoped that the quality of English education in Indonesia can continue to be improved.

2-2. Public Administration Perspective

Bureaucracy has a close relationship with the implementation of the English curriculum in Indonesia, especially in terms of organizational structure, curriculum development and implementation processes, and human resource management. Here's the explanation (Streven, 1977):

a. Organizational Structure

- 1) Ministry of Education, Culture, Research and Technology (Kemendikbudristek): Plays a role as a national English curriculum policy maker, including setting competency and graduate standards (SKL).
- 2) National Education Standards Agency (BSNP): Plays a role in developing the national English curriculum, including preparing the basic curriculum framework (KDK) and curriculum development guide (PKK).
- 3) Education Department: Plays a role in adapting the national English curriculum according to each regional context.
- 4) Schools: Play a role in implementing the English language curriculum at the local level, including preparing school curricula (KKS) and lesson plans (RPP).

This clear and structured organizational structure is important to ensure the smooth process of developing and implementing the English language curriculum in Indonesia.

b. Curriculum Development and Implementation

- 1) Bureaucratic approach: The development and implementation of the English language curriculum in Indonesia still follows a bureaucratic approach, where the Ministry of Education and Culture has a major role in determining the direction and content of the curriculum.
- 2) Limited participation: The participation of other stakeholders, such as teachers, schools, and the community, in the development and implementation of the English curriculum is still relatively limited.
- 3) Standardization: The national English curriculum has competency and graduate standards (SKL) that must be achieved by all students in Indonesia.
- 4) Evaluation: Evaluation of the implementation of the English curriculum is carried out periodically to ensure its effectiveness (Satori et al., 2013).

This bureaucratic approach has advantages and disadvantages. The advantage is ensuring uniformity and consistency of curriculum implementation throughout Indonesia. The downside is a lack of flexibility and responsiveness to local needs and context.

c. Human Resources Management

- 1) English teachers: The quality of English teachers is a key factor in the successful implementation of the English curriculum.
- 2) Teacher training: The government needs to conduct regular training of English teachers to improve their competence and professionalism.
- 3) Professionalism development: English teachers need to continue to develop their professionalism through various activities, such as seminars, workshops, and conferences (Eret;).

Effective human resource management is essential to ensure the smooth implementation of the English language curriculum in Indonesia.

Therefore, the theory of bureaucracy by Max Weber defines bureaucracy as an organization that has characteristics based on six elements, namely:

- 1) Division of Labor and Specialization: A clear and structured division of labor, with everyone having specific roles and responsibilities.
- 2) Hierarchy of Authority: A clear hierarchical structure, with different levels of authority at each level of the organization.
- 3) Formal Rules and Procedures: Formal rules and procedures that govern all aspects of work, ensuring consistency and predictability.
- 4) Impersonality: Decisions and actions are based on objective rules and regulations, not on personal relationships.
- 5) Meritocratic Recruitment: Recruitment and promotion are based on qualifications and merit, not personal connections.
- 6) Career Orientation: Bureaucrats are expected to be professional and committed to a long-term career in the organization (Sager & Rosser, 2021).

The six components outlined in Weber, 2023) theory are crucial to the way Indonesia's English curriculum is put into practice. The regulations are quite strict and unbending. Furthermore, laws and regulations are overemphasized. Informal groupings are viewed as irrelevant and disregarded. In actuality, most commercial organizations nowadays heavily rely on informal gatherings. Bureaucracy typically requires a large amount of paperwork, which is inefficient in terms of time, money, and effort. The decision-making process is frequently needlessly delayed by rules and procedures. Business organizations need to make decisions quickly and be flexible with their procedures, yet government organizations could benefit from having a bureaucratic framework. Bureaucratic systems are therefore inappropriate for corporate groups. Although employee technical qualifications are an important aspect of promotion, bureaucratic organizations often do not consider the commitment and dedication of English teachers.

3. Methodology

Employing a qualitative approach with document analysis techniques, the study scrutinizes a range of documents, including books, research articles, and curriculum documents.

4. Discussion

Lesson Plan Curriculum 1947-1968

The curriculum for lesson plans in Indonesia from 1947 to 1968 was shaped by the complex interplay of sociopolitical factors and the legacy of colonial powers. The Dutch colonial era left a lasting impact on the educational landscape, with two distinct systems emerging—one Islamic and one Dutch. The Dutch system was characterized by strict policies and a class divide, providing separate education to different groups. Despite these challenges, the government worked to create a curriculum that was relevant and responsive to the changing times. The "Lesson Plan" curriculum, introduced in 1948, continued to evolve until 1968, reflecting the country's transition to the New Order era. This period saw significant changes in educational policy and practice, laying the groundwork for future developments in Indonesian education.

1964 Education Plan Curriculum

During President Soekarno's final years in office, the 1964 Curriculum or Education Plan was developed, replacing the previous curriculum and introducing the concept of dynamic, imaginative, and productive learning. This curriculum emphasized fostering creativity, taste, initiative, hard work, and morals through five study groups: moral, intellectual, emotional/artistic, personality (skills), and physical development. Basic education focuses on increasing knowledge and providing hands-on, developmentally appropriate activities. The approach to learning was implemented through directed cooperation, and Saturday was declared a holiday to allow students to engage in activities related to their interests, including sports, games, the arts, and culture.

1968 Curriculum

The 1968 curriculum was designed to foster the Pancasila spirit, basic knowledge, and specialized skills, aligning with the principles of the 1945 Constitution. The primary objectives were to enhance students' intelligence, physical fitness, morality, and religious convictions, developing them into authentic, strong, and physically fit Pancasila individuals. The curriculum emphasized equal importance on intellectual and skill development, physical well-being, and strength. It was perceived as political in origin, replacing the 1964 plan, which was seen as a remnant of the Old Order. The ultimate goal was to create genuine Pancasila people, achieved through an organizational approach featuring Pancasila growth groups, foundational knowledge, and specialized skills.

1975 Curriculum

The 1975 curriculum in Indonesia was a centralized and goal-oriented educational framework that aimed to enhance the quality of education and align it with national development goals. It emphasized the use of the Instructional System Development Procedure (PPSI) and was influenced by behavioral psychology. However, the curriculum faced criticisms for its rigidity and lack of flexibility, making it challenging to adapt to local needs and circumstances.

1984 Curriculum

Curriculum revisions were required because, by 1983, the requirements of science, technology, and society for education in the 1975 curriculum were judged to be out of date. It appears that the 1975 curriculum was revised or improved upon in the 1984 curriculum. The curriculum from 1984 includes the following elements:

- a. Focused on learning objectives. Based on the idea that educational opportunities for pupils in the extremely short amount of time, they have in school must be genuinely useful and efficient. As a result, defining the objectives for students to meet must come before selecting or deciding on instructional resources.
- b. Active student learning (CBSA), a student-centered teaching methodology, is used. To maximize learning chances for students in the cognitive, affective, and psychomotor domains, CBSA is an instructional technique that offers opportunities for students to be actively involved physically, mentally, intellectually, and emotionally.
- c. A spiral technique is used to bundle the lesson materials. Depending on the depth and scope of the subject area, teaching materials are packaged using the spiral method. The depth and breadth of the topic matter increases with class and school level.
- d. Prior to receiving instruction, instill understanding. Understanding must be the foundation of the concepts that pupils acquire, and practice should follow comprehension. They are utilized to help students understand the concepts they are studying, which supports the perception of teaching aids as media.

In the context of studying English, the communicative approach is beginning to be used.

1994 Curriculum

The division of lesson stages in schools follows a quarterly schedule and is focused on popular lesson material or topics, which entails using a single curriculum system for all Indonesian pupils. This curriculum includes a core curriculum so that different regions can create their curricula tailored to the community's needs. Teachers should then select and apply instructional tactics that actively engage students in their learning on a mental, physical, and social level. Teachers can engage students by posing questions that encourage research and convergent-divergent solutions, which are open-ended and allow for multiple alternative answers. As a result, English is now required coursework at all educational levels.

Competency-Based Curriculum (KBK) 2004

The 2004 curriculum, also known as the Competency-Based Curriculum (KBK), was developed in response to calls for reform from various laws and decrees, including those related to regional government, government power, and national education policy. Under the KBK, the learning process is now seen as the domain of teacher authority, and the focus is on ensuring that students acquire the necessary competencies at a particular level. Competence is defined as a combination of values, attitudes, knowledge, and abilities demonstrated through thought and behavior patterns. Competencies are composed of several components, including knowledge, comprehension, abilities, values, attitude, and interest. Students are expected to develop these aspects to comprehend, master, and apply what they learn in their daily lives. The competencies are categorized into several types, including:

- 1) Academic competencies: Knowledge and skills in problem-solving.
- 2) Occupational competencies: Readiness and ability to adapt to the world of work.

- 3) Cultural competencies: Adaptation to the environment and culture of Indonesian society.
- 4) Standard competencies: Possessed after studying one subject.
- 5) Basic competencies: Possessed after completing one topic or concept.
- 6) Temporal competencies: Using fundamental skills possessed by students.

These categories help structure the competencies and ensure that students develop the necessary skills and knowledge.

With several advantages of KBK compared to the 1994 curriculum, namely:

- 1) KBK prioritizes mastery of the material results and competencies of the UNESCO learning paradigm: learning to know, learning to do, learning to live together, and learning to be.
- 2) The syllabus determines uniformly the role of teachers and students in the learning process, the syllabus is the authority of the teacher.
- 3) The number of study hours is 40 hours per week and 32 hours per week, but the number of subjects cannot be reduced.
- 4) Process skills learning methods by creating active, creative, effective, and fun learning (PAKEM) and Center, Teaching, Learning (CTL) learning methods.
- 5) 2006 Education Unit Level Curriculum (KTSP).

Every Indonesian education unit creates and uses the Education Unit Level Curriculum (KTSP), which is an operational curriculum for instruction. Law Number 20 of 2003 about the National Education System and Government Regulation Number 19 of 2005 concerning National Education Standards impose legal requirements on KTSP. Schools started preparing for the KTSP in the 2007–2008 school year by using the KTSP Development Guide published by BSNP, as well as the Content Standards (SI) and Graduate Competency Standards (SKL) for primary and secondary education, which were issued through Minister of National Education Regulations Number 22 of 2006 and Number 23 of 2006, respectively.

Though KTSP is developed by the school to meet its needs, it is fundamentally an integral part of SI. The curriculum structure and content at the educational unit level, educational objectives at the educational unit level, educational calendar, and syllabus make up KTSP. The Minister of National Education Regulation Number 24 of 2006 about the Implementation of SI and SKL is referred to as the KTSP implementation.

According to Minister of National Education Regulation number 22 of 2006, which was cited by Mulyasa, the following guidelines should be followed for creating KTSP:

- 1) Emphasizes the needs, growth, and potential of pupils as well as their surroundings. Curriculum development is based on the idea that students are essential to the educational process for them to become competent, virtuous, and democratic citizens. As such, it must be tailored to the requirements, development, and potential of each student as well.
- 2) Integrated and varied. The curriculum is created considering the diversity of the student body as well as local circumstances, without making any distinctions based on a student's gender, socioeconomic background, race, or religion. The curriculum covers local material, integrated self-development, and the essential curriculum content components.
- 3) Aware of advancements in the arts, sciences, and technology. The understanding that science, technology, and the arts all evolve dynamically informs the curriculum.

2013 Curriculum

The 2013 Curriculum's main components are its thematic integration and simplicity. The goal of the 2013 curriculum is to create a generation that is equipped to confront the future. Because future developments are anticipated in the framework of the program.

After being given the learning content, the focus is on encouraging pupils to be able to notice, inquire, reason, and present what they have learned. The 2013 curriculum was structured and refined with an emphasis on natural, social, artistic, and cultural phenomena through the learning objects.

It is anticipated that our pupils will have significantly improved attitudes, abilities, and knowledge competencies because of this method. They will be more imaginative, inventive, and productive to eventually successfully navigate a variety of issues and obstacles as they reach a better future.

As required by Law 20 of 2003 concerning the National Education System in the explanation of article 35, where Graduate competency is a qualification of graduate abilities includes attitudes, knowledge, and skills in accordance by agreed national standards, the preparation of the 2013 curriculum is part of continuing the development of the Competency-Based Curriculum (KBK), which was initiated in 2004 and covers attitude, knowledge, and skill competencies in an integrated manner. This talk is a component of the 2013 Curriculum public test, which aims to get community feedback and perspectives.

Emphasis on developing 21st-century skills, including the ability to communicate in English.

Independent Curriculum (Kurikulum Merdeka)

The Independent Curriculum in Indonesia aims to revolutionize traditional learning methods by granting students more autonomy in their education. This curriculum emphasizes the development of 21st-century skills, fostering independence in learning, and catering to individual student needs. Its flexibility allows students to choose their subjects, learning rhythms, and methods, actively engaging them in the learning process and promoting the development of creative, critical, collaborative, and communicative skills. Additionally, the curriculum emphasizes the use of ICT as a learning support tool, enhancing student access to diverse learning resources, increasing engagement, and facilitating collaboration between students and teachers.

Citations, or reference sources that support the implementation of the Independent Curriculum, may include:

- 1) **Regulations:** The government can issue regulations detailing the objectives, principles, and strategies for implementing the Independent Curriculum.
- 2) **Research and studies:** Academic research can provide insights into the effectiveness, challenges, and benefits of the Independent Curriculum.
- 3) **Training materials:** Training materials and guidance can be developed for teachers, principals, and other educational staff to understand the concepts, methodology, and learning strategies of the Merdeka Curriculum.
- 4) **Best practices and examples:** Successful implementation of the Independent Curriculum by schools or educational institutions can serve as examples and inspiration for others.

- 5) **Collaboration with partners:** Organizations, universities, research institutions, or international educational institutions can provide support and resources, facilitating the exchange of knowledge, training, and experience to improve understanding and implementation of the Merdeka Curriculum.

Merdeka Curriculum is currently in the development and experimental stages in several schools in Indonesia, and the sources mentioned may not be fully available or published. For the latest information about the Independent Curriculum, it is recommended to refer to official sources such as the Ministry of Education and Culture of the Republic of Indonesia. In summary, giving autonomy to schools to design a curriculum that is more appropriate to local needs, including English language learning, is a key aspect of the Merdeka Curriculum.

Analysis of English Language Education Policy in Indonesia

Based on the public administration theories above, English language education policy in Indonesia can be analyzed from several aspects, namely:

- 1) **Policy Making Process:** English education policy in Indonesia is generally made top-down, with the Ministry of Education and Culture as the main policy maker. The participation of other stakeholders, such as teachers, schools, and the community, in the policy-making process is still relatively limited.
- 2) **Policy Implementation:** Various entities, including the national and local governments as well as educational institutions, are responsible for carrying out Indonesia's English language education policy. Careful consideration must be given to factors that affect policy implementation success, such as stakeholder support, teacher competency, and resource availability.
- 3) **Policy Evaluation:** Evaluation of English language education policies in Indonesia needs to be carried out periodically to ensure their effectiveness. The evaluation must involve various parties and use various methods to obtain comprehensive results.

Challenges and Recommendations

Some of the challenges faced in implementing English language education policies in Indonesia include:

- 1) **Resource gap:** The resource gap between schools in developed areas and underdeveloped areas is still quite large.
- 2) **Lack of qualified English teachers:** There are still many schools that lack qualified English teachers.
- 3) **Lack of support from stakeholders:** Support from parents, the community, and the private sector for English language education still needs to be improved.

Based on these challenges, several recommendations to increase the effectiveness of English language education policies in Indonesia include:

- 1) **Increase budget allocation for English language education:** The government needs to increase budget allocation for English language education, especially to provide adequate resources for schools in disadvantaged areas.
- 2) **Conduct ongoing English teacher training:** The government needs to conduct ongoing English teacher training to improve their competency.
- 3) **Increase stakeholder participation:** The government needs to increase stakeholder participation in the process of creating, implementing, and evaluating English language education policies.

5. Conclusion

English language education policy in Indonesia needs to be analyzed from a public administration perspective to understand how the policy is created, implemented, and evaluated. By applying various public administration theories appropriately, it is hoped that the English language education policy in Indonesia can become more effective and achieve its goal of improving the English language competence of the Indonesian people.

Solutions and Recommendations

To overcome these challenges and issues, various solutions and recommendations are needed, including:

- 1) Improving the quality of English teachers: It is necessary to carry out training and professional development of English teachers on an ongoing basis.
- 2) Increasing facilities and infrastructure: The government needs to allocate greater funds to provide English language learning facilities and infrastructure.
- 3) Developing effective learning methods: It is necessary to implement English learning methods that are more communicative and student-centered.
- 4) Increasing motivation to learn English: Various efforts need to be made to increase students' motivation to learn English, such as holding English language competitions, cultural festivals, and student exchange programs.

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Contact emails: jihads21e@student.unhas.ac.id
juandanawawi1808@gmail.com
muhtangabdullah@yahoo.co.id
indrayatinurunhas@gmail.com
muhakibuh62@gmail.com

***The Needs Analysis of Using English in Travel Agencies in Urban Cities in Uzbekistan:
Focusing on the Language Use Difficulties***

Klichev Botir, Toyo University, Japan

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Abstract

This study aims to examine the specific English language needs and challenges faced by tourism professionals in Uzbekistan's travel agencies. Uzbekistan's tourism sector's rapid development earned it a place among the top five nations globally, with the most dynamically evolving tourism industry, as acknowledged by the UNWTO. The Guardian (2019) regarded Uzbekistan as the world's premier tourist destination. In Uzbekistan a travel sector has witnessed rapid growth and increased interaction with inbound tourists and multinational companies. Foreign tourist arrivals increased from 2 million in 2016 to 6.7 million in 2019. In this study four employees of travel agencies in Tashkent, Samarkand and Bukhara were interviewed to identify English language needs and challenges in 2023. Interview data was analyzed based on the Grounded Theory Approach. Through GTA approach, five core-categories were identified: (1) past and current experience, (2) actual needs for English, (3) realization of problems of English use, (4) problem-solving situations in English use, and (5) future hopes for English use. According to the interview data, all the participants learned the professional English in higher education. Their actual needs of English such as emailing and communicating with tourists were identified. As a problem of English use, diverse accents and slangs were described. To solve the problem, participants engaged with English media and sought coworker's assistance. The present study underscores the critical role of English proficiency in the tourism sector, advocating the importance of understanding World English and curriculum development to enhance the competencies of travel agents in developing countries.

Keywords: Travel Agencies, Uzbekistan, English Language Learning, Needs Analysis, World English

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Introduction

The English language occupies an essential role as the primary means of global communication. Within the context of the tourism industry, English has become an important tool, enabling effective communication, negotiation, and transaction execution between tourism professionals and tourists. One of the major economic sectors in the world due to the high levels of people movement connected with tourism (Thurlow & Adam, 2010; Urry, 2002). Consequently, it directly or indirectly contributes to host countries by means of foreign currency inflows, job creation across service and manufacturing sectors, and bolstered government revenues derived from various levies such as hotel taxes, tourist taxes, departure taxes, income taxes, and customs duties on imports (Badri, Dizaji, & Zeynali, 2014). As a global lingua franca, English is extensively utilized in the hospitality and tourism industry, facilitating international trade and tourism by providing English-speaking tourists access to diverse destinations. In light of these considerations, the ability to communicate proficiently in English has become imperative, given that the majority of tourists are inclined to use English as their medium of interaction. Consequently, all personnel within the tourism industry, spanning roles in hotels, airlines, tour companies, and related sectors, must possess a high level of English fluency to facilitate seamless communication with guests. Proficiency in English empowers staffs to comprehend the nuanced needs of guests, thereby enabling them to provide service that aligns with guest expectations and enhances overall satisfaction, ultimately fostering guest loyalty.

"The guest is as great as your father," according to a fitting saying from Uzbekistan, emphasises the value of hospitality in Uzbek society. Though it is not without difficulties, Uzbekistan's tourist sector appears to be one with great potential. Recognizing the potential of tourism as a driver of economic development, the President of Uzbekistan issued a Presidential Decree (2017) titled "The Measures to Ensure the Rapid Development of Tourism in the Republic of Uzbekistan". This decree emphasizes the importance of aligning economic strategies with potential factors that enhance the quality of life for Uzbekistan's population and advance the tourism sector. Uzbekistan boasts a unique cultural and historical heritage, with ancient cities that offer profound historical significance. The country encompasses three main types of tourism: inbound, outbound, and domestic. With a diverse array of tourist destinations, Uzbekistan is home to a substantial number of tour operators and travel agencies, currently totaling 1483 (Uzbektourism, 2022). Commencing in 2016, Uzbekistan initiated a comprehensive reform of its tourism industry, recognizing tourism development as a strategic priority for economic growth in various regions. This reform evidenced by a significant surge in foreign tourist arrivals between 2016 and 2019. To illustrate, foreign tourist arrivals increased from 2 million in 2016 to an impressive 6.7 million in 2019. Uzbekistan's tourism sector's rapid development earned it a place among the top five nations globally, with the most dynamically evolving tourism industry, as acknowledged by The Guardian (2019) as one of the world's premier tourist destinations. Furthermore, 2018 witnessed a remarkable 98% increase in foreign tourist arrivals compared to 2017, accompanied by a 131% growth in the number of companies and organizations engaged in tourism activities. This growth was characterized by varied patterns in tourist arrivals from diverse regions. For instance, tourists from Central Asian countries registered an average annual growth rate of 22-25%, while tourists from non-CIS countries experienced a substantial 50% annual growth rate.

Tourism professionals employed by travel companies across Uzbekistan are presented with increased opportunities to engage with the English language due to the influx of foreign

visitors. However, while these professionals receive training in English communication based on curricula developed by experts in the field, a formal needs analysis has not been conducted to discern the specific English language requirements tailored to the context of tourism employees. These professionals often encounter communication challenges when interacting with foreign travelers, which can hinder the delivery of efficient services. Addressing this issue necessitates an examination of the specific linguistic needs within the tourism context. Notably, various scholars in the field of English for Specific Purposes (ESP) have underscored the importance of adapting language teaching methods and content to the distinct needs of learners in specific professional domains (Hutchinson & Waters, 1987). Consequently, while some training courses are available for tourism staff and students to develop English proficiency within the tourism context, the lack of a systematic needs analysis represents a critical gap.

Moreover, existing curricula may not adequately align with the actual needs of tourism employees. Therefore, conducting a formal needs analysis specific to English language requirements in the tourism sector across Uzbekistan is imperative. Notably, previous research in this domain primarily focuses on examining language issues faced by employees and students in tourism businesses and universities in countries such as Iran (Masoumpanah, 2013), Malaysia (Kholidi, 2022), Indonesia (Suprina & Rahayu 2016), Vietnam (Trang, 2015) and Thailand (Aunruen, 2005 ; Prachanant, 2012). However, few qualitative studies have been conducted on this topic in Uzbekistan. Moreover, studies addressing English language needs in Uzbekistan's tourism sector remain scarce, particularly for tourism employees. Recognizing this research gap, compounded by the fact that English has become the predominant language in the daily operations of travel companies, this study is driven by the purpose of conducting a comprehensive review of the English language needs within Uzbek travel agencies. This research aims to establish a baseline for garnering diverse insights, including content development, design, and program implementation for English language programs tailored to the tourism sector.

This study focuses on discerning the specific English language needs and challenges encountered by tourism professionals working within international travel agencies and companies in Uzbekistan. The research outcomes are expected to serve as valuable guidelines for the development of English language programs aimed at enhancing the capabilities of tourism staffs. The findings may be instrumental for policymakers, planning authorities, and relevant organizations in gaining a more nuanced understanding of the English language requirements for tourism employees embarking on careers in international tour companies in Uzbekistan. Additionally, the study results may offer valuable insights to English language learners and educators within the realm of English for Specific Purposes (ESP), assisting in developing educational materials customized to the specific requirements of travel agents in this particular setting.

This study is conducted to provide an understanding of the needs, responsibilities, and problems of using English in tourism employees working in tour and tourism companies in Uzbekistan. Therefore, in this study the research questions are these follows:

1. What are the English language needs for employees working in tourism companies?
2. What difficulties do tourism employees face in using English in their job?

Literature Review

Need Analysis of English Language Use

The role of needs analysis in the field of English for Specific Purposes (ESP) has been a cornerstone for practitioners such as researchers, course designers, material developers, testers, evaluators, and classroom teachers. Mackay and Mountford (1978) categorized needs into academic and job needs. Academic needs involve English proficiency required for further academic study, while job needs pertain to the English skills needed for specific job roles, such as technicians requiring English for project work. Graves (1996) expanded on this by stating that needs analysis involves identifying what learners can do and understanding what they need to learn or improve upon. In essence, needs analysis aims to collect and interpret information about learners' needs. Therefore, Crystal (1997) underscored the pivotal role of English as an auxiliary language in facilitating transportation and accommodation services, business meetings, academic conferences, international conventions, and other official gatherings in the tourism industry. However, Piyanapa (2004) introduced a different perspective, focusing on learners' needs at the conclusion of a language course, termed Target Situation Analysis (TSA). This framework emphasizes communication purposes, settings, means, language skills, functions, and structures. Piyanapa (2004) also emphasized that needs analysis is crucial for establishing how a course should be structured and what it should cover. The term "needs" itself has been defined in various ways, contributing to a nuanced understanding of learners' requirements.

Analyzing needs is essential when designing and implementing language programs, and it forms an integral part of planning language learning curricula, as Brown (1995) and Richards (2001) emphasized. As per the insights shared by Richards (2001), a demand for the English language exists among individuals employed in the fields of tourism, business, and civil service. English has gained popularity and significance, particularly among the workforce in the tourism sector. The presence of staff members capable of speaking English has become a necessity within Uzbekistan's hospitality industry. The proficiency in English language skills is widely acknowledged as a crucial requirement for those engaged in the domains of tourism and hospitality.

In the present study, language skills (listening, speaking, reading, and writing) based on job needs are investigated, encompassing functions and challenges in using these skills. Language proficiency, particularly in English, is vital in the tourism industry, especially for employees working with foreign companies and clients in Uzbekistan, where English serves as a mode of international communication. A study on the role of language in the Management of Tourism Organization, conducted by Thitthongkam and Walsh (2010), identified several dimensions of language in tourism. These include enhancing customer satisfaction, promoting the language proficiency of tourism professionals, inspiring and persuading international tourists, increasing demand, fostering a better understanding of culture, and facilitating effective internal and external communication. These dimensions emphasize the multi-faced role of language in the tourism industry.

English Education in Uzbekistan

In Uzbekistan English language is not a public or common spoken language. However, it has been thought for few decades. The inclusion of English language education as part of formal education was initiated by the Soviet administration in 1932. Following the issuance of a

special government decree, the acquisition of a foreign language became an obligatory component of the curriculum for all citizens who have completed elementary schooling.(Ornstein, 1958). The incorporation of foreign language studies into formal education led to the establishment of a specific curriculum within schools, spanning from Grade Five to Grade Ten. The Grammar Translation (GT) Method served as the predominant teaching methodology in the field of Soviet TEFL (Bartley, 1971). The allocation of hours for English language instruction within the EFL curriculum of the Soviet Union exhibited variability from year to year.

In Soviet times English was simply taught as one of many foreign languages. However, the country's independence marked a significant turning point, opening doors for a new approach to English education. While English is yet to reach the same status as Russian, the current outlook on English language education hints at its potential to outshine other foreign languages in the future. The early 2000s witnessed a transformative phase in the teaching of foreign languages in Uzbekistan. This period saw a collective effort from all stakeholders, including educators, students, and educational institutions like schools, colleges, lyceums, and universities, to adopt new methodologies for teaching and acquiring proficiency in foreign languages. (Jalolov, 2015). In a bid to enhance higher education, Uzbekistan has implemented significant reforms, incorporating the utilising of CEFR and National Qualifications Framework (NRK) in the country. Both projects took part in the implementation of Presidential Decree No 1875 of December, in 2012, significant advancements were made in the realm of enhancing the pedagogy and acquisition of foreign languages. These developments were aimed at fortifying the communication proficiencies and global influence of prospective experts from Uzbekistan across various disciplines.

Since English has become a major international language, the government of Uzbekistan has been actively promoting the teaching of English as a crucial part of the curriculum in public schools. Beginning in 2013, English education has been made a mandatory subject for first-graders in primary school. However, not all primary schools across the country have strictly followed such mandates. The implementation of English language exposure in primary schools and the broader transformation of English education across the nation has been executed through a top-down approach. The language planning policy in the Uzbekistan education system has traditionally adhered to a hierarchical approach, frequently entailing decisions made by the government and the governmental education agency. The lack of transparency has frequently been subject to criticism by both external observers and internal stakeholders. English as a Foreign Language (EFL) teachers in different primary and secondary schools across the country have often lacked awareness of the intricacies of language-planning policy. Despite the high demand for English for Tourism, there remains a shortage of textbooks tailored to the specific needs of tourism industry personnel in Uzbekistan, with most existing resources designed for general English usage.

Methodology

The purpose of this study is to demonstrate the needs and challenges that Uzbekistan travel agents have when utilizing English in the workplace. Additionally, predicted data that highlight certain linguistic abilities and capabilities are helpful to travel agents. This study uses a qualitative approach and tools to analyze the needs of travel agents in Uzbekistan's urban centers. The study's primary methodology involved conducting a semi-structured interview survey to investigate English usage in order to assess and characterize the current requirements for English usage among Uzbek travel agents. To find primary data for this

study, interview survey questions were used. They are employed to evaluate travel agents' English language proficiency in Uzbekistan.

Instrument

There are multiple phases involved in creating interview survey questions. First, including the interview survey and the questions used in the earlier studies. A number of research articles belong to the requirements analysis in ESP and English language were studied. Next, the frameworks of sample questions are examined. Furthermore, the course syllabus and texts regarding English for tourism are examined in order to provide proper data for the interview questions. Subsequently, the questions are produced considering the study's objectives, the information obtained, and other criteria for creating interview survey questions. The supervisor professor then reviews the questions to ensure they are valid in substance. Before the questions are given to the interviewers, the other researcher's inputs and criticisms are considered for revision. At first, the survey content was made in English with the interview questions. The interview questions are then given to the participants in Uzbek language to aid in understanding. The survey's results are then manually examined using the Grounded Theory Approach (GTA) techniques.

The research instrument was a set of semi structured interview survey which was used to gather data concerning the needs, functions and problems of English use in tourism industry. The obtained data was analyzed using the Grounded Theory Approach (GTA). The content of the survey is about the difficulty of language use. The interview survey items were the followings:

- Time and period of work as a tour agent
- First language
- Situation of English learning (how much you are studying)
- When to start studying professional English
- English proficiency certificate
- Current work content and use of English
- English usage problems
- Problem-solving situations
- English education advices for new staff
- Hope for the future

Participants

The study involved four individuals employed in the tourism sector, specifically working for international tour companies situated in prominent tourist destinations within urban centers of Uzbekistan. These tourist attractions are situated in Tashkent, Samarkand, and Bukhara. The participant group consisted of three males and one female, spanning ages from their 20s to their 60s. These individuals possess extensive experience in the hospitality industry as tour agents, having worked in the field for several years.

	Participant A	Participant B	Participant C	Participant D
Sex	Male	Male	Male	Female
Age	30's	20's	60's	30's
Educational background	Univesity degree	Univesity degree	Univesity degree	Univesity degree
Province	Samarkand	Bukhara	Samarkand	Tashkent
Data	Sept, 2022	Oct, 2022	Dec, 2022	Dec, 2022
Type	Online	Online	Online	Online

Table 1. Demographics of Participants of the Interview

Results

Based on interview survey results, 89 subcategories, and 22 categories were identified. Five core-categories were extracted: past and current experience, actual needs for English, realization of problems of English use, problem-solving situations in English use, future hopes for English use.

Core-categories	Categories	Sub-categories
Past and current experience	[Continuation of work at a travel agency for years]	«Continuation of employment at a travel agency for years with Uzbek as the first language» «Work experience at a travel agency online.»
	[Started to learn professional English at University]	«Begin professional English study at university» «Learning English in high school and private language schools» «Started studying specialized English in a specialized field at university» «Willingness to learn English and continuation»
Actual needs for English	[Motivation and continuation of learning English]	«High motivation to learn English even while using Japanese or Russian in working environment» «Efforts to remember English» «Planning IELTS test next summer» «Willingness of learning English due to high English usage rate for tourists» «High rate of English usage during work»
	[Awareness of the importance of English proficiency certificates]	«Lack of recognition of the importance of English proficiency certificates» «Certificate of English proficiency required in recent years» «The importance of English proficiency certificates» «The language certificate requirement in conferences abroad» «Language certificate to improve skills and credibility as a tour agent»
	[Increasing the English usage due to business expansion]	«Increase the number of opportunities for services in English due to business relations» «Increase the number of requests from Russia and European countries» «Experience of using English in neighbour countries» «Use English when communicating with foreign companies»
	[Frequency of the English usage in communication and work processes]	«High rate of speaking English daily with tourists» «High rate of English usage among tourists» «Use English when communicating with foreign companies through formal emails» «Using English almost everyday» «Using English during writing emails sometimes» «Using english during tours or spins with tourists» «Experience of using English in Uzbekistan, Tajikistan and Kyrgyzstan»

	[Understanding customer desire]	«Importance of all skills to understand customer's desire» «Problem solving by improving English ability»
	[Importance of improving writing skills]	«High importance of writing and speaking skills for tour agents» «Trying to write a small book in English» «Currently trying to develop writing skill more» «High motivation and importance of improve writing skill»
	[Importance of listening and speaking ability is high in travel companies]	«Another important skill is listening» «High importance of writing and speaking skills for tour agents»
Realization of problems of English use	[Problems in understanding slang (listening problem)]	«Difficulty in understanding English speaker's slangs and accent» «Excessive use of slang by native speakers» «Lack of opportunities to understand slang at university education» «Difficulty in understanding English in work with tourists who use slang»
	[Accent and Pronunciation Problems (Speaking problems)]	«Challenges of understanding various accents and dialects of English-speaking tourists» «Difficulty in understanding English words in fast speaking» «Realizing lack of speaking practices» «Recognition of burden for native speakers without using jargon and slang» «Understanding various type of English accents» «Indian or Russian peoples English is sometimes hard to understand» «Explaining complex itineraries can be challenging» «Facing difficulties while negotiating prices »
	[Disadvantages of not being good at speaking and listening skills]	«Explaining complex itineraries can be challenging» «Facing difficulties while negotiating prices »
	Grammatical and vocabulary problems	«Struggling to find right words to express complex ideas and concepts» «Difficulty in understanding some English words» «Grammatical problems when writing emails» «Sometimes do not understand the English words» «Not understanding words because of not using them» «Lack of understanding business words in meetings. » «Lack of vocabulary to express complex ideas»
	Realizing importance of English in emails	«Grammatical problems when writing emails in English» «Using English during writing emails sometimes» «Lack of communication problems in English while writing e-mail» «Use English when communicating with foreign companies through formal emails» «Understanding importance of English in emails»
Problem-solving situations in English use	[Watching movies in informal English]	«Improve listening skills by using YouTube videos» «Improve listening ability by watching movies and listening to podcasts» «Using European or non-native countries' movies» «Listening British Council podcasts to understand different accents»
	[Reading English books and textbooks]	«Past experience of using paper dictionaries » «Improve English by reading more English books » «Reading news in English to improve english language ability»
	[Asking help from others]	«Asking help from experienced staffs» «Asking tourists to explain the words» «Tourists explain the meaning of the word more simply» «Asking help from guide interpreters during group tours» «Satisfaction from working the company due to helpful staffs»

	[Problem solving by another explanation]	«High willingness to develop all English skills» «Attending English courses to improve English ability» «Improve speaking by talking with native speakers»
	[Using technologies to improve English ability]	«Using electronic dictionaries» «Using internet to correct writing and grammar mistakes easily» «Using dictionary and apps to translate the contexts» «Using online resources for solutions»
Future hopes for English use	[Hope to start an own business]	«Importance of English and negotiating skills to do business with foreign companies» «writingg a book about tourism potential of Uzbekistan »
	[Hope to acquire a master's degree in tourism]	«Hoping to obtain a master's degree in tourism» «Using English to continue education in future» «Hoping to retake another IELTS exam»
	[Career opportunity with strong English ability]	«actively engage to learn English regularly» «enrolling English languages courses» «Practicing speaking and listening by communicating with native speakers» «Big advantages to improve English skills in workplace» «English skill is important for new employees»

Table 2. Core-Category Breakdown

In the case of the core category of (1) “past and current experience”, participants reported a range of experiences with English, beginning with formal education in university at [started to learn professional English at university] and extending into their professional careers at [continuation of work at a travel agency for years]. The participants have been working in travel agencies for several years, with English usage becoming increasingly significant due to online work environments and international client interactions.

To the core category (2) “actual needs for English”, English was identified as crucial for professional growth and effective communication in the workplace, according to the category [frequency of English usage in communication and work processes]. The participants showed a strong desire to enhance their English language skills (writing and listening): [motivation and continuation of learning English], [importance of improving writing skills], [importance of listening and speaking ability is high in travel companies], recognizing the importance of proficiency certificates at [awareness of the importance of English proficiency certificates], such as IELTS test. [Increasing the English usage due to business expansion] and [understanding customer desire] were highlighted as key drivers for increased English usage.

The analysis also revealed nuanced challenges in another core category, (3) “the realization of problems of English use”, which participants faced in using English, notably in understanding slang, accents, and achieving clear pronunciation in categories [problems in understanding slang (listening problem)] and [accent and pronunciation problems (speaking problems)]. Participants frequently encountered difficulties in both understanding varied English accents spoken by Indian and Russian and slang of native speakers of English such as «understanding various types of English accents» , «(Indian or Russian peoples English is sometimes hard to understand)» .

However, to overcome challenges and language barriers revealed by analyzing the data, participants employed various strategies in the core category of (4) “problem-solving situations in English use”. These strategies included engaging with English media in the category of [watching movies in informal English] (YouTube videos and podcasts), [asking

for help from others] such as experienced coworkers, and [using technologies to improve English ability] like language learning apps and online dictionaries. These approaches facilitated informal learning and improvement in language proficiency.

As a (5) “future hope for English use”, survey participants expressed aspirations to [Career opportunity with strong English ability] for career advancement. Their future goals also included [hope to start their own business] and [hope to acquire a master's degree in tourism], which led to starting their businesses, pursuing a master’s degree in tourism, and enhancing professional opportunities through improved English proficiency.

Discussion and Conclusion

This study's findings illuminate the intricate relationship between English language proficiency and professional development in the travel industry. The participants' strategies for overcoming language barriers, such as engaging with English media and using technology, align with the notion of autonomous learning and the use of authentic materials in language acquisition. The findings highlight the pivotal role of English in professional settings, particularly in tourism where cross-cultural communication is frequent. The need for continuous language development, as evidenced by the participants' ongoing efforts to improve their English skills, underscores the dynamic nature of linguistic competence in professional contexts.

The exploration of experiences, needs, challenges, strategies, and aspirations related to English language use among travel industry professionals has provided valuable insights into the integral role of language proficiency in professional development and success. As said above, many previous researches in this domain primarily have focused on examining language issues faced by employees and students in tourism businesses and universities in countries across the globe. However, few qualitative studies have been conducted on this topic. Even though various data collection and analysis methods were utilized, the results closely matched those of another study.

For example, Aunruen (2005) conducted a needs analysis of English for travel agents in Chiang Mai. The results indicated that the agents primarily needed English language skills for client communication. Speaking was identified as the most essential skill for their daily tasks, followed by listening, writing, and reading. Grammar and pronunciation were considered to be of lesser importance. The agents encountered the most challenges with speaking, followed by grammar and listening, respectively. As a problem of English use, diverse accents and slangs were described. The new finding of this study is the specific language challenges identified included difficulties in writing emails in English. Understanding grammar is crucial to emailing international customers and clients in a foreign country.

Both studies, Aunruen’s (2005) and the present study, underscore the importance of English proficiency for travel agents, particularly in speaking and listening. They also highlight the challenges faced in these areas. However, the present study provides more detailed strategies for improvement, such as watching movies and Youtube videos in English, reading English books, listening to podcasts, using technology to improve English abilities and seeking help from other colleagues with high proficiency of English. This indicates a more holistic approach in the present study’s analysis, addressing language skills and practical methods for enhancement and improvement. In an increasingly interconnected world, the proficiency to communicate proficiently in English is not just a professional attribute, but a vital instrument

for cultivating comprehension and cooperation across diverse cultural contexts. This study contributes to the growing body of knowledge on language use in travel agents of Uzbekistan and highlights the need for targeted language enhancement and improvements for professionals in the travel industry.

In closing, this research not only sheds light on the current state of English language use in the travel industry but also paves the way for future inquiries into the evolving linguistic demands of Uzbekistan's educational institutions. The present study underscores the critical role of English proficiency in the tourism sector, advocating the importance of understanding World English and curriculum development to enhance the competencies of travel agents in developing countries.

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Evaluating Professional Skills Development Across the Engineering Undergraduate Degree Programme: An IEP Review

Mauryn C Nweke, University College London, United Kingdom

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Abstract

The advancement of technical competency has traditionally been at the centre of engineering pedagogy in university education, however, the increasing emphasis on the need for professional skills by accreditation bodies and employers has seen pressures on the higher education system. University institutions worldwide have taken this on but in order to do so have had to shift their pedagogical approach. The attainment of technical and theoretical knowledge has long suited a teacher-centred learning style where students receive information from the educator and are expected to assimilate and absorb knowledge passively. However, the attainment of professional skills implies the need for application in professional or pseudo-professional settings in order to ascertain its procurement. This has led to the implementation of active learning or student-centered pedagogies where students play a more participatory role and hands-on role in their learning. The award-winning Integrated Engineering Programme at University College London celebrates 10 years of existence this year and has been seen to be one of the global leaders in the embedding of professional skills within the engineering curriculum. But how effective has it been? This research addresses the following questions using interviews and focus groups:

1. What are the key issues/commendations staff have of students' application of professional skills within an engineering context?
2. What could be incorporated into year 1 learning to better prepare students for subsequent years of study?
3. How is skills-based teaching perceived by students as they progress through their degree?

Keywords: Engineering Professional Skills, Engineering Education, Integrated Engineering Programme

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Introduction

Here in the UK, there has been a gradual but noteworthy shift in engineering curricula with the aim of improving an engineer’s teamwork and communication skills. Several institutions have revised their curriculum to highlight technical communication and engineering teamwork competencies in some form. Such universities include Kings College London Centre for Research in Education in STEM, Manchester University via their Science and Engineering Education Research and Innovation hub and Aston Engineering Education Research Group, among others (Hauke, 2014). With that said, there is little data available at this moment that demonstrates the impact of this pedagogical shift on efficacy of the engineer’s professional skills in the workplace, however a paper released by the *Royal Academy of Engineering, 2019*, suggests that progress has been shown in closing the skills gap (Perkins, 2019).

An institution that is reported to be leading the way in engineering curriculum reform in the UK is University College London (UCL). In 2014, the UCL Faculty of Engineering Sciences made comprehensive revisions to its curriculum and made it a focal point to account for the enhancement of professional skills, with particular emphasis on teamwork and technical communication skills of engineering students via the Integrated Engineering Programme (IEP). As shown in Figure 1, students enter through their home departments (e.g. Chemical Engineering) via the 3rd year Bachelor of Engineering (BEng) or 4th year Master of Engineering (MEng) undergraduate programme where they then take on their departmental modules alongside IEP modules. In the first year there are three IEP modules – Engineering Challenges (also known as the Challenges or ENGF0001), Design & Professional Skills 1 (DPS1) and Mathematical Modelling and Analysis 1 (MMA1 or ENGF0003). These modules are managed by the central IEP team under the direction of Prof. Emanuela Tilley.

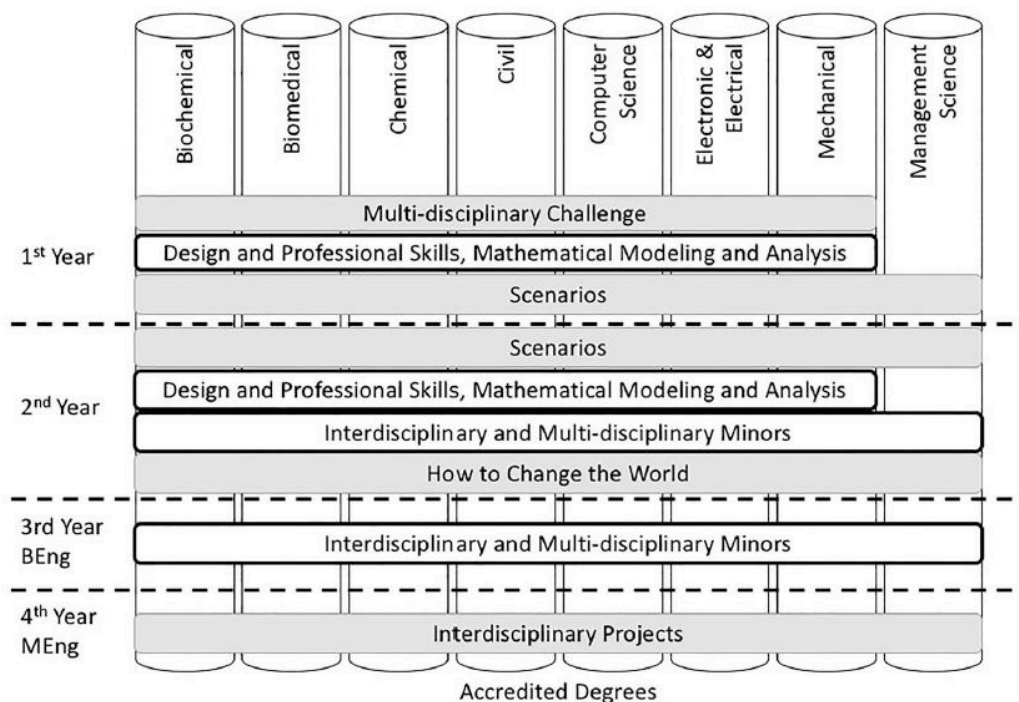


Figure 1: Overall Structure of the IEP and the Engineering UG Degree.
From Mitchell et al. 2019

Second year modules are predominantly department-managed with the exception of MMA2 (or ENGF0004) and How To Change The World (HTCTW), which are IEP managed. Third- and fourth-year modules shown in figure 1 are departmentally managed but adopt an IEP pedagogy via the use of certain practices such as PBL and technical communication development (John E. Mitchell *et al.*, 2019).

This study focuses on the impact of DPS1 on subsequent years of study. On this module students are taught and assessed by engineering communication experts on their ability to communicate their work via lab reports, specifications and codes as well as design reports as well as a range of presentations including demo, showcase and powerpoint. Another component of the module involves training engineering students to present their work to audiences with different technical backgrounds, as well as different career stages (e.g. PhD students). Students on the programme are taught and assessed on how to tailor presentations to various audiences (John E. Mitchell *et al.*, 2019). Students are also taught how to work in teams and apply these teachings in other IEP modules such as the Challenges as well as other parts of DPS1, such as 1st year scenarios.

The first-year scenarios are two-week-long P(j)BL-based projects in which students work in teams to find a solution to a real-world issue. In Biochemical Engineering, for example, students work in teams of 4-5 students to solve manufacturing issues related to shelf-life of a product and scale-up of production to meet consumer demands. During the week they visit manufacturing sites and meet with industry experts in the area, who are also involved in assessing the teams' technical solution. The teams are also assessed on their final presentation and teamworking capabilities. The direct involvement of industry in academia has been shown to have a positive impact on student drive when adopting a P(j)BL approach (Kaushal, 2016).

The IEP was designed and implemented to address directly the needs expressed by stakeholders such as employers, government and accreditation bodies for an engineer to be able to effectively communicate their work to various audiences and work competently in teams and whilst a number of UK institutions have implemented similar revisions to their curriculum none have done so on the same scale as UCL. As the IEP celebrates 10 years of existence, what is needed at this stage is to ascertain whether or not these reforms are effective as students progress through their degree.

Aims of This Study

The aim of this study is to gather the perspectives of staff across the departments that take DPS1 and staff that are responsible for 'flagship' modules for the 2nd and 3rd/4th year cohorts regarding their assessment on teamwork, writing and presentation skills development across the UG degree programme. In this study a 'flagship' module is defined as a key module where teamwork, writing and presentation skills are emphasised according to the learning outcomes – so for the 2nd year cohort, that would be the Design & Professional Skills 2 module (DPS2) and for 3rd /4th years, that would be the final year Design/Project module. Departments involved in this study are: Biochemical Engineering, Biomedical Engineering, Chemical Engineering, Computer Science, Electronic and Electrical Engineering (EEE) and Mechanical Engineering. Civil Engineering's DPS1 module is departmentally managed and is therefore not part of this inquiry.

On a personal note, as the IEP faculty lead of DPS1, a key goal is such that the findings of this research primarily help inform the IEP of areas of improvement to better support engineering students' skills development. A secondary goal of this research would be in aid of the improvement and development of pedagogic practice among staff on the DPS1 module and beyond and sharing of best practice.

This study aims to investigate the following research questions:

- What are the key issues/commendations staff have of students' abilities to work in teams, write and present their work throughout the degree programme?
- What could be incorporated into the 1st year DPS1 module to better prepare students for subsequent years of study?
- How is skills-based teaching perceived by students as they progress through their degree?

Further background and the methodological approach used in this study can be found in Nweke, 2021. Note that the findings presented in this study are a continuation of those presented in Nweke 2021. Due to word count limitations, the third research question on perceptions of skills-based teaching will be published in a separate paper.

Findings and Discussion

Assessing Teamwork

As found in Nweke 2021 whilst careful selection of members within a team can aid in how a team functions, there are still uncertainties concerning team cohesion and conflict resolution capabilities once the team is put together and how this is assessed. General practice reported in literature suggests that students are awarded a singular team mark, and whilst this may favour members that are less engaged, it puts the more capable students at a disadvantage, which has been reported to negatively impact team cohesion (Grammenos *et al.*, 2020). Departments across the faculty have noticed this and as a result have adopted varying approaches to promote team cohesion, particularly in the early years of study:

“One thing that they also have to submit within the week is a reflective diary. Each day it's designed to trigger them to think about both how the project's going, but also how they're working as a team... the questions in the diary are - what isn't working your team? What can you do personally to make that better? To try and make them take a bit own of ownership of their team because I found sometimes in teams that don't gel you get students who just go and take a back seat and then everyone takes a back seat and then nothing gets done. So I wanted to work on them taking ownership of their issues within a team.” (John, 2nd year)

“We've got systems called green lights... (we've) got these wonderful automated spreadsheets where whenever you meet a student, you flag it green, amber, red.. Every encounter ..any teaching assistant or staff makes with the student you give him green, amber, red and so you can see patterns in the data throughout the terms. And it literally says green is good... if you want to help them with (anything)...then they get Amber, and if they've just been misbehaving or not contributing, or you know they're just absent, it's just a red, which means that you know you get 2 reds in a row, you get called into my office.” (Dean, 2nd year)

“If there are students that weren't attending or weren't contributing, we generally then got in contact with them and ask them why? What are they doing? What's their contribution and particularly the last scenario they couldn't that they couldn't get the group mark unless they contributed an individual component. So close supervision, close contact points to try and maintain contribution, incentivizing an individual contribution to get the group mark and moderating marks for those that contribute less.” (Ryan, 3rd year)

Although the approaches taken are different, what is common across the departments is the emphasis on evaluating individual contributions within a team as a means of aiding team cohesion, coupled with assessing the team deliverable itself (e.g. a written report, presentation etc.). The varying approaches however, could be a contributing factor to any possible retrogression in teamwork skills development (Adams and Laksumanage, 2003).

The use of web-based/ software for teamwork has been reported in literature and one that has proven to be reliable on parts of DPS1 and has subsequently been rolled out on other IEP and departmental modules is the use of the software tool known as IPAC (Individual Peer Assessment of Contribution to group work) (Garcia-Souto, 2017).

“I do this IPAC thing, which is the individual peer assessment contribution and initially it started as a way of getting the students more engaged because they know that they cannot just hide without doing anything and also to improve the dynamics because now there is accountability within the group.” (Jackie, 2nd/3rd year)

Spearheaded by Dr Garcia-Souto of Medical Physics & Biomedical Engineering, UCL, the tool is described as a “method of assessment that differentiates individual marks based on the effort /professional behaviour of each individual as assessed by their peers. The IPAC methodology addresses the staff and students’ concerns of mark fairness, as well as discourages “passengers”, engages students, and gives a better overall students experience.”(Garcia-Souto, 2017). This software allows students within a team to quantitatively rank their peers’ contributions and provide written feedback to support the ranking. Staff on the course are able to monitor these entries daily and the values generated are used as part of the teams’ marks. Both students and staff alike have provided commendations on the efficacy of this tool, with 92% of students being in favour of the use of this tool as a means to assess teamwork in a fair way (Grammenos *et al.*, 2020). However, there are concerns from staff that students may not be aware of what standard of contribution is expected from them and when to flag up issues with a member of staff and these may cause issues within a group, particularly in latter years of study:

“Yeah and also maybe incorporating into some of the learning that you do strategies on how to overcome problems within teamwork so that then they don't have to flag it up.. but they think what strategies have I got? How to do it so that they could maybe do that a bit more themselves? So that they get into less problems as they proceed through the project in the third year.” (Steven, 3rd year)

As reflected in literature, these findings perhaps highlight a gap in the current assessment of teamwork on DPS1 – how to assess conflict resolution, which was a concern expressed by staff:

“If there is a group with a really bad problem, but they actually work through that problem and come out the other side I mean, that's fantastic, but it's hard to actually reward the students for doing that.” (Robbie, 3rd year)

In a study carried out by Wang and Wu, 2020, one of the most effective ways of assessing conflict management and resolution is using systematic questioning in either interview or documented format, that allows the participant to: 1. Identify the reasons for the conflict, 2. Describe the conflict itself 3. Recognise their contribution to the conflict (whether good or bad), 5. Identify the solution 6. Recognise their contribution to the solution, 7. Reflect on what could have been done differently. This has proved effective when used by employers for the purposes of recruitment (Ludewick *et al.*, 2020), however, what is unknown is whether this level of granularity can be feasibly integrated into the current DPS1 assessment format. It is perhaps worth considering the integration of this (or a similar) approach in combination with the successful IPAC approach. This should allow for a more comprehensive assessment of teamwork that will ensure that important metrics used by employers are effectively evaluated as students progress through their degree.

Presentation Confidence

What was observed in this study is that despite the ample practice students get to present in various contexts, staff still highlighted issues related to presentation confidence:

“Well, you got the usual tacit and non-tacit behaviours of your teams, so you've got certain people who are always quiet and they don't want to present.” (Dean, 2nd year)

“I think probably the biggest challenge we have is nervousness. And you know, even some of the really good students who can put together a good presentation, it's nerves.” (Robbie, 3rd year)

Although not commonly reported in literature, it has been raised in some studies, particularly internationally (Brocato *et al.*, 2015). In a study carried out by Mohamed and Asmawi, 2018 on understanding the main challenges engineering students face with oral presentations in universities in Malaysia, 37% of the students that participated in their study reported their main issue to be a lack of confidence, which was the highest percentage attributed to any of the challenges, some of which included a lack of preparation (12%), content understanding (8%) and other challenges related to the presentation technology and time management.

Brocato *et al.*, 2015 observed similar challenges in Mississippi State University and reported on the use of theatre workshops as a way of tackling presentation confidence issues with engineering students. These workshops took place a week before the students' first presentations of the year and used expertise from individuals with more than 30 years in theatre and musical performance. It involved exercises that addressed controlled breathing, phonation, projection and fighting self-consciousness. More than 50% of students fed back that the workshop helped to improve their confidence and was also reflected in the increase in average marks for presentation assignments for that year.

A further approach reported by Cochrane and Donoghue, 2008 involves the use of a software program called the *Virtual-i Presenter (ViP)*. Using this program, students are able to create, view and evaluate their oral presentations using their PCs/laptops and webcam outside of class time. The software is able to recreate how the student's presentation would be delivered

in class and aids in improving their skills by allowing them to watch themselves back, practice repeatedly and receive feedback from peers and academics. Surveys showed that students were able to practice 4 times more than usual and almost 65% of students preferred the use of the online tool compared to live presentations.

Given the uncertainty of the current climate and the growing need to be able to quickly adapt to online teaching and learning environments, the use of a software or online tool that students can use to practice their presentation and improve their confidence is generating more appeal than traditional face-to-face approaches (Motogna, Marcus and Molnar, 2020). In recognition of this, as of the coming academic year, DPS1 has incorporated the use of an online tool, similar to the one reported by Cochrane and Donoghue, 2008 called *GoReact*. This tool carries all the aforementioned functions of *ViP*, with the additional benefits being the ease of its integration onto the Moodle platform as well as the ability for staff and peers to join a student's live presentation session and the ability to have different presenters in one virtual room, mimicking what was practiced in face-to-face presentation assessments pre-COVID-19. The hope is that the implementation of this tool will not only allow for ease in transition to online presentations if another lockdown occurs, but it will serve as a long-lasting resource for students to use to continue to enhance their presentation skills, particularly relating to confidence.

Another possible reason behind the lack of confidence within the engineering education context could be attributed to English being a second language and the perceived feelings regarding students' command of English, even in the latter years of study (Stapa, Murad and Ahmad, 2014). Of the top ten nations that produce engineering graduates, over 85% speak English as a second language and of this number, almost 50% are from Asia, more specifically East Asia (WorldAtlas, 2021). This is reflected in the annual uptake of students in the Faculty of Engineering Sciences at UCL, with a similar proportion of students coming from the East Asian region and has been recognised by staff in this study to have been exacerbated by remote learning:

"If you're the one student on a European time zone and you have five team members on a Far East time zone ... the group meet without you or communicate in a different language in a separate chat channel ... So there might be some challenges there where people are more nervous to speak English 'cause they're doing it less." (Ryan, 3rd year)

As reported in literature, many engineering educators have recognised the difficulties associated with bringing students up to the same technical standard, let alone the same standard of English and many recognise that the onus cannot be on the academic alone and that there is a need for external support from those with specific expertise in this area (Poongodi and Periasamy, 2020). A study by Thakur, Kaur and Thakur, 2013 recognised this need and outlined specific steps that those trained to teach the English language to engineering students could take to help improve communication such as the use of technical vocabulary, correct grammar, sentence construction, among others. And whilst the study was able to demonstrate a general improvement in language skills, what seemed to be missing was the link between the English language instructor and the academics in the engineering departments for engineering technical language proficiency.

To address this, in 2023-24 DPS1 trialled the integration of UCL's Academic Communication Centre (ACC) across all departments. Analysis of the impact will be reported

in a separate publication. The hope is that if this strategy proves to be successful in DPS1, it can be rolled out to across all year groups. The improvement in language skills, paired with the ability to practice presentations repeatedly with the *GoReact* tool should significantly help to improve presentation skills as students' progress through their studies.

Writing Skills

The ability to write well is one of the most coveted skills by employers in engineering as reported in the literature review, yet it is the one that has proved most difficult to see significant advancements in engineering education (Narayanan, 2010). Studies have shown that one of the factors contributing to this relates to students' reluctance to devote time and effort to writing (Narayanan, 2005). This has been observed by staff in this study who expressed the challenges in motivating students to write:

“So my second years they don't believe in writing. It's literally the truth. They hate writing. They hate writing reports, and I wish that there was more emphasis. They have to know that when you go into a company, they have documentation, you have to write reports.” (Dean, 2nd year)

Research has shown this attitude to continue into latter years of study, particularly with the pressures of larger pieces of writing such as dissertations carrying higher weightings at the end of degree programmes (Jenkins, Jordan and Weiland, 1993). As Dannels, 2002 reports, it is important to recognise that there are differences in expectations of writing motivation between working engineers and student engineers, however engineering employers have also reported similar observations, particularly from early-career engineers, further highlighting the importance of continued efforts in the area of changing students' perception on the importance of such skills (Yong and Ashman, 2019).

Staff in this study were able to identify specific areas of writing that appear to be challenging for students, regardless of their year of study, and there were commonalities between different departments:

“I find that students want to report everything and they don't feel comfortable omitting any information and they feel like because they've done work on something they have to show it.” (Nelson, 4th year)

“I think one of the things that they don't know how to do in their third year when they arrive there is basic report outlining you know what's important to say in each part.” (Ted, 4th year)

“One is that they are very uncomfortable with writing short reports. This is condensing their writing into something that is the real stuff and not using a lot of space.” (Lucy, 4th year)

A four-year study carried out by Gunn, 2013 to identify the specific challenges faced by advanced engineering students in communicating their work via writing observed similar findings to those expressed by the staff in this study. The findings of the study suggested that the main areas of concern were disorganisation in idea expression and poor writing of introductions and conclusions. When asked to produce a summary of written work (an activity frequently performed in employment), students found it challenging to condense

information, select the most relevant content, contextualise information at the beginning and the end as well as general structure. Comparable studies were carried out by Wren, 2018 relating to quality of written communication, particularly students' confusion between what belongs in the introduction and conclusion sections as well as differentiating between description and critical analysis.

Conrad, 2017 performed a recent study that compared writing performance between engineering students and it was shown that quite a few students had less accurate word choice, issues with report structures and as well as arguably more concerning issues related to plagiarism and grammar. This was also a concern raised by staff in this study:

"I think you know there's stuff around paraphrasing, for example, where students get that wrong and they get into a lot of trouble with Turnitin, and they just don't understand it." (Harry, 2nd year)

"I sometimes teach them how to punctuate and even in year 2 I teach them this, it becomes hard to teach them something worthwhile, it becomes hard when they don't have the right foundations and they have that crutch ... they don't necessarily develop individual good writing skills and referencing." (Tim, 2nd year)

There are undue pressures on engineering educators to incorporate the teaching of foundational writing into the engineering curriculum, and whilst efforts are being made to do so, it is recognised that support from writing experts is needed (Thakur, Kaur and Thakur, 2013). A qualitative study conducted by Mokgwathi and Otlhomile, 2015 collected feedback on the efficacy of the recently implemented two-year foundational technical writing (TW) course (a course all engineering students in the Botswana International University of Science and Technology are required to take) from the points of view of engineering lecturers. The TW course is taught by TW specialists and is designed to prepare engineering students to write various types of engineering documentation to a high standard, covering areas related to grammar and punctuation, writing organisation and technical arguments, critical thinking in academic writing and information literacy.

Engineering lecturers fed back that the course had provided significant improvement in students' writing skills, with one participant stating, *"I do not have a lot of work correcting grammar when I mark their scripts."* A number of lecturers also reported on the significant reduction in plagiarism, improvements in research skills and referencing, along with a better understanding of writing structure. One area that was still noticeably problematic was related to difficulties in condensing large amounts of text into summaries, which was not an explicit learning outcome on the TW course.

To address similar concerns expressed by staff in this study, as mentioned previously DPS1 has trialled integration of UCL's Academic Communication Centre (ACC) with the module and analysis of its efficacy will be evaluated and published separately. Whilst it would be unfeasible, given the structure of degree programmes at UCL Engineering, to include something as comprehensive as reported in Botswana International University of Science and Technology, a similar concept will be applied via the use of academic writing experts collaborating with engineering educators, with the explicit addition of summary writing as a learning outcome. Students will work with ACC staff using specific writing assignments from DPS1. As they work on the DPS1 assignment, they will receive regular feedback from ACC staff, helping them to improve their writing with each iteration and apply the same

concepts to other assignments on their degree programme. The anticipated outcome is a significant improvement in lab report writing, referencing, plagiarism and summary writing. Student and staff feedback on its efficacy will be collected in annual module evaluation surveys.

Summary and Conclusion

The findings discussed in the previous section indicate that from the perspective of the staff involved in the study across the six departments, there are a number of commendations as a result of the introduction of skills-based teaching on DPS1. These include the general concurrence that presentation skills are well developed, and the transfer of these skills are seen as students progress through their studies. Also included in the commendations is the improved student perception of the IEP and skills-based teaching as they get towards the end of their degree programme (to be discussed further in future publication).

With that said, staff expressed concerns over the continued confidence issues that students face in presentations. To help address issues with confidence, DPS1 have introduced the use of the online tool *GoReact*, where students are able to record themselves presenting, watch back their presentation repetitively, and get peer and staff feedback. Similar tools have been used successfully in literature, so it is anticipated that similar results will be seen on DPS1. A further improvement in relation to teamwork skills involved adequately assessing conflict resolution. Whilst many studies recognise that it is a challenging aspect to assess directly, recommendations such as the roll out of the IPAC tool, combined with systematic reflection (as used in employment interviews) may help to address this. Staff mainly expressed concerns over students' inability to write concisely i.e. identifying what is important to include and what can be left out, as well as some basic writing skills due to language barriers. To address this, DPS1 have trialled a collaboration with UCL's ACC. Literature has reported on improvements in student's writing skills as a result of collaborative efforts between staff with expertise in writing and engineering educations. It is anticipated that similar results will be seen upon applying this strategy on DPS1.

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Teaching Scientific Writing in the Era of ChatGPT

Mauryn C Nweke, University College London, United Kingdom
Maria Florez-Martin, University College London, United Kingdom
Samuel Ackerley, University College London, United Kingdom
Fiona Truscott, University College London, United Kingdom

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Abstract

Generative AI (gen-AI) tools such as ChatGPT have very quickly become widely accessible as well as embedded into a wide range of existing software. The early iterations of these technologies so far have produced impressive outcomes in terms of their ability to produce generic writing, leading to the question - will the teaching of writing skills become obsolete? A number of studies show that there are niche areas within engineering that gen-AI tools have not garnered enough specificity in information to produce written reports that are technically accurate enough for students to pass off as their own work. In spite of this, research shows the growing trend of students using gen-AI tools to complete their assignments without understanding the shortcomings of the technology when applied to their engineering discipline, particularly problematic with first-year engineering students. The Integrated Engineering Programme (IEP) was introduced to University College London in 2013/14 as a means of embedding transversal skills-based education into the curriculum. This presentation aims to outline the steps taken on the IEP to maintain the standards of writing competence and how gen-AI tools have shaped how we teach scientific writing and best practice when embedding their use into the curriculum.

Keywords: Generative AI, Teaching Scientific Writing, Engineering Education

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Introduction

Generative artificial intelligence (gen-AI) is very quickly transforming the way in which educators and students teach and learn. These technologies, which include the use of large language models (LLMs), video generators and diffusion model imaging offer educators and students extensive access to information and enable the creation of innovative educational materials with great efficiency. Of all the gen-AI technologies, LLMs (such as ChatGPT, Google Bard etc.) have been in popular demand as they have the capability to generate natural language text for a variety of purposes, including summarising research papers, ideation for essays and proof-reading (Menekse, 2023).

It is believed that engineering education has a lot to gain from incorporating gen-AI to enhance teaching material, learning environments, alleviate staff workload and offer a more personalised and engaging learning experience for students. An example of this has been presented in Bearman, Boud, & Ajjawi, 2020 where students were provided with different learning activities and practice problems tailored to different levels of difficulty based on their problem areas.

In studies by Jesse, 2023, Leung, 2024 and Mlocka, 2023 it was found that gen-AI has been particularly useful for neurodivergent students such as those with autism. Typically students that display the most common forms of autism tend to have the following struggles with in-class activities:

- Staying focused when reading large amounts of text
- Creative ideation whilst experiencing executive dysfunction
- Articulating and structuring thoughts

It was found that ChatGPT was able to assist in breaking large blocks of text into succinct bullet points for ease of cognitive processing, especially when used with tools that allow for speech-to-text programming to aid in structuring and articulating thoughts.

It has been shown that students use AI tools for vocabulary, grammar and spelling checking, sentence structure, corrections in tone, delivery and prose formality, varying writing styles to suit varying audiences, particularly useful for non-native English speaking students. Observations reported by Piatek, 2023 state that ChatGPT as a tool gave these students 'more confidence' when writing in English and many used it to simultaneously translate their written essays from their native language into English and correct their grammar and spelling. Whilst the use of AI in this way is not problematic, it may compound more fundamental language problems. A study by Wang, 2023 looked into the efficacy of ChatGPT when used by non-native English speaking students to translate their work. They found a number of inaccuracies in translation due to students' unfamiliarity with the English language, concluding that students' lack of proficiency with English language skills would only be exacerbated by ChatGPT.

Whilst it is apparent that gen-AI could and does currently provide many advantages to engineering education, there are equally just as many concerns, particularly around student learning. The most commonly reported concerns around generative AI in education are the rise of academic misconduct and the propensity for the tools to provide incorrect or misleading responses (Mubaroq, Kamalia, & Zenico, 2024).

In engineering disciplines such as Electronic Engineering and Computer Science, it has been found that students have indulged in AI-assisted cheating to generate code for assignment submission. A study by Moturu & Nethi, 2023 described how ChatGPT was being used by students in foundational programming courses and similar findings were discussed in a study by Lau & Guo, 2023. The prevalence of its use in scientific writing is also on the rise. The Higher Education Policy institute surveyed more than 1000 UK undergraduates on their use of gen-AI in writing essays and reports. Over 50% admitted to using AI to generate work for summative assignments without fact-checking and 5% admitted to copying and pasting directly from AI-generated text straight into their assignment (Adams, 2024).

Other reported concerns include the possibility that generative AI may hinder attempts to improve students' analytical thinking. Literature indicates that some educators argue that there is a possibility that AI will lead to a downgrading of human skills and knowledge and have likened this phenomenon to the invention of the calculator and its impact in reducing the need for basic arithmetic skills (Munger, 2024). However it is believed that AI poses a bigger threat to creativity and critical thinking, giving rise to an important question - how will educators ascertain whether students have acquired the fundamental understanding of a topic?

In response to the AHISA survey, education establishments reported additional concerns regarding ethical issues that include inherent bias, data privacy and intellectual property rights, as well as the detection and management of outputs from generative AI tools (Duncan, 2023). However with the evolution of these tools, a number of measures are being taken to adapt current teaching practices to allow for the incorporation of AI into engineering education.

Honig, Rios, & Oliveira, 2023 describe the way in which their teaching of coding for computer science students has been adapted to intentionally use ChatGPT to assist learning. Rather than students being asked to produce code, activities were framed such that AI was an unreliable participant and hence students were tasked with debugging and finding errors in coding. Nweke, Banner, & Chaib, 2023 describe how assessment mark schemes and rubrics could be amended in engineering assignments to reduce the likelihood of ChatGPT generated work achieving a pass mark. It was shown that generally, increasing the percentage of marks allocated to sections that necessitate critical thinking and analysis, and subsequently decreasing the marks allocated to sections that are descriptive or introductory meant that when assignments were generated by ChatGPT and marked against the modified rubric, they scored lower marks compared to when these same assignments were marked against the original rubrics. An article by Edmond, 2024 looked into scientific writing and detailed how they amended their teaching and assessment practice relating to engineering ethics where the assignment was an ethics essay. In this assignment, students were asked to declare where and how they used AI (non-punitively). The most common findings were that students used AI tools such as Scribblr to generate references and find a source's citation information and used ChatGPT to proof-read their work. The author used this information to incorporate more teaching on referencing and citations and the impact of academic misconduct.

Written communication skills have been shown to be one of the most coveted skills by engineering employers (Perkins, 2019), however research shows that scientific writing is particularly problematic for engineering students and has been exacerbated by the introduction of AI tools, highlighting the need for enhanced efforts in this area (Imran & Almusharraf, 2023). To address this, in 2023 UCL introduced a three-tiered categorisation system designed to specify (at the instructor's discretion) the extent of AI usage on a

particular assignment. The 3 categories are as follows: (1) Cannot use, (2) Can use for assistive purposes, (3) AI has an integral role. Whilst categories 1 and 3 are more straightforward to implement, category 2 can have a number of interpretations in its application, and if not well-specified, may breed a whole host of issues with written assessments.

In order to better define the scope of AI usage in a category 2 assignment, it is important to first ascertain how students are using AI on their scientific writing assignments. The Social Impact report (submitted individually) and Team report were the two assignments chosen for this study. These assignments were selected as they are among the first scientific writing assignments that students are exposed to in their first year of undergraduate studies at UCL Engineering on the Integrated Engineering Programme (IEP) (Mitchell, Nyamapfene, Roach, & Tilley, 2019; Truscott, Tilley, Roach & Mitchell, 2021).

Methodological Approach

Teaching

The study was conducted with first year undergraduate students from the Faculty of Engineering at University College London (UCL). Engineering Challenges is a very large and complex core module for between 900 and 1000 students from across seven departments within the Engineering Faculty at UCL, UK. It is an interdisciplinary team-based project module taken by a majority of the first-year students within the faculty in term 1 and is central to UCL's teaching framework. As the first team project experience for our undergraduate students, it aims to introduce them to how projects work and the skills needed to collaborate with others; the module focuses on what engineers do rather than what they know. Due to its placing within the curriculum, teaching was added to this module focused on the application of Artificial Intelligence (AI) in academic practice. The aim was to inform students about both the advantages and limitations of using AI tools, ensuring they understood the importance of maintaining academic integrity while leveraging technological advancements. The teaching was packaged with teaching on referencing and the reliability of sources as a way of indicating to students that this was a key writing practice.

Data Collection

To gather data on students' use of AI tools, two assessments from the module were selected, an Individual Social Impact Report and a Team Report, and the data was pooled. Students were asked to include a coversheet at the beginning of each assessment. Completion of this coversheet was optional, and no penalty was given for non-completion. The coversheet included two questions designed to record detailed information about the students' experiences and opinions regarding AI tools:

- Which AI tools have you used when writing? This includes spelling and grammar checkers as well as text predictors.
- How have you used these tools?

Data Analysis

The responses collected from the coversheets were manually transferred into an Excel spreadsheet for organisation and preliminary examination. To facilitate analysis, a Python script was developed and employed to clean the dataset. This script handled tasks such as

identifying non-responses, standardising text formats (and accounting for misspelling of AI tools), and categorising answers for easier interpretation.

The cleaned data was then analysed to identify patterns and trends in the students' use of AI tools. Quantitative analysis was performed to determine the frequency of use of various AI tools and their perceived usefulness. The insights from these analyses provided a comprehensive understanding of how engineering students at UCL are integrating AI into their academic writing processes, highlighting both common practices and individual variations.

Statistical Analysis

To understand the correlation between AI usage and grades, data was tested for normality with a Shapiro-Wilk test. If the data was normal, a One-Way ANOVA was run. If data was not normally distributed, a Kruskal-Wallis was performed followed by a Dunn's test. Statistical significance was set at $p < 0.05$.

Findings and Discussion

Response Rates

Data from 1056 assessments was extracted, with 855 (80.97%) students including and responding to the questions on the coversheet (see **Error! Reference source not found.**). From these, 170 students (19.88%) reported using no AI tools, and the remaining 685 students (80.12%) used one tool (521; 60.94%), two tools (139; 16.26%) or three or more (25; 2.92%) within the assessment. No statistical difference in grades was observed between students that used AI and those who did not.

The high response rate showed a significant level of engagement among the students. However, the voluntary nature of the coversheet meant that approximately 19% of students did not participate. In future assessments, requiring mandatory completion of the coversheet or integrating the questions more seamlessly into the assessment templates might increase the response rate. Additionally, considering a separate, dedicated questionnaire for collecting data on AI tool usage could provide more comprehensive insights.

Quantity of reported tools	n (students)	% (students)
0	170	19.88
1	521	60.94
2	139	16.26
3 or more	25	2.92
Total	855	100

Table 1. Quantity of Reported Tools.

Use of AI Tools

The reported AI tools were divided into four main categories: generative AI, spelling and grammar, AI translators, and others (see **Error! Reference source not found.**). There were 426 (50.35%) instances of generative AI use, 361 (42.67%) of spelling and grammar AI, and

51(6.03%) of AI translators. Additionally, 31 answers reported use of non-AI tools (e.g. MyBib, Google, Plagiarism Checker, Wikipedia).

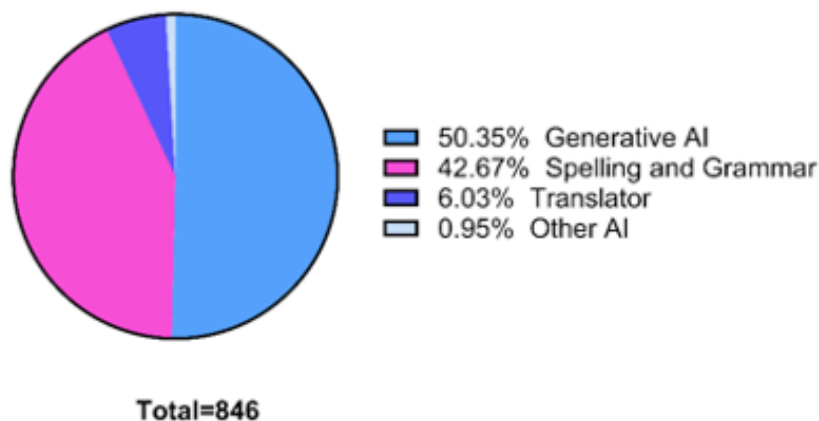


Figure 1. Pie chart showing AI tools divided into categories. Generative AI was the most commonly used tool, followed by spelling and grammar, and translator tools. Responses that disclosed the use of AI but did not mention specific software were classified as Other AI.

It became clear in the analysis of the data that while most students used AI tools (80.12%), there was still confusion regarding what constitutes AI. Some students mistakenly included non-AI tools such as Wikipedia and referencing software. This highlights a need for more thorough education on what AI tools are and how they differ from other digital resources. Despite this confusion, many students demonstrated adaptability in using AI tools for generating ideas and improving spelling and grammar, which are foundational aspects of writing.

Generative AI Tools

A total of 426 responses included mentions of generative AI (Figure 2a). The most commonly used was ChatGPT (89.44%), followed by QuillBot (6.10%) and Bing AI (3.52%). Focusing on ChatGPT usage, 322 students (84.51%) did not mention the version used, while 48 (12.60%) used ChatGPT 3.5, and 11 (2.89%) used the paid ChatGPT 4 version (Figure 2b).

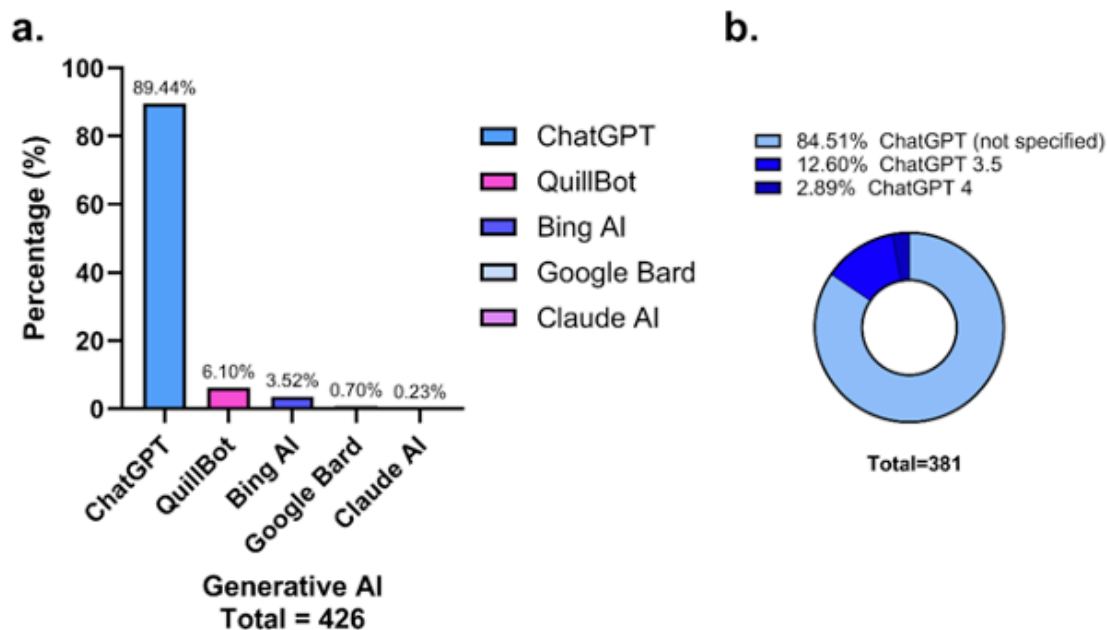


Figure 2. Generative AI tools used by students. (a) Bar chart showing percentage use of each generative AI tool. ChatGPT was the most used tool (89.44%), followed by QuillBot (6.10%) and Bing AI (3.52%). (b) Pie chart showing reported version of ChatGPT.

Spelling and Grammar Tools

361 students reported the use of spelling and grammar AI software. Grammarly was the most commonly used tool (57.89%) followed by Microsoft Word Editor (29.36%). 11.08% of responses included mentions of spelling and grammar checkers but did not specify which tools were used. Google Docs AI powered proofreading was used by 1.39% of students, with ProWritingAid used by 0.27%.

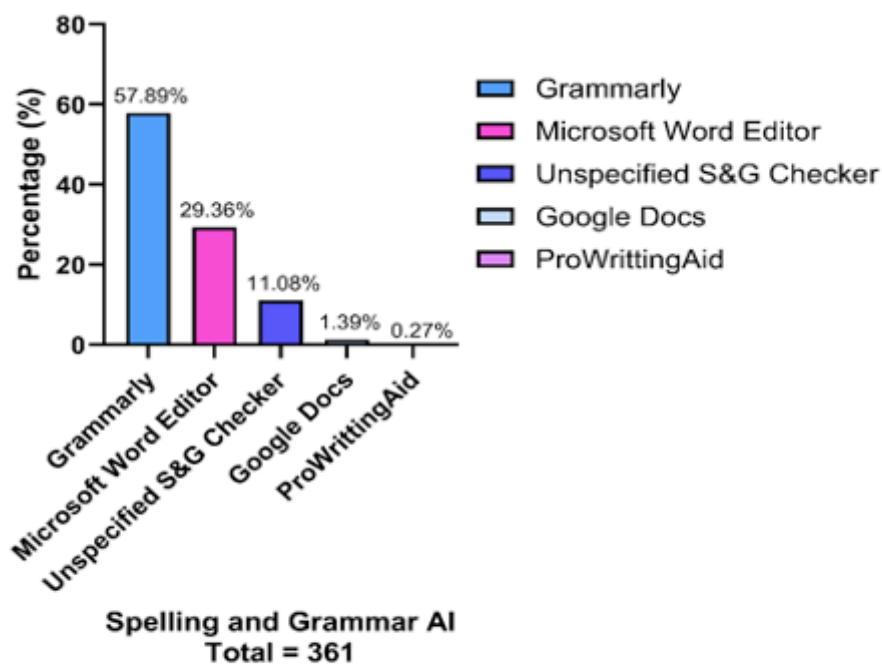


Figure 3. Spelling and grammar (S&G) tools used by students. Grammarly was the most commonly used tool (57.89%) followed by Microsoft Word Editor (29.36%).

Translator Tools

A total of 51 students claim to use translator tools (see Figure 4). DeepL was used by 60.78% of those students, followed by Google Translate (15.69%) and Baidu Translate (11.76%). The remaining 11.76% mentioned the use of translator tools but did not specify the software.

A significant portion of the UCL student body is international, with 54.84% international undergraduate students in 2022-23 (UCL, 2024). The use of AI tools to help with spelling and grammar, and translation was particularly beneficial for these students, aiding them in expressing their ideas more coherently. Tools such as Grammarly and Microsoft Word Editor, which focus on spelling and grammar, and DeepL, a translator, were extensively used, suggesting that these tools play a crucial role in helping students produce clearer and more accurate written assessments. This also benefits instructors in grading, as the quality and clarity of the submissions are improved.

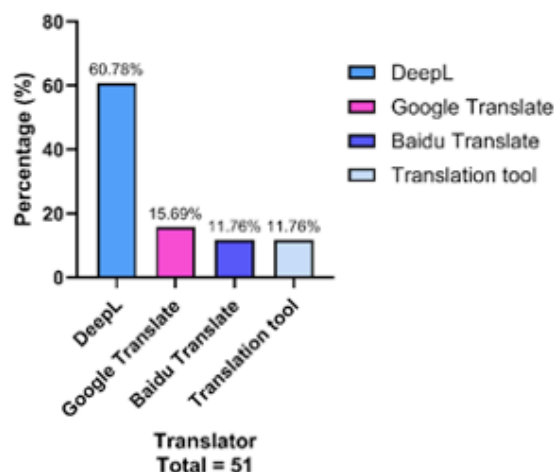


Figure 4. Translator tools used by students. DeepL was most commonly used (60.78%) of those students, followed by Google Translate (15.69%) and Baidu Translate (11.76%). The remaining 11.76% mentioned the use of translator tools but did not specify the software.

How Students Used Generative AI Tools

We additionally asked the students to provide details on how they had used specific AI tools in their work; "how have you used these tools?" We focused on how students had used generative AI in their assessments. From the 426 entries concerning generative AI tools, we classified the responses into two core groups: Writing, which involves language and text processing tasks, and Comprehension, which pertains to information insights and explanation. We further divided these groups into smaller subcategories.

Responses mentioning the use for spelling and/or grammar were categorised under spelling and grammar. Using AI to improve or write sections of text based on prompts was classified as organising and structuring content. Using AI for translating or finding synonyms was grouped into translation and synonym suggestions. These three subcategories were grouped under the umbrella term writing. Using AI for idea generation and brainstorming was categorised accordingly. Mentions of researching topics and related tasks were grouped into research and information gathering. Using AI to explain concepts was categorised under understanding and explaining concepts. Using AI to summarise text, such as research articles, was categorised as summarising content. These four subcategories were grouped under the umbrella term comprehension. Any responses mentioning a generative AI tool without specifying its use were categorised as not specified.

Table 2 displays the responses regarding the use of generative AI tools by students. Responses are separated into specific categories and subcategories, as discussed in the methods. ChatGPT was the most frequently used tool, with approximately 90% of students mentioning its use. This was followed by Quillbot (6%) and Bing AI (3.5%). Google Bard and Claude AI collectively accounted for less than 1%. This was anticipated given that ChatGPT was the first advanced conversational generative AI model released free of charge back in 2022 (OpenAI, 2022). The chatbot reached an estimated 100 million users just two months after launch, making it the fastest-growing consumer application in history (Hu, 2023). Except for Quillbot, all the generative AI tools used by students represent conversational AI models; capable of generating text responses, answering a multitude of questions, and carrying out specific tasks. Quillbot, on the other hand, is explicitly a writing

aid designed for paraphrasing, grammar checking, and summarising text. Unlike conversational AI, it cannot generate ideas or carry out analyses.

	Writing			Comprehension				Not specified	Total
	Spelling and grammar	Organising and structuring content	Translation and synonym suggestions	Idea generation and brainstorming	Research and information gathering	Understanding and explaining concepts	Summarising content		
Bing AI	3	0	0	1	6	3	0	2	15
Chat GPT	38	49	22	116	46	67	8	35	381
Claude AI	1	0	0	0	0	0	0	0	1
Google Bard	0	1	0	0	2	0	0	0	3
Quillbot	12	10	0	0	0	0	0	4	26
Total	54	60	22	117	54	70	8	41	
	136 (32%)			249 (58%)				41 (10%)	

Table 2. Student Usage of Generative AI Tools Across Different Writing and Comprehension Subcategories.

Markedly, 32% of students described using generative AI to help with writing tasks with Quillbot the second most used generative AI tool after ChatGPT, as shown in Table 2. This result is unsurprising given that the engineering course from which this data was gathered has a high number of overseas students, with approximately only 30% being native English speakers. We found that students frequently use chatbots to formulate sentence structures, check for errors, ensure words make sense in context, and generally improve their written language. One student stated, “I send the content I write to it and let it improve my grammar and spelling.” Examples of prompts used by students with the conversational AI tools (not Quillbot), as provided in the questionnaire, include: “Can you help me make the text flow better while correcting all grammar and spelling errors?”, “Check through the paragraph provided and, wherever possible, improve it”, “Can you make this more concise and straight to the point without any loss of information?”, and “Please make the following understandable and clear.” These prompts demonstrate the usefulness of AI in formulating coherent sentence structures with improved readability and clarity, especially for non-native English-speaking students.

Many students refer to using AI for “checking grammar” and improving sentence quality or “making it more concise.” Students often describe writing out paragraphs with their ideas and then running them through the GPT. In the case of ChatGPT, which was by far the most used generative AI platform identified in this study, pasting a paragraph of text into the GPT with a simple prompt such as “check this for grammar” or even “is this ok” results in the AI providing a revised version of the original text that is grammatically error-free. Often, it will additionally substitute words and phrases with synonyms, even without explicit instruction. This is interesting because these prompts are very basic, thus it is as if the models are assuming that the user wants a reworded version that sounds more fluent, as based on its training data. However, if more specific prompts are given, such as “check for spelling and grammar but do not reword any of the text,” the chatbot will do just that.

Comprehension-based use of generative AI accounted for 58% of the responses. This high percentage aligns with our expectations, as the primary appeal of these novel tools lies in providing information insights and explanations. The bar chart in Figure 5 showcases the data split within each category and subcategory for ChatGPT. Idea generation was the largest subcategory, with 116 students using the chatbot to help generate ideas for their assignments. For example, one student provided the prompt, “Can you brainstorm about the political risks of building a vaccination production plant?”, which demonstrates how students are using and interacting with these models, having human-like intelligent conversations. Another student mentioned, “Basically, I come up with a theme, and then the AI gives me a detailed solution,” highlighting a concern that some students may use AI for more than just generating initial discussion points.

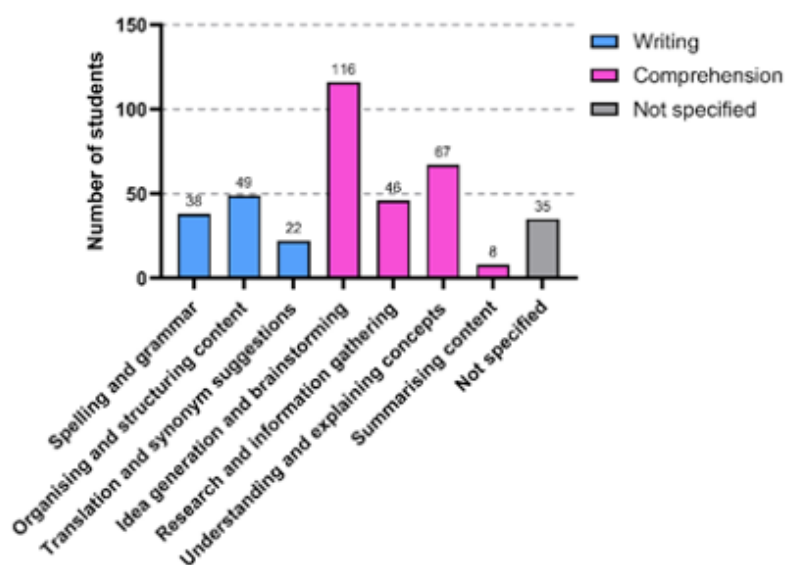


Figure 5. Bar chart of student usage of ChatGPT separated into writing and comprehension subcategories.

Understanding and explaining concepts was the second largest subcategory within comprehension, with 67 students (for ChatGPT). This use was anticipated, as the chatbot can simplify jargon-heavy text from articles or sources into lay terms, a valid and useful application, especially for foreign students who may struggle with scientific terminology. Notably, one student commented, “I find AI better at explaining than Google,” likely inferring that the chatbot is easier to interact with, and understand, compared to searching for answers using a web browser.

Conclusion

Within this study we investigated how first year undergraduate engineering students are using gen-AI tools within their written assessment. The use of a coversheet combined with explicit teaching on how to use gen-AI tools within written assessments proved to be largely successful with very few cases of suspected passing off gen-AI generated work as a student’s own. A significant majority of students (81%) engaged with the coversheet, despite it being optional, but highly recommended. Framing the coversheet as a way to declare the use of generative AI tools, similar to referencing external sources, seems to have created an

atmosphere where students do not feel the need to hide their use of these tools. Of those that completed the coversheet, 80% declared use of some form of gen-AI tool while 20% declared no use. The most popular tool is by far ChatGPT, possibly due to the publicity surrounding it and the versatility of it as a tool. Overall students reported that they were primarily using gen-AI tools for writing support, idea generation or information sourcing.

While these uses are at least somewhat positive in an educational setting it raises questions about where does one draw the line between using AI as an assistive tool for university assignments and when does it cross into territory where the work is no longer representative of the student's own efforts. This is especially thought-provoking given the generative nature of these AI models. While AI for spelling and grammar correction, translation, and synonym suggestions has been integrated into tools like Microsoft Word for years, the rise of generative AI suggests a shift in student reliance on these technologies for written work. The added functionality of generating new text based on specific prompts might lead to greater dependence on generative AI for corrections. Although the core ideas from students are retained after using GPT, the role of AI in shaping the final text warrants careful consideration.

Similarly where students are using AI as a tool to find information, how much are they critically evaluating the information produced by these tools? This is particularly relevant for first year students given their limited knowledge of their degree subject, do they have the information or skills needed to critically evaluate the information AI provides? Students' reliance on the outputs of AI tools and assumption of 'correctness' of these outputs may lead to the inclusion of irrelevant or tangentially relevant material and for them to 'miss the point' of an assessment. This is particularly relevant when working in spaces that are traditionally seen to be outside of engineering, like sustainability or ethics, and where engineering students may feel out of their depth and more reliant on the information from AI tools.

The findings from this study suggest several implications for future teaching practices. Firstly, incorporating detailed instruction on AI tools and their appropriate use in academic writing should be a standard part of the curriculum. Given the widespread use of tools like ChatGPT and Grammarly, it is important to provide guidance on how to use these tools effectively while maintaining academic integrity. Second, the need to discuss the strengths and weaknesses of these tools as well as how to evaluate the information generated and apply that within students' work. Finally, given the fast evolution and uptake of these tools, there is a continuing need to evaluate the potential impact of them within the educational space and engage with how to incorporate their use within teaching in the future.

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Contact emails: c.nweke@ucl.ac.uk
f.truscott@ucl.ac.uk

***Why Engage in Scientific and Technological Initiation?
A Groundbreaking Brazilian Study***

Woska Pires da Costa, Instituto Federal Goiano, Brazil
Angélica Ferreira Melo, Instituto Federal Goiano, Brazil
Priscilla Rayanne E. Silva, Instituto Federal Goiano, Brazil
Matias Noll, Instituto Federal Goiano, Brazil

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Abstract

Scientific and technological initiation programs are developed to introduce students to scientific research and technological development. Our study aimed to evaluate undergraduate students' research experience, self-perceptions, and scientific production during one academic period. The study design was based on quantitative analysis of curricula vitae, and an electronic survey was conducted on students enrolled in a Brazilian Midwest Institute. The sample included 213 students (115 female, 54.0%) who participated in a Brazilian undergraduate program (UR) – called Scientific Initiation (SI) – during the 2018–2019 academic term. The students were divided into two groups according to their experience in research: 110 (51.6%) students were experiencing their first time in a research program, and 103 (48.4%) experienced students. The results showed that students who had participated in research activities more than once perceived the benefits of SI more positively ($p=0.047$) and demonstrated a greater volume of academic production than those who were participating for the first time ($p<0.001$). Both groups agreed that experience in SI will contribute to better academic performance in graduate programs (novices: 64.5%; experienced: 71.8%). Furthermore, most participating students expressed their intention to continue their involvement in SI (novice: 59.1%; experienced: 64.1%), indicating the positive trajectory of Brazilian SI programs. In conclusion, undergraduate students who participate in UR programs, as in Brazilian SI programs, contribute positively to academic production and training by providing personal and professional benefits and the opportunity to produce academic work that can help initiate academic careers.

Keywords: Academic Development, Academic Production, Scientific Initiation, Undergraduate Research, Student Perceptions

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Introduction

Scientific research in the academic environment is crucial to a country's progress, and educational institutions are responsible for promoting and facilitating this process (Zheng, 2023). From this perspective, encouraging research is essential for advancing scientific knowledge and promoting technological innovation (Chen, 2021). One proven effective mechanism is public policies such as undergraduate research programs (UR). These programs play a crucial role in students' academic and professional development, and it is within the power of educational institutions to enable them to become future researchers and scientists (Daniels et al., 2016). Furthermore, when students are involved in scientific research and technological development from an early age, a nation can reduce its dependence on other countries. Therefore, it is crucial for educational institutions to actively involve students in the UR by promoting these programs through outreach and leveraging digital and social media platforms (Mahatmya et al., 2017).

Several countries have been increasingly committed to promoting programs that provide students with enriching experiences in science and technological innovation. For example, in recent decades, funding agencies in the United States have diversified programs focused on Science, Technology, Engineering, and Mathematics (STEM), resulting in successful academic UR initiatives aimed at underrepresented college students (Hernandez et al., 2018). New Zealand is also an example of this movement, where research has become an increasingly relevant component of undergraduate studies, benefiting students by providing a wide range of developmental skills (Lopatto, 2010; Mantai et al., 2023; Mieg et al., 2022).

In the context of Brazil, UR programs are designed to involve students in scientific and technological research during their school years to train qualified human resources (CNPq, 2006). These Brazilian programs are called Scientific Initiation (SI) and are offered by educational and research institutions that have qualified professionals on staff to work in the field of research, in addition to other requirements. Thus, SI programs are offered in various forms, benefiting students from high school to the undergraduate level. The outcomes of student experience in SI include the structuring of postgraduate programs, success in undergraduate research projects, the consolidation of research groups, and the promotion of activities to disseminate researchers' results involving both faculty and students (Noll et al., 2021). Given this, there is a latent responsibility, which invokes a sense of national pride and promotes skills to deal with complex situations and challenges, leading to qualified actions in the future (Melo et al., 2023).

While UR offers significant advantages to students, it is equally important to address the obstacles that hinder their participation and lead to low engagement rates (Melo et al., 2023). Barriers such as undervaluation of SI programs, excessive activities, and insufficient infrastructure and resources can limit the effectiveness and reach of these programs (Costa et al., 2024). However, overcoming these barriers can significantly broaden students' perceptions of science and future careers, enhancing their intelligence and maturity (Amaya et al., 2018). This underscores the need for higher education institutions to provide adequate resources, quality guidance, and recognition to improve student engagement in these programs (Melo et al., 2023). Moreover, participation in scientific research programs can greatly influence and direct students to continue their academic careers and can influence the construction of scientific identity (Ceyhan & Tillotson, 2020). By creating the conditions necessary to expand the number of undergraduate students engaged in scientific research,

institutions can contribute significantly to the advancement of knowledge in various fields (Melo et al., 2023).

Given the scarcity of research in Latin American countries, especially in Brazil, our study aimed to fill this gap by evaluating the experiences of research students, their self-perceptions, and their scientific production as a result of their involvement in SI activities. We employed a quantitative survey approach to gather data. The findings of this investigation can significantly contribute to the understanding of the importance of UR programs for the development of the next generation of scientists and researchers.

Study Design

This study is part of an umbrella study named the "Panorama of Undergraduate Research in Brazil" (PUR-Bra study). The methodological design was based on quantitative analysis of curricula vitae, and an electronic survey was conducted on students enrolled in a Brazilian Midwest Institute. This research was approved by the Ethics Committee (Protocol CAAE No. 08499119.9.0000.0036, by consolidated opinion No. 3186828), and all participants consented to participate voluntarily, according to Brazilian ethics legislation.

The research instrument was validated to assess the organization, objectivity, clarity, ease of reading, and understanding of the content. The questions were analyzed using the Content Validity Index (CVI), which measures the proportion of evaluators who agree on specific aspects of the instrument (Alexandre & Coluci, 2011).

The target audience was students who were participating in an experience at UR during the 2018-2019 academic term. The sample was restricted to students who answered the survey questionnaire. The students were divided into two groups according to their research experience: students who were participating in a research program for the first time and experienced students at UR.

The data were analyzed using descriptive and inferential statistics, by the software Statistical Package for the Social Sciences (IBM™ SPSS™ Statistics), version 26 for Microsoft Windows™ (IBM Corp., Armonk, N.Y., USA). Absolute numbers and percentages were used for the descriptive analysis of the data. The Pearson's parametric chi-square test ($\alpha = 0.05$) was used to calculate the chi-square (χ^2) value (Henrique et al., 2022; Ugoni & Walker, 1995). To avoid statistical power loss, the last three answer options of some questions were grouped together and classified as "very good", "good", and "indiferente/ partially/ totally disagree" options (Melo et al., 2023).

The mean and standard deviation were used in the students' scientific production, and the normality of the data was assessed using the Kolmogorov–Smirnov test (Hazra & Gogtay, 2016). Given the non-normal distribution observed, we used a non-parametric test, the Mann–Whitney *U*-test, to assess whether there was a statistically significant difference ($\alpha = 0.05$) (Hazra & Gogtay, 2016; Leitão et al., 2021).

Results and Discussion

The sample included 213 students (115 female, 54.0%), 110 (51.6%) students who were novices in a research program, and 103 (48.4%) experienced students. The results showed that students who had participated in research activities more than once perceived the benefits

of SI more positively ($p = 0.047$; see Table 1) and demonstrated a greater volume of academic production than those who were participating for the first time ($p < 0.001$; see Table 2).

Table 1: Students' perceptions of the benefits of SI.

Variables	Total ($N = 213$) n (%)	Experience with SI		p -value
		Novice ($N = 110$) n (%)	Experienced ($N = 103$) n (%)	
a) Is the SI important in undergraduate studies?				
Totally agree	187 (87.8)	96 (87.3)	91 (88.4)	0.276
Partially agree	24 (11.3)	14 (12.7)	10 (9.7)	
Indifferent, partially, or totally disagree	2 (0.9)	0 (0.0)	2 (1.9)	
b) Will your academic skit improve in the postgraduate stage due to this experience in SI?				
Totally agree	145 (68.1)	71 (64.5)	74 (71.8)	0.047 *
Partially agree	62 (29.1)	33 (30.0)	29 (28.2)	
Indifferent, partially, or totally disagree	6 (2.8)	6 (5.5)	0 (0.0)	
c) In the future, will you intend to apply to a postgraduate program?				
Yes	152 (71.3)	76 (69.1)	76 (73.8)	0.635
No	11 (5.2)	7 (6.4)	4 (3.9)	
Not sure	50 (23.5)	27 (24.5)	23 (22.3)	
d) Do you intend to continue in the SI program?				
Yes	131 (61.5)	65 (59.1)	66 (64.1)	0.093
No	30 (14.1)	12 (10.9)	18 (17.5)	
Not sure	52 (24.4)	33 (30.0)	19 (18.4)	
e) Could the SI activities help you get a good job in the future?				
Totally agree	126 (59.2)	62 (56.4)	64 (62.2)	0.633
Partially agree	65 (30.5)	35 (31.8)	30 (29.1)	
Indifferent, partially, or totally disagree	22 (10.3)	13 (11.8)	9 (8.7)	

Note: N represents the number of participants; n represents the number of responses for an alternative to the question. Mann–Whitney U -test ($\alpha = 0.05$): * statistically significant difference. The last three answer options of some questions were grouped together and classified as 'totally agree', 'partially agree', and 'indifferent/partially/ totally disagree' to avoid statistical power loss.

Table 2: Academic production of the students.

Variables	Experience with SI		p -value
	Novice $M \pm SD$	Experienced $M \pm SD$	
Scientific articles	0.07 \pm 0.35	1.18 \pm 3.02	< 0.001 *
Scientific articles in English	0.03 \pm 0.16	0.52 \pm 1.53	< 0.001 *
Extended abstracts	0.90 \pm 2.28	4.70 \pm 5.54	< 0.001 *
Abstracts	0.99 \pm 2.09	4.75 \pm 5.86	< 0.001 *
All productions	2.10 \pm 4.02	11.38 \pm 12.89	

Note: M and SD represent the mean and standard deviation, respectively. Mann–Whitney U -test ($\alpha = 0.05$): * statistically significant value.

Both groups agreed that experience in SI will contribute to better academic performance in postgraduate programs (novices: 64.5%; experienced: 71.8%). Our findings align with existing evidence that such experiences foster gains in independence and intrinsic motivation to learn (Lopatto, 2007). The impact of UR experiences on students' competence in postgraduate studies is notably positive, with research capacity being a strong predictor of academic performance in postgraduate programs (Guo et al., 2021). Additionally, involvement in UR significantly increases the likelihood of students pursuing scientific fields and advancing to postgraduate school (Hernandez et al., 2018). Conversely, poorly managed UR experiences can pose challenges for students in their graduate studies (Dolan & Johnson,

2010), underscoring the importance of ensuring these experiences are rewarding to develop the necessary skills and competencies effectively (Wang et al., 2023).

Most participating students expressed their intention to continue their involvement in SI (novice: 59.1%; experienced: 64.1%), indicating the positive trajectory of Brazilian SI programs. These results are consistent with findings suggesting that students engaged in multiple research cycles had significantly higher scientific production, including articles and abstracts, than those participating only once, i.e., UR experiences contribute to cognitive and personal growth (Hunter et al., 2007). In addition, our findings corroborate with another study, showing that students' scientific productivity improves with more significant experience in UR (Zydney et al., 2002).

Furthermore, the students engaged in multiple research cycles demonstrate significantly higher scientific production, including articles and abstracts, compared to those with only a single cycle. Thus, an extended engagement in UR results in a deeper understanding of scientific research processes and developing essential skills for future scientists (Thiry et al., 2012).

Like any other study, ours has some limitations that are important to report. Firstly, the participants in our study belonged to a single Brazilian institution, which may have influenced the results. Therefore, it is suggested that future studies address a larger target audience and a broader context. Secondly, despite the researchers' efforts in this study's original design, some potentially relevant variables, such as leadership capacity, level of engagement, and sense of belonging, were only noticed after the data had been collected. Finally, we highlight that the new results obtained by replicating this research could generate insights that enable a better understanding of the evolution of public policies aimed at academic and scientific training in Brazil, allowing more effective decisions to improve them.

Conclusion

In conclusion, undergraduate students who participate in UR programs, as in Brazilian SI programs, contribute positively to academic production and training by providing personal and professional benefits and the opportunity to produce academic work that can help initiate academic careers. Based on the study's results, the information and knowledge gathered can contribute to developing institutional strategies and actions to increase support for Brazilian and UR programs in other countries.

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Contact email: woskapc@gmail.com

Investigating Linguistic and Non-linguistic Factors Affecting Intercultural Communicative Competence in UK International Students

Dunia Alghamdi, Newcastle University, United Kingdom
Alina Schartner, Newcastle University, United Kingdom

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Abstract

Intercultural Communicative Competence (ICC) is vital for international students in higher education, who often face challenges like language barriers and cultural differences. Investigating linguistic and non-linguistic factors influencing ICC development is crucial (Young & Schartner, 2014). This ongoing a repeated cross-sectional design study examines the linguistic dimension of vocabulary knowledge (VK) and non-linguistic factors of social contact (SC), impacting ICC among international students in one-year MA programs at UK universities (N=103). The data were collected using questionnaires during the academic year 22/23 (September, February, and July). The short form of the Multicultural Personality Questionnaire is used to measure ICC (Van der Zee et al., 2013). The significant contribution of this study lies in providing valuable insights into linguistic and non-linguistic factors that allow educators and institutions to devise effective strategies for enhancing ICC among international students. The findings reveal that Open-mindedness and Cultural Empathy significantly influence social contact with host nationals and multinational groups, with stronger correlations observed. The relationship between ICC and Vocabulary Knowledge is also emphasized. These results highlight the importance of fostering Open-mindedness and Cultural Empathy to improve Vocabulary Knowledge and interactions with host nationals and multinational peers. This research enables UK-based educators to better understand international students' strengths and challenges, facilitating intercultural communication between international and British students and assisting them in overcoming potential learning obstacles.

Keywords: Intercultural Communicative Competence, Social Contact, Vocabulary Knowledge

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Introduction

In the academic year 2021/22, UK universities hosted 679,970 international students, including 120,140 from EU countries and 559,825 from non-EU countries, marking the ninth consecutive year of record growth (Figure 1). This total represents a 37% increase, or 184,000 more students, compared to three years prior. In 2017/18, there were approximately 254,000 new international students at UK universities. However, this number increased over the subsequent four years to a new peak of 381,700 in 2020/21 (Bolton et al., 2024).

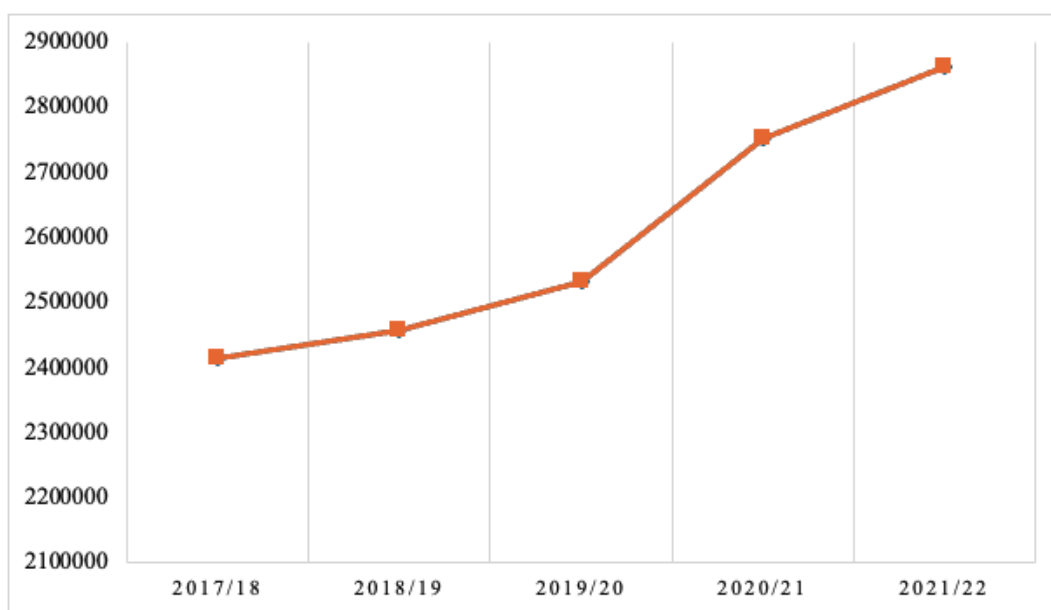


Figure 1: Increase in Non-UK International Students

With international students' mobility increasing drastically over the past 20 years, there has been a growing scholarly interest in the international student experience (Schartner, 2014) and in developing their intercultural communicative competence (ICC) (Lantz-Deaton, 2017; Schartner, 2015). Recent studies indicate that experiences of living abroad, and intercultural education are vital in advancing ICC among international students (Young and Schartner, 2014; van der Zee et al., 2013). Moreover, recent research indicates that international students often encounter challenges, such as language barriers and intercultural difficulties, while studying abroad (Schartner, 2014). As a result, ICC is one of the qualities higher education institutions seek to develop in their international students (Young and Schartner, 2014).

Intercultural Communicative Competence

ICC has emerged as a central issue in a globalized society, sparking academic discussions about its precise definition (Salisbury, 2011, cited in Schartner, 2015). A meta-analysis by Spitzberg and Changnon (2009) identified over 300 different conceptual approaches and models for ICC. These models and definitions arise from various fields such as international education, communication studies, psychology, and personality studies (Arasaratnam and Doerfel, 2005). In the academic literature, ICC is one of many terms used to describe similar concepts, with others including intercultural communicative competence, cross-cultural awareness, intercultural sensitivity, multicultural effectiveness, and global competencies (Fantini and Tirmizi, 2006). Despite the varied definitions of ICC across different disciplines

and contexts, there is a common thread in these definitions pointing to a set of skills necessary for effective and appropriate interactions among culturally diverse people. For instance, Byram (1997) describes intercultural communicative competence as communicating across linguistic and cultural boundaries through negotiation skills, linguistic proficiency, and cultural understanding. Johnson et al. (2006, p. 530) define ICC as “an individual’s effectiveness in utilizing a combination of knowledge, skills, and personal attributes to successfully interact with people from different national cultural backgrounds, domestically or internationally.” Similarly, Hammer et al. (2003, p. 422) define ICC as “the ability to think and act in ways that are interculturally appropriate.” Although these definitions share common elements, they emphasize different aspects. Recent literature reviews (Leung, Ang, and Tan, 2014; Spitzberg and Changnon, 2009) discuss more than 30 models of ICC and over 300 associated constructs. These theoretical models highlight various constructs crucial for succeeding in intercultural interactions. For example, Byram’s (1997) model outlines five dimensions of ICC: positive attitudes; cultural knowledge; skills of interpreting and relating; skills of discovery and interaction; and critical cultural awareness. The model by Kelley and Meyers (1995) includes personal skills such as flexibility, openness, emotional resilience, and autonomy.

This study defines ICC as ‘complex abilities necessary for effective and appropriate interactions with individuals who differ in language and culture from oneself’ (Fantini, 2006, p. 6). Given that the study aims to explore the development of ICC among international students, the conceptual framework is centered around the ICC construct. Fantini (2006) notes that many ICC models overlook target language proficiency, which is crucial for developing ICC. In this context, ‘effective’ and ‘appropriate’ refer to an individual’s ability to perform within the target language culture and how the native population perceives such performance (Fantini, 2009). According to Fantini (2009), the ICC model construct encompasses various traits (like flexibility, humor, patience, openness, interest, and curiosity), spans three domains (communication, relationship, and collaboration), and includes four dimensions (knowledge, attitudes, skills, and awareness), along with target language proficiency and developmental stages, all contributing to a comprehensive understanding of ICC (see Figure 2).



Figure 2: Components and Aspects of ICC (Fantini 2020, p. 35)

The various conceptualizations of ICC have resulted in many tools for measuring ICC (e.g., Gabrenya et al., 2013). Researchers have, over several decades, examined indicators of beneficial intercultural communication and engagement. Most research has focused on personality traits, behaviour, or social skills that ensure successful cultural adaptation (Herfst et al., 2008). There are also a large number of intercultural sensitivity (i.e. attitudes) assessment tools available, each focusing on a separate aspect of ICC, i.e. interpersonal skills; intercultural communication skills; cultural empathy; open-mindedness; emotional stability; flexibility; social initiative; emotional resilience; intercultural uncertainty; perceptual acuity; personal autonomy; and teamwork (Bennett & Hammer, 1998; Brinkmann, 2011; Matveev & Nelson, 2004; Trompenaars & Wooliams, 2009). However, Deardorff (2006) and Fantini (2009) consider that the most effective method of assessing ICC is to employ a combination of qualitative and quantitative methodologies across multiple dimensions.

The standard method for evaluating an individual's level of ICC consists of psychometric tests, comprised of skills or personal qualities that must be demonstrated to achieve complete intercultural competency. These evaluations serve as blueprints for ICC in their structural forms, such tests: (1) the Intercultural Development Inventory (Hammer, Bennett, & Wiseman, 2003); (2) the Test of Intercultural Sensitivity (Weldon et al., 1975); (3) MPQ (Van der Zee & Van Oudenhoven, 2000, 2001); (4) the Intercultural Adjustment Potential Scale (Matsumoto et al., 2001); and (5) procedures such as the Culture Assimilator (Fowler, 2020). In addition, Matsumoto and Hwang (2013) investigated the reliability and validity of ten psychometric tests used to measure culture-general ICC, identifying three that proved promising: firstly, the Cultural Intelligence Scale (Van Dyne, Ang, & Koh, 2008); secondly, the Intercultural Adjustment Potential Scale (Matsumoto et al., 2001); and thirdly, MPQ (Van der Zee & Van Oudenhoven, 2001).

This study used the MPQ-SF because it has demonstrated constructive and predictive validities over various outcome indices in different sample groups, including international students (Leong, 2007; Yakunina, et al., 2013). Also, the instrument has been successfully applied to longitudinal studies (Schartner, 2016). The study investigated how SC and VK impact ICC (Fantini, 2006). The MPQ has been positioned as being more context-sensitive and thus more effective than the Big Five (Van der Zee & Van Oudenhoven, 2000), and widely employed to assess international students' adaptation and ICC (Young et al., 2013; Peltokorpi & Froese, 2012; Leong, 2007). By Van der Zee and Van Oudenhoven (2000), MPQ measures the following five dimensions of IC:

1. Cultural Empathy. It is also termed 'sensitivity' (e.g. Hawes and Kealey, 1981). It means the 'ability to empathize with the feelings, thoughts, and behaviours of members of different cultural groups' (Van der Zee & Van Oudenhoven, 2000, p. 294). Ruben (1976) defined Cultural Empathy as "the capacity to project an interest in others, as well as to obtain and to reflect a reasonably complete and accurate sense of another's thoughts, feelings, and/or experiences".
2. Open-mindedness. It refers to an open and unprejudiced attitude towards outgroup members and diverse cultural norms and values (Van der Zee & Van Oudenhoven, 2000, p. 294).
3. Emotional Stability. This is the ability to handle stressful events successfully and regulate emotional reactions under duress.
4. Flexibility. This denotes the ability to learn from mistakes and modify behaviour as required. Such flexibility is particularly important when the assignee's assumptions about the situation in the host country do not match reality. It is inextricably linked with the ability to learn from new experiences.

5. Social initiative. It is “a tendency to approach social problems actively and to take initiatives” (Van der Zee & Van Oudenhoven, 2002, P. 681).

Social Contact and Intercultural Communicative Competence

A substantial degree of research has been undertaken into the importance of ensuring international students feel socially linked to others while studying abroad, for example, Furnham and Bochner (1982, p. 171) stated that if students "are introduced into a new society by close, sympathetic host-culture friends, the evidence indicates that they may encounter fewer problems than if they are left to fend for themselves". Montgomery and McDowell (2009) claimed that overseas students create a social network in which they discuss their experiences and their reasons for wishing to succeed, while members of an international community of students can provide support mutual support when it comes to their academic careers, socialization, and emotional well-being.

The Functional Model of Friendship Networks (FMFN) was established by Bochner, McLeod, and Lin (1977) as a functional model of international student networks (see Table 1). This model divides these networks into three distinct categories: firstly, co-national networks (which affirm and express the culture of origin); secondly, networks with host nationals (which facilitate academic and professional aspirations); and thirdly, multinational networks (which are utilized for recreational purposes) (cf. Pho & Schartner, 2019). This model has retained its relevancy, regularly referred to in research into student migration (Hendrickson, Rosen & Aune 2011; Schartner 2015).

Network	Members	Typical function
Primary Co-national	Contacts with other sojourning compatriots	Close friendships; express/rehearse the culture of origin
Secondary Host nationals	Bonds with significant host nationals (e.g. students academics, officials)	Instrumental; facilitate academic and professional aspirations
Tertiary Non-co- nationals	Non-co-nationals, including fellow international students	Companionship for recreational activities

Table 1: The Functional Model of Friendship Networks (Bochner et al. 1977)

Interactions between international students and the inhabitants of host countries have been found to assist international students in adjusting to a new culture, prevent feelings of loneliness, and enhance their enjoyment (Strauss & Volkwein, 2004). Young et al. (2013) found that overseas students demonstrating high levels of psychological well-being were also likely to have relationships with host society members in the context of higher education in the UK.

Several studies have found that social networks and friendships between international and domestic students are associated with a reduction in feelings of stress and loneliness and an overall improvement in psychological well-being (Smith et al., 2011). However, it is problematic for students from both the host and other countries to successfully integrate (e.g., Spencer-Oatey, 2018), with barriers being identified as including: firstly, differing learning and/or lifestyle styles; secondly, a lack of common social groups or interests; thirdly, cultural

divergences; fourthly, challenges relating to language and sustainability communication; and finally, a lack of common social groups or interests (Spencer-Oatey, 2018).

Further studies have shown that international students often feel dissatisfied with their limited contact with native speakers (Schartner, 2015). This dissatisfaction can lead to a lack of confidence in their command of the local language and, consequently, a lack of sense of belonging (Gu et al., 2010). These findings underscore the importance of positive social contact in enhancing ICC of international students.

Vocabulary Knowledge and Intercultural Communicative Competence

A literature review reveals that the word ‘knowledge’ is a controversial topic. A considerable body of literature has shown various aspects of knowledge of a given word. Knowing what a word is helps measure how many words learners of English as a Foreign Language or a Second Language need to learn to communicate with others and use the second language sufficiently. A literature review reveals several ways and standards for counting a particular speech element as a word. This area of word counting has greatly interested many scholars whose main aim is to measure learners’ vocabulary knowledge. For example, Richards (1976) laid out seven aspects of knowledge of a word: meanings, forms, grammatical features, register characteristics, collocation, association and semantic features.

In contrast, Read and Chapelle (2001) identified four aspects—vocabulary size, parts of words, lexical organization and lexical access—while Nation (2013) posited three: form, meaning and use. In English as a Second Language vocabulary teaching and learning, Anderson and Freebody (1982) propose two extents of VK: breadth and depth. They defined the depth of vocabulary as ‘the quality or depth of understanding’. In contrast, vocabulary breadth means ‘the number of words for which the person knows at least some of the significant aspects of meaning’ (Anderson & Freebody, 1982, p. 93). It is required in concern to have in-depth knowledge of different words to comprehend the meaning relations that are relevant to these words (Nation, 2013), (Qian, 2002, p. 514), including components such as “pronunciation, spelling, meaning, register, frequency, and morphological, syntactic, and collocational properties”. The depth of vocabulary knowledge has also been connected to the comprehension of a number of meanings of a word and, in various contexts, how these meanings can be used (Tannenbaum et al., 2006). On the other hand, for breadth of knowledge, learners need to acquire only surface meanings, which only entails knowing the dictionary meanings (Tannenbaum et al., 2006).

In this study, the focus will be on the breadth of VK. As such, Meara (1996, p. 37) asserts the significance of vocabulary size: “all other things being equal, learners with large vocabularies are more proficient in a wide range of language skills than learners with smaller vocabularies, and there is some evidence to support the view that vocabulary skills make a significant contribution to almost all aspects of L2 proficiency”. The development of different vocabulary models indicates the growing status of vocabulary in linguistic studies; at the same time, researchers generally agree that the essential component of language ability is VK (Schmitt, 2008). It is substantially linked with language skills’ essential components and language proficiency (Tylor & Milton, 2019). Several studies (e.g., Mohd et al., 2017) have ascertained the relationship between proficiency and knowledge of vocabulary; the more proficient a person is, the larger their vocabulary. According to Milton (2009), receptive knowledge refers to knowing the word’s form and recognizing its meaning while reading or

listening; productive knowledge refers to one's ability to retrieve or recall the word's form and meaning while writing or speaking (Milton, 2009; Nation, 2013).

In the field of ICC, a quantitative study by Grin and Faniko (2012) reported on a sample of 6,434 young Swiss men who answered a questionnaire about their foreign language skills and ICC using the Common European Frame of Reference for Languages and the MPQ. Preliminary results showed a significant relationship between three MPQ dimensions (open-mindedness, cultural empathy and social initiative) and language skills. There was no significant relationship between language skills and the other two dimensions (flexibility and emotional stability).

In the field of ICC, few studies have investigated the relationships between VK and ICC that acknowledge vocabulary's central role in learners' perceptions. Nation (1990, P. 2) states, "Both learners and researchers see vocabulary as an important, if not the most important, element in language learning. Learners feel that many receptive and productive language difficulties result from an inadequate vocabulary". This study will investigate the impact of one aspect of language proficiency VK and explore its effects on ICC.

Methodology

This research took place within a higher education setting in the UK, specifically targeting international students enrolled in one-year master's degree programmes in various disciplines. All had a minimum English language proficiency level of IELTS 6.5 or equivalent. Participation was voluntary and informed written consent was obtained from all participants before data collection.

The study used a repeated cross-sectional design, asking similar questions across various samples of the same population over time using a questionnaire (Fox, 2022). In phase 1, 103 completed online surveys. In phase 2, 79, while in phase 3, 62 participants (See Table 2).

Demographics		P1	P2	P3
Gender	Male	26	18	17
	Female	76	60	45
	Non-binary	1	1	0
Age	21-25	68	47	36
	26-29	17	16	13
	30-33	8	9	10
	+34	10	7	3
Geographical Region	Africa	5	2	0
	Asia	62	48	39
	Europe	11	11	14
	Northern America	7	3	6
	South America	16	12	2
	Australia	1	3	1
Total		103	79	62

Table 2: Demographics of Research Participants

In order to measure the development of ICC over time, the Multicultural Personality Questionnaire (short form) (van der Zee et al., 2013) was administered to participants three times over academic year 22/23, in September, February, and July. Items were rated on a 5-

point Likert scale, ranging from 1 (totally not applicable) to 5 (completely applicable). Of the participants involved in the quantitative portion of the study, a subset of 22 also engaged in these follow-up interviews.

This study employed the Functional Model of Friendship Networks (FMFN) to examine three distinct sources of SC: co-nationals, host nationals, and non-co-national internationals. The FMFN was proposed initially by Bochner, McLeod, and Lin (1977). Despite its age, the FMFN remains relevant and a vital reference point in contemporary research on student migration (Hendrickson et al., 2011; Schartner, 2016). The quality and quantity of contact were measured using a 7-point Likert scale, with scale items adapted from prior research (Pho & Schartner, 2019). These dimensions afford a more comprehensive view of SC and its potential impacts on ICC.

A 7-point Likert scale was used to determine two items (amount and frequency) for the quantity of SC. Students self-reported their degree of SC, from 1 (none) to 7 (very many/more than ten people), and their frequency of SC, from 1 (almost never annually) to 7 (almost every day). The quality of contact was measured according to pleasantness from 1 (very unpleasant) to 7 (very pleasant) and closeness, from 1 (merely an acquaintance) to 7 (a very close friend). I determined the scores by multiplying the degree and frequency to create an index for the quantity of contact (cf. Brown, Vivian and Hewstone, 1999; Brown et al., 2001, cited in Pho and Schartner, 2019).

Schmitt et al. (2001) developed the Vocabulary Levels Test (VLT) to estimate vocabulary size for second-language learners of academic English. The test has thirty items in ten clusters and is based on the Academic Word List. Participants are required to choose three words from a list of six on the left-hand side that match their paraphrased forms on the right-hand side. The remaining three words serve as distractors (Nation, 2004). As Kirchner (2013) states, the VLT requires a passive recognition of words in which the meanings or definitions are not provided, so it is a valuable and reliable tool for evaluating the level of students' VK. The selection of VLT over other measures is primarily driven by its direct relevance to academic English, which aligns with the profile of the participants in this study—postgraduate international students. Another important aspect is its focus on passive vocabulary recognition, which tends to be a better indicator of overall vocabulary size (Milton, 2009).

Conclusion: Initial Findings

Intercultural Communicative Competence

Descriptive statistics (Figure 3) showed distinct trends: CE remained relatively stable with the highest mean scores, FX and SI demonstrated a consistent decrease, indicating a reduction in adaptability and social engagement, respectively, while ES increased, suggesting improved emotional management. OM saw a slight but consistent decline. Overall, the MPQ scores were stable, implying consistent group characteristics throughout the study. There were no statistically significant differences in the overall MPQ scores across the three phases of the study. Similarly, this lack of significant variation was observed in the scores of the individual MPQ subscales. These findings suggest that the development of ICC, as measured by the MPQ, may not be easily observable over short periods. This aligns with the understanding that ICC development is an ongoing process, potentially requiring more extended time frames to manifest significant changes (Fantini, 2020).

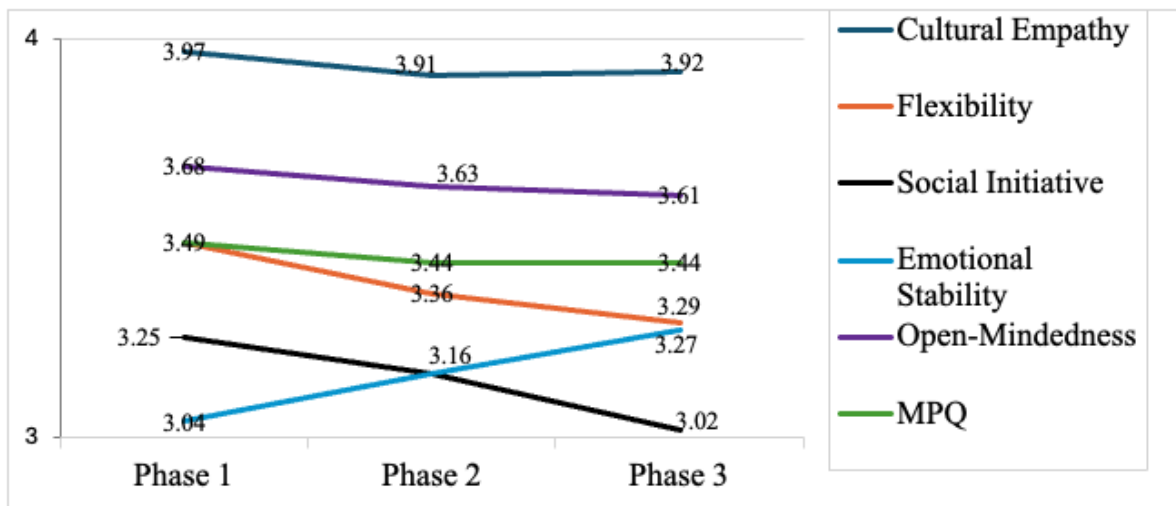


Figure 3: Changing Patterns of MPQ Subscales in Three Phases

Correlation analysis highlighted strong positive relationships between CE and both FX and OM in the early phase ($r = .309^{**}$, $r = .388^{**}$), respectively, with these trends largely persisting into Phase 2, especially between CE and OM $r = .607^{**}$. Phase 3, however, showed some variations, including a sustained strong correlation between CE and OM $r = .534^{**}$, but weaker correlations of CE with FX and SI ($r = .228$, $r = .306^*$), and a new negative correlation between SI and ES $r = -.193$, suggesting that increased emotional stability might lessen the propensity for social initiatives.

Social Contact and Intercultural Communicative Competence

Figure 4 reveals that participants most frequently interacted with co-nationals across all three phases. However, contact with host nationals and multinationals had increased notably by phase 3.

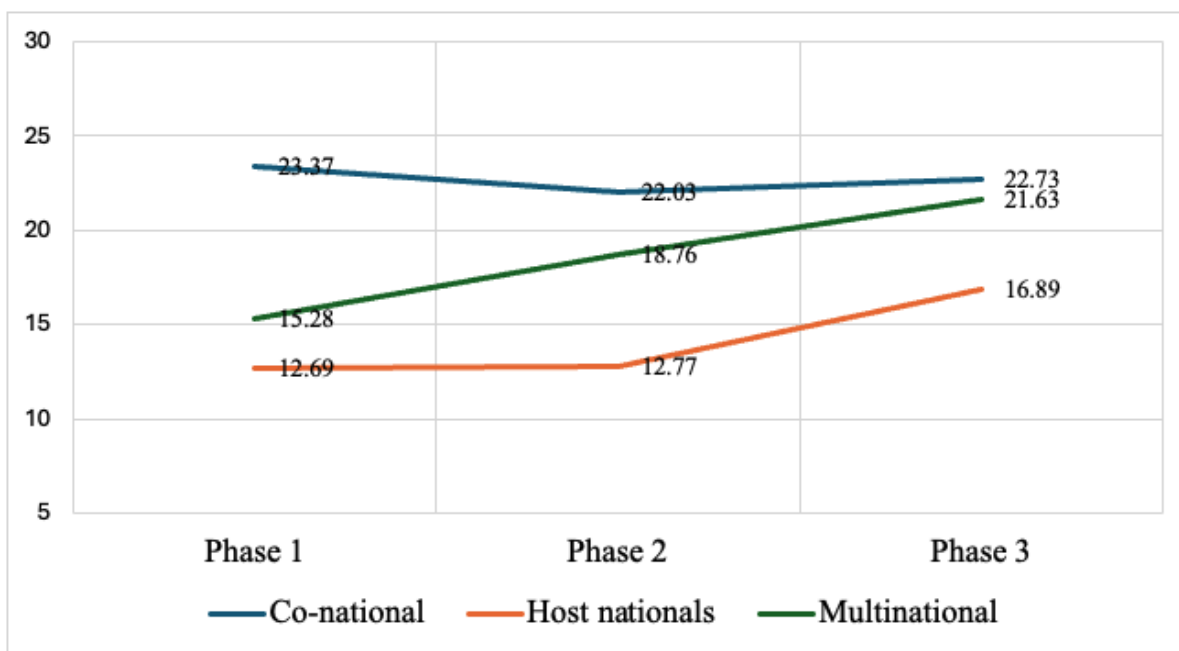


Figure 4: Changing Patterns of Quantity of Social Contact Over Time in Three Phases

No statistically significant relationship was found between the degree of contact with co-nationals and the MPQ scales, indicating that increased contact with co-nationals does not necessarily lead to enhanced ICC. This lack of association persists across all study phases. However, initial findings reveal a notable association between contact with host nationals and higher ICC scores, suggesting that engaging with individuals from other nationalities may enhance ICC in the early stages of international experience. This relationship diminishes by phase 3, implying that as social networks become broader and more established, the influence of this type of social contact on ICC may lessen. For interactions with multinationals, the connections are initially weak but demonstrate a significant strengthening in phase 2, particularly in the CE and SI subscales, and this trend continues into phase 3. This progression suggests that sustained and increasing contact with multinationals could significantly enhance ICC over time.

The multiple linear regression analyses support these observations, indicating that while the predictive value of MPQ subscales for social contact with host nationals and multinationals is significant in phase 2, it is less pronounced in phases 1 and 3. This pattern highlights a potential peak in the influence of certain types of social contacts on ICC development during the middle phase of the study.

MPQ	Quantity P (1)			Quantity P (2)			Quantity P (3)		
	Co-national	Host nationals	Multi national	Co-national	Host nationals	Multi national	Co-national	Host nationals	Multi national
CE	.036	.133	.131	.065	.224*	.351**	-0.166	-0.004	0.199
FX	-.033	.141	.011	.074	.362**	.198	-0.037	0.198	0.206
SI	.141	.233*	.189	.052	.218	.421**	-0.047	0.180	.277*
ES	-.079	.046	.104	-.063	.115	.175	-0.188	-0.122	-0.168
OM	.070	.212*	.114	.045	.284*	.454**	0.061	-0.079	0.135
MPQ	.037	.246*	.178	.050	.349*	.466**	-.092	.040	.175

Table 3: Bivariate Correlations Between MPQ Subscales and Quantity of Social Contacts in P1(N=103), P2 (N=79), and P3(N=62)

Regarding the quality of social interactions with host nationals and multinationals figure 5 shows that there has been a gradual increase as participants spent more time in the UK, while interactions with co-nationals remained relatively stable. The data also suggests that the duration of the students' stay influences the quality of all interactions, but especially those with host nationals and multinationals.

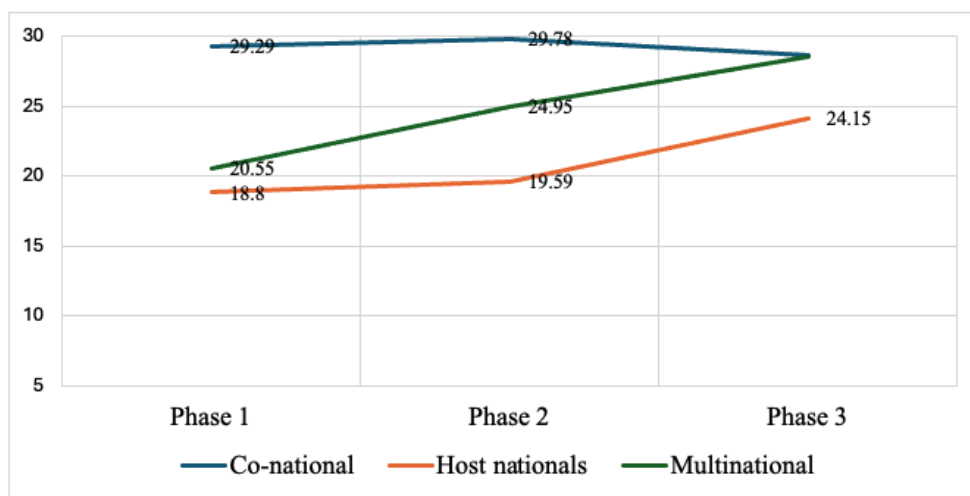


Figure 5: Changing Patterns of Quality of Social Contact Over Time in Three Phases

The quality of social contacts with host nationals and multinationals, particularly noted in the traits of CE, FX, and SI, shows a strong and consistent association with the development of ICC. This association is most pronounced in phase 2 of the study, indicating that as students become more accustomed to their new environment, the quality of their social interactions plays a crucial role in enhancing their intercultural competencies. The significant role of these MPQ dimensions suggests that as students progress in their international experience, high-quality interactions with host nationals and multinationals are pivotal in cultivating their ICC.

However, the predictive power of these MPQ dimensions for the quality of social interactions wanes by phase 3, and notably, these dimensions do not predict the quality of social interactions among co-nationals in any phase. This pattern underscores that while the quality of social contact significantly affects the development of ICC when interacting with host nationals and multinationals, this influence does not extend to interactions with co-nationals.

MPQ	Quality P (1)			Quality P (2)			Quality P (3)		
	Co-national	Host nationals	Multi-national	Co-national	Host nationals	Multi-national	Co-national	Host nationals	Multi-national
CE	.112	.168	.212*	.193	.354**	.432**	0.139	0.186	0.166
FX	.129	.162	.181	.243*	.391**	.215	-.028	.164	.085
SI	.269**	.224*	.219*	-.048	.138	.430**	-.183	.219	.204
ES	-.058	.035	.049	.147	.183	.176	-.008	-.070	-.068
OM	.200*	.324**	.364**	.149	.269*	.502**	.227	.079	.119
MPQ	.203*	.290**	.326**	.205	.391**	.512**	.097	.187	.128

Table 4: Bivariate Correlations Between MPQ Subscales and the Quality of Social Contact in P1(N=103), P2 (N=79), and P3(N=62)

Vocabulary Knowledge and Intercultural Communicative Competence

The analysis of VK reveals a steady improvement in student scores from Phase 1 to Phase 3 (Table 5). The increment in the minimum scores from Phase 1 to Phase 3 underscores that even the students with lower initial scores have shown notable advancements. The study group displayed a significant enhancement in vocabulary knowledge throughout the phases examined. A repeated measures ANOVA revealed a statistically significant difference in vocabulary knowledge across the three-time points, as evidenced by an F-value of 3.258 and a significance level of $p = 0.040$. The longer students stayed in the UK and were exposed to English as a medium of instruction, the better their VK.

VK	M	SD	Minimum Score	Maximum Score
P1	24.67	7.38	14	30
P2	26.38	7.92	20	30
P3	27.48	5.30	18	30

Table 5: Descriptive Analysis of Vocabulary Knowledge in P1(N=103), P2 (N=79), and P3(N=62)

As international students progress through their studies, the impact of vocabulary knowledge (VK) on intercultural communicative competence (ICC) evolves significantly. Initially, in Phase 1, the influence of VK on ICC is minimal, suggesting that early stages of linguistic development might not immediately translate into enhanced intercultural competence. However, by Phase 2, the increase in VK appears to significantly enhance ICC, evidenced by stronger associations with the Cultural Empathy (CE) and Open-Mindedness (OM) subscales (correlations of $r = .401^{**}$ and $.251^{*}$, respectively). This indicates that as students'

vocabulary expands, their ability to empathize and remain open to cultural differences also improves, facilitating better intercultural interactions.

In Phase 3, the relationship between VK and ICC shows a decline ($r = -.002$), possibly indicating that once a certain level of language proficiency is reached, further vocabulary expansion does not significantly contribute to ICC, or other factors may become more influential in shaping intercultural competence at this mature stage.

Conclusions

This ongoing study highlights trends in ICC among international students in the UK. MPQ scores remained stable, with notable correlations in CE and OM. SI tended to decline. Interactions with co-nationals were predominant, but contact with host nationals and multinationals increased. The quality of these interactions improved, particularly in the middle phase. VK improved significantly, with strong links to CE and OM in the second phase. Fostering diverse social networks and providing ongoing support may enhance ICC and adaptation for international students.

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Contact email: d.s.d.alghamdi2@newcastle.ac.uk

***From Foreign to Familiar: Approaching the Arts As the New Potential Second Language
in Socially Aware Education***

Martha Ioannidou, Aristotle University of Thessaloniki, Greece
Soula Mitakidou, Aristotle University of Thessaloniki, Greece
Antonis Lenakakis, Aristotle University of Thessaloniki, Greece

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Abstract

The paper examines the potential of arts as a second or additional language. It proposes that this approach offers students a unique opportunity to develop cognitive and language skills, critical thinking abilities, cultural awareness, and a sense of social justice. Art literacy involves several aspects, including appreciating the arts, being inspired by them, reflecting, and expressing oneself through them. Similarly, learning a second language requires familiarising oneself with its sounds and forms, interacting and collaborating with experienced target language users, and reflecting and expressing oneself through the language. Integrating arts as an additional language into educational practices can create inclusive, dynamic, and critical learning environments that provide equitable access to all students, fostering creativity, empathy, and a deeper understanding of the world around them. Studies have shown that motivation and individuals' willingness to learn a language can significantly impact their proficiency, and the arts have a unique advantage in this regard. They can initiate communication through non-linguistic means without the limitations of grammar and language rules. This approach is particularly relevant for e-generation students who prefer to express their emotions and ideas through diverse means. Drawing from the CARE/SS EU-funded Erasmus + project, this paper provides documentation of the power of art to act as an additional language that scaffolds students' learning across the curriculum. It also provides a platform for students to engage with critical issues, develop a deeper understanding of societal challenges, and cultivate a sense of social responsibility.

Keywords: Art Education, Second Language, Art Literacy, Critical Pedagogy, Communication Through the Arts, Cultural Awareness

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Introduction

In recent decades, the international community has recognised the importance of second language education in maintaining linguistic and cultural diversity (Zhang, 2018). An alternate and inclusive Second Language education plays a significant role in fostering positive emotions, personality traits, and institutional tendencies in learners (Wang, Derakhshan & Zhang, 2021). It involves affective variables like willingness to communicate, influencing individuals' communication in first and second languages (Yashima, 2002). This paper focuses on the potential of the arts as a primary teaching medium and as an additional language that enhances learning across the curriculum. There is ample evidence of art's power as a supplementary teaching means. Professionals in second language teaching have long recognised and utilised art as a dynamic tool for language learning (Alexander et al., 2013; De Jesus, 2016; Mitakidou, 2010; Mitakidou & Tressou, 2017). Martin (2017) argues that "[t]he arts can be used to teach, not just as activities that enhance learning, but also as the primary medium through which students process, acquire, and represent knowledge" (p. 116). Over the last decades, whole-school arts-based implementations have occurred, where schools have shifted from traditional to an interdisciplinary arts-rich curriculum that encourages students to build on their strengths and talents and represent knowledge through diverse modes of expression. Museums and cultural institutions have also developed programmes¹ and provide rich resources for second or foreign language teaching through the arts and cultural artefacts (Yagcioglu, 2022). However, despite these initiatives, the arts remain at the margins of school activity, or as Spina (2006) suggests, they remain a "frill" or "enrichment" and "not as a way of building communication skills or advancing academic achievement" (p. 5). At best, they occasionally support the learning of core school subjects.

Approximately 35 years ago, Gloria Ladson-Billings coined "culturally relevant pedagogy" to describe an educational approach promoting students' academic success, cultural competence, and critical consciousness. This concept involves fostering a sociopolitical awareness that enables students to critically analyse cultural norms, values, and institutions perpetuating social inequalities (Ladson-Billings, 1995, p. 162). By leveraging students' cultural backgrounds, culturally relevant teaching has proven more equitable and efficacious, offering a meaningful learning platform for all students. It amplifies the voices of marginalised students and provides privileged students with the opportunity to acknowledge and interrogate their privileges. Despite the advancements and the growing awareness among educators regarding the need to cultivate more inclusive and engaging learning environments, Ladson-Billings (2021) recently advocated for a "hard reset" in education, emphasising a more robust and culturally-centered pedagogy (p. 68). This renewed focus on culturally relevant pedagogy aims to empower educators and underscore their pivotal role in shaping the future of education.

Similarly, the idea promoted here is that art is a medium through which students can engage meaningfully in their learning and acquire and demonstrate their knowledge in a socially aware education. Socially aware education, in this context, refers to an approach that prepares students to understand themselves and others intensely, be open to diverse cultures and perspectives, and recognise the power of community and collaborative processes. Research has shown that integrating social awareness into education can enhance student learning

¹ E.g., <https://www.britishmuseum.org/learn/adult-learning/esol>
<https://eltcampus.com/blog/museum-resources-for-the-english-language-teacher>

outcomes, benefiting educational entities and society (Grant, 2019). Ying and Kutty (2023) argue that the developmental stage of children is critical for fostering social awareness skills, which are crucial for developing empathy, cooperation, perspective-taking, positive relationships, and prosocial behaviour. In socially aware education, the arts are increasingly being recognised as a potential second language that can contribute significantly to students' development. Art education is seen as a means to foster social action, democratic participation, and awareness of social issues, thereby contributing to the improvement of collective existence (Belver, Ullán & Acaso, 2005; Darts, 2004).

Summarising the results of relevant research projects, which have been proliferating in the EU over the last fifteen years, it is clear that incorporating the arts into education can enhance communication awareness, language mastery, and second language development, ultimately contributing to social justice in education and sustainable community development (Ioannidou, 2022; Kompiadou, Lenakakis & Tsokalidou, 2017; Leeman, Rabin & Román-Mendoza, 2011; Okan, 2020).

Advantages of Integrating Arts as an Additional Language

Drawing on the processes and outcomes of recent EU-funded projects such as CARE and CARE/SS², our research underscores the unique benefits of fully integrating the arts into education, not just as a supplement but as a primary medium. This inspiring approach posits that the arts can serve as a unique language through which students can process, acquire, and represent knowledge, thereby fostering socially aware education.

The role of the arts in education is increasingly recognised as a valuable contributor to students' development. Art education, including visual arts, theatre, music, literature, and other creative practices, has enhanced language awareness, social and cultural understanding, and critical thinking skills, which are cornerstones of academic success (Chen, 2009; Dobrick & Fattal, 2018; Tulasiewicz, 1997). It is seen as a means to foster social action, democratic participation, and awareness of social issues. Integrating the arts holistically into the curriculum creates educational spaces that allow for the exchange of languages, customs and traditions, attitudes and perspectives, promoting human development and mutual coexistence among social groups (Belver et al., 2005). Furthermore, the arts play a crucial role in developing empathy, self-awareness, and collaboration skills among students, essential components of socially aware education (Dobrick & Fattal, 2018). Additionally, the arts can serve as a tool for activism, identity exploration, and heritage language education, emphasising the importance of sociocultural factors in sustainable community living and learning (Peña-Pincheira & Costa, 2020; Robertson & Hughes, 2011).

In the context of arts as a second language education, pre- and in-service generalist teachers are encouraged to engage with critical art literacy and social justice issues, highlighting the importance of preparing students to become critically aware individuals. The expressive and interpretive nature of the arts not only provides a platform for students to engage with critical issues and develop a deeper understanding of societal challenges but also cultivates a sense of social responsibility, a crucial aspect of social development.

² CARE/SS: Critical Arts Education for Sustainable Societies. Erasmus+, KA2 project: Strategic Partnerships for higher education, KA220-HED - Cooperation partnerships in higher education. <https://care-ss.frederick.ac.cy/> (2022-2024) and CARE, Visual art education in new times: Connecting Art with REal life issues is an EU-funded Erasmus + project (2019-2022).

Research indicates that integrating social awareness into education significantly improves student learning outcomes. Cultivating social awareness skills in future teachers and through them in children is crucial for fostering empathy, cooperation, and positive relationships. Approaches such as critical inquiry projects and human rights education play a crucial role in promoting social justice awareness in education. After all, as has already been emphasised, culturally relevant pedagogy provides an inclusive learning platform for all students and encourages critical examination of cultural norms and values. However, despite the progress, there is a growing call for a comprehensive and culturally centred pedagogy to catalyse a significant transformation in education.

A brief review of the relevant literature reveals these basic arguments: In a groundbreaking work for its time, Greene (1995) proposed that integrating arts into education is pivotal for transforming learning. This exposure ignites imagination and fosters profound engagement, leading to growth and innovation. Similarly, these days, Halverson and Sawyer (2022) advocate using art practices to enhance cognitive, social, and cultural dimensions of learning. According to Spina (2006), the arts should be regarded as an additional language because they offer a rich semiotic experience, allowing individuals to approach symbolisation creatively and nuancedly. The unique advantage of the arts lies in their ability to facilitate communication through non-verbal means, unconstrained by grammar and language rules. As a non-verbal language, the arts can create a "common meaning" (Bamford & Wimmer, 2012, p. 6) that exploits other perception recall and use mechanisms, making them more inclusive and appealing to students of varying linguistic levels and backgrounds than formal teaching methods. By infusing instruction with creativity and active listening, students can improve their language proficiency and, at the same time, deepen their understanding and appreciation of artistic culture, thereby fostering a more holistic approach to language, the arts and other subjects of the curriculum (Zhang & Jia, 2022). Overall, these perspectives highlight the invaluable role of the arts in education for promoting imagination, innovation, and inclusivity. An authentic arts-based curriculum encourages diverse modes of expression, allowing students to embrace their linguistic and cultural diversity. Such an approach not only enhances their language skills but also fosters their expressive abilities on a global scale, a significant and often overlooked benefit of arts-based learning. Further, it encourages students to explore language within its cultural context, fostering a deeper connection between language usage and cultural understanding (Bloju, 2023).

Art Literacy and Language Learning

Arts activities encourage peer support, providing opportunities for students to explore new thoughts and language areas with the help of others, thereby enhancing the meaning of their actions (Spina, 2006). This framework allows for natural code-switching between languages. Moreover, the knowledge and skills gained through the arts are transferable to other subjects, similar to how language acquisition in one language can benefit learning other languages (Cummins, 2007; Mitakidou, 2003).

The engagement in arts activities facilitates peer scaffolding, offering students valuable chances for gradual exploration into new realms of thought and learning. Fellow students often aid in interpreting actions, transforming their significance for the learner. In this context, code-switching between languages and artistic expression becomes a natural and beneficial choice. This emphasis on peer collaboration underscores the significance of teamwork and cooperation in the learning process.

When comparing the common mechanisms of approach in second language learning through verbal construction and the arts, exciting elements emerge from literature (Martin, 2017) and practical experiences such as the CARE/SS project. It becomes evident that the processes involved in these two fields are parallel. However, the arts significantly trigger the processes, leading to a more universal achievement of social inclusion.

The acquisition of a second verbal language involves familiarisation with the phonology and morphology of the language, interaction and collaboration with proficient speakers of the target language, reflection and self-expression through the use of the language. Similarly, using the arts as a second language entails cultivating an appreciation for the arts, drawing inspiration from them, and reflecting and expressing oneself through them.

Motivation and humour are integral factors in second language acquisition, whether verbal or artistic, as they positively influence individuals' eagerness to gain new knowledge and significantly impact their proficiency and skills. These elements are also fundamental components of socially conscious art education and critical pedagogy.

It is worth mentioning that the fusion of language and concepts is seen more evidently in arts as a second language education. This approach integrates art lessons with the learning of another subject, emphasising meaning over form and the learning process over the final product. Arts as a second language tailors arts lessons to students' existing knowledge and skills, building on their abilities.

In traditional second language learning, language acquisition relies on social interaction, while in arts as a second language education, social interaction, collaboration, discussion, and response are integrated into the learning process. Arts as a second language provides a supportive environment for artistic growth and expression, including adequate time, scaffolding, trust, and respect, essential for second language acquisition.

Moreover, arts as a second language goes beyond language satisfaction and joy, incorporating aesthetic experiences that encourage experimentation, observation, and exploration within the art form. While second language learning emphasises adjusting language for student comprehension, arts as a second language takes a structured approach, focusing on a structured art curriculum to appropriately challenge students based on grade-level expectations. This structured approach reassures educators of its effectiveness in teaching artistic language skills.

Finally, similar to the gradual development of language skills in second verbal language learning, arts as a second language allows for the longitudinal growth of artistic language skills over several years. This long-term approach to learning in arts as a second language education should inspire all involved, especially pedagogy stakeholders, as it promises significant and lasting benefits for students.

An essential prerequisite for authentic arts integration is that the arts are not marginalised but hold equal status with other curriculum subjects. Although many Western educational systems have incorporated the arts into their curricular planning, the interpretation and implementation of this mandate in schools can be problematic, where a lack of consensus around purpose increased accountability focused on a narrow range of subjects, and acute funding issues prevail (Pavlou, 2022; Tambling & Bacon, 2023).

The CARE/SS Project

The European-funded CARE/SS research project was created to provide a platform for students to engage with critical issues, gain a deeper understanding of societal challenges, and develop a sense of social responsibility. It involved the collaboration of five partner universities and was designed for undergraduate and postgraduate student teachers, in-service teachers, and arts education students. The training programmes aimed to promote the well-rounded development of learners and were based on the guide "Socially Engaged Arts Curricula for Teacher Training Programmes" by Vella (2024). The courses incorporated theories such as socially engaged arts, critical pedagogy, sustainable education, arts education, and new technologies. The activities were centred on five major themes: *Public space, Respecting diversity and inclusion, Sharing knowledge, Collaborative processes, and Sustainable transformations in society.*

The Aristotle University of Thessaloniki (AUTH) training programme included a postgraduate course for in-service teachers and two courses for future teachers, one in Greek and one in English for Erasmus student teachers. Most undergraduate participants at the School of Education of Aristotle University were already familiar with arts in education, while others had varying degrees of previous arts-based experience. All three courses provided extensive documentation of the potential of art as an additional language to support students' learning across the curriculum.

The programme was designed to present theory through artistic practices and new technologies. The courses utilised an experiential, participatory approach, encouraging collaboration and interaction to support students and empower them to use the arts as an expressive means. This expanded the possible associations that linguistic interactions allow (Spina, 2006). The arts functioned as a dynamic additional language, allowing participants to understand the course's theoretical background, gain an increased appreciation of the arts, overcome any fear of engaging with the arts, and feel confident expressing themselves through the arts. By immersing trainees in artistic practices and cultural traditions, trainers created a more stimulating and meaningful holistic learning environment that promoted both linguistic proficiency and cultural awareness. In the realm of intercultural communication, visual arts played a crucial role in bridging cultural gaps and promoting cross-cultural understanding. Visual communication through iconic artistic examples from the international artistic sphere was used to convey messages and shape perceptions, demonstrating the diverse nature of visual arts. Additionally, the integration of visual communication design and public art in the digital era has broadened the opportunities for interactive exercises, surpassing traditional methods of information dissemination. Visual arts, drama interactions and creative writing, for a start, offered great educational potential for the integration of variant, marginalised groups like foreign student teachers (Erasmus) from different cognitive and cultural backgrounds, special needs pre-service future teachers and refugees new students living and trying to get acquainted with the dominant culture, while not abandoning their cultural identity. After all, as has already been emphasised, in socially engaged art education, arts act as a multifaceted language, preserving culture, facilitating communication, and promoting inclusivity by providing a platform for their distinctive expressions (Mills & Doyle, 2019). In role-play and theatre, for example, individuals immerse themselves in different perspectives, thus expanding their awareness of alternative ways of existence. In that context, the scientific team (trainers) established an optional arts-based seminar for the group to delve into their dilemmas and engage in fresh perspective-taking experiences through arts-based and Theatre of the Oppressed (Boal, 2002) activities. Many students

effectively confronted their assumptions and explored new possibilities through this initiative. Trainers asserted that "engaging in embodied reflections, naming, imagining, and critically reflecting provided a rich opportunity for constructing new ways of thinking and feeling, which could lead to transformative learning" (Bhukhanwala, Dean & Troyer, 2017, p. 611). The outcomes underscored the significance of several elements: A collective challenge commencing with a participant's predicament, fostering a secure environment, displaying vulnerability and learning from encounters, empathetic peer engagement, and the role of the facilitator.

Further, through digital storytelling, students explored diverse cultural landscapes, enhancing their language skills while gaining insights into variant cultural practices and traditions represented in class (Greek and foreign students). Online intercultural exchange using applications like Canva and Padlet or Blogging has also been found to be instrumental in developing learners' cultural awareness and understanding of cultural similarities and differences. As Ioannidou (2024) explains, students have deepened their cross-cultural awareness and appreciation by engaging in personal discovery and social interactions with peers from different cultural backgrounds, fostering a more inclusive and empathetic approach to language learning. All these hands-on experiences allowed them to reflect critically on cultural nuances, ultimately enhancing their intercultural competence and communication skills in a more effective, engaging way that promoted active social inclusion through critical, socially engaged arts-based pedagogies.

The findings of CARE/SS demonstrate that socially engaged arts play a crucial role in fostering positive community transformation. A thorough observation of the participation tempo and quality, oral and written reflections, artistic creations, and evaluation processes through quantitative and qualitative data analysis confirmed that participants felt sensitised and empowered by the course. Most expressed their commitment to remain alert and responsive to societal challenges. Trainers and trainees have emphasised that socially engaged arts create a safe space for individuals to express themselves and engage in meaningful dialogue. Through various art forms, individuals can reflect on their experiences, communicate their thoughts and feelings, and envision a collective future. Moreover, participants noted that engaging with art stimulates action, facilitates the deconstruction and reconstruction of individual and community identities, and harnesses conflict as a constructive tool for learning and growth. Art is seen as a powerful medium for self-expression, perspective transformation, and processing difficult emotions.

The arts have been recognised as instrumental in facilitating meaning-making, empowerment, self-identity exploration, healing, and personal transformation. This comprehensive understanding of the impact of socially engaged arts underscores their importance as tools for individual and community well-being and development.

Observing participants' gradual growth and meaningful associations with the art, they were exposed to both as audiences and as active participants were rewarding. The training programme created an inclusive, hospitable platform for all students, allowing them to engage meaningfully with the arts and through them with the theoretical background of the course.

Following are some indicative *mot à mot* comments from the learners' working groups that provide documentation of the power of arts to act as a second/ alternative language that

scaffolds students' learning across the curriculum, aiding them to develop a deeper understanding of societal challenges and cultivate a sense of social responsibility.

All forms of art leave a powerful imprint on students: they unsettle and challenge them, and they sensitise, activate, and engage them, thus reinforcing creative collaborations. As a means of expression and interaction, art decisively contributes to eliminating contemporary social plagues. (group 1)

Through our work, we wanted to demonstrate how important art is in everyone's life and how easily it can contribute to the improvement of not just one space but also society as a whole. (group 2)

The main idea is to encourage students to build on their creativity to highlight and face inequalities in society. (group 11)

In implementing our final assignment, we associated with the arts and experientially appreciated the importance of accepting diversity through it. It was a unique process and an excellent practice that we will definitely follow as professionals. (group 13)

Indeed, participants appeared determined to build on their newly acquired knowledge in their practice. Their reflections on their engagement with the training project suggest that their commitment and involvement with the programme goals might be ongoing and have a powerful impact on their professional profile.

The pervasive anti-democratic spirit of our times, the violation of human rights inside and outside our borders, the escalation of inequalities, and the "normalisation" of racist practices coupled with institutional indifference make education the only means of defending human beings. (group 6)

We consider that if the particular activity was an unforgettable initiative of social sensitisation and action that promoted our need for creativity and our struggle to improve contemporary reality, it must have the same impact on our young students. (group 16)

Sensitisation was a word echoed in almost all assignments. Most groups of participants realised and pursued through their work the powerful impact the arts afford on people's sensitisation to crucial societal issues.

Our main goal was to sensitise the children and, through them, the public, which related to the activities related to environmental pollution. The activity could function as a peaceful protest that could reach the local authorities and possibly change deep-rooted attitudes toward bad public space management. (group 3)

We consider it our duty to sensitise our students to societal challenges as we consider them active citizens and invite them to co-decide the activities appropriate for our school and other public spaces frequented by children. (group 4)

An added benefit was the enhancement of participants' cultural as well as personal and social identity.

In the final assignment implementation, I discovered aspects of myself I was unaware of. I realised my love for art and its power. Through the arts, we may express ourselves in the most creative way, even the most complex social issue, so nothing is impossible if you find the appropriate way to express it. (group 4)

Through artistic expression, people understand the world but also themselves better; they realise the problems and pathogenies of the society they inhabit and enter a process of exploration and reflection. (group 4)

Gradually, we realised that the fear of the unknown we felt is socially constructed: we can achieve whatever we long for, despite our faults and weaknesses, provided we simply accept to try alternative routes. (group 7)

Coupled with their growth in and empowerment through the arts was participants' liberation from their arts' fear.

The activities of the course, as well as the process of implementing our final assignment, helped me realise the "magic" of art: You do not have to have talent in order to create. All you need is the proper disposition and collaboration so that you can unite differences into a voice that will carry and defend your message. (group 7)

The overwhelming majority of participants cherished the inviting, inclusive atmosphere created through the arts.

The creation of an inclusive culture is achieved through the empowerment of the team, the sense of belonging, the common goal, the acceptance of diversity and the development of a school for all children. Inclusive practices need to aim at increased participation of all children and decrease exclusions. (group 7)

Art constitutes the ideal vehicle for expressing with means that suit us and construct public contexts that we are happy to inhabit. (group 8)

Also, participants put their trust in the language of the arts to carry their messages for the pressing need for sustainable transformations in society.

Our project is not merely about highlighting the problem; it is rooted in a call to action and a belief in the simplicity of the solution. Changing a few habits and attitudes can pave the way for a significant positive impact. (Erasmus group)

Finally, they appear fully aware of the need for strong alliances and informed and committed communities in the cause of change.

By encouraging people to act collectively and fostering a sense of closeness, we aim to instil a genuine commitment to the well-being of our shared environment. Creating a strong community bond catalyses individuals to feel a sense of agency and responsibility, thereby propelling them to adopt sustainable practices. (Erasmus group)

Conclusion

Arts serve as a powerful alternative language of communication, offering a creative and imaginative platform that goes beyond ordinary forms of expression. This mode of communication is particularly valuable in educational settings, as it can enhance learner involvement and motivation and contribute to societal development and progress (Donahue & Stuart, 2024).

Research and the findings of programmes such as CARE/SS demonstrate evidently that through their expressive and interpretive nature, the arts provide a platform for learners to engage with critical issues, develop a deeper understanding of societal challenges, and cultivate a sense of social responsibility. The arts are indeed emerging as a potential second language in socially aware education, offering students a unique avenue to develop language skills, cultural awareness, critical thinking abilities, and a sense of social justice. By integrating the arts into educational practices, educators can create inclusive and dynamic learning environments that foster creativity, empathy, and a deeper understanding of the world around them. Socially aware education through the arts is essential for nurturing well-rounded individuals who are academically proficient, socially conscious, and empathetic. The more arts are blended into real-life, sustainable education, the more students can develop critical thinking skills, empathy, and a sense of social responsibility, contributing to a more inclusive and harmonious society.

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Contact email: mioannidou@eled.auth.gr

*Weaving the Social Engagement of Students Through Art Practices:
In the Wake of Project CARE/SS*

Martha Ioannidou, Aristotle University of Thessaloniki, Greece
Antonis Lenakakis, Aristotle University of Thessaloniki, Greece
Michalis Christodoulou, Aristotle University of Thessaloniki, Greece

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Abstract

The EU-funded research project CARE/SS aimed to develop innovative online and blended courses for educating teachers in the arts. The project's objective was to empower teachers with critical pedagogy and sustainable development principles, enabling them to address contemporary social challenges effectively. According to the research findings discussed in this paper, integrating socially engaged art practices into the curriculum can positively impact students' social development, creativity, critical thinking, character education, and social justice. The project focuses on the social engagement of students through art practices, highlighting that art education is a multifaceted approach to promoting creativity, critical thinking, and community engagement. Through specific implementations and their reflective outcomes, this paper delves into mapping and analysing the multiple ways teachers and students used to explore, interpret, communicate, collaborate, and participate in social and political action, contributing to a more empathetic and democratic society. Furthermore, it addresses opportunities and critical challenges generalist teachers have to deal with to enhance students' artistic skills and foster teamwork, communication, and problem-solving skills essential for social engagement. Overall, this research offers valuable insights into how art education can enhance students' social development and promote social sustainability. Socially engaged arts allow students to express themselves creatively, actively address social issues, and promote positive community change.

Keywords: Arts Education, Socially Engaged Arts, Sustainability, Blended Learning, Social Awareness

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Introduction – The Concept

Art education uniquely fosters a specific set of thinking skills not adequately addressed elsewhere in the curriculum. It provides children with a broad education that includes the arts, and the continued development of our society depends upon a creative education. This unique role of art education in fostering critical thinking and creativity is not just crucial, but it is the cornerstone for the continued development of our society.

Engaging students through art practices can be a powerful tool for fostering social awareness and emotional growth. By integrating arts into education and providing a platform for students to express themselves creatively and meaningfully, students can develop a deeper connection with social issues and enhance their social-emotional competencies (Casciano, Cherfas, & Jobson-Ahmed, 2019; Huhmarniemi, 2023). Through collaborative and community-based art projects, students can address pressing real-life social issues and create impactful interventions in public spaces, fostering a sense of social responsibility and community engagement (Song, 2024). A prerequisite for such an educational policy and action is the practical admission that arts education is crucial in providing students with supportive learning environments that enhance school engagement and relationships, ultimately contributing to a positive school climate (Bowen & Kisida, 2023). By incorporating arts into education, students can explore, interpret, and communicate ideas, collaborate with others, and engage in social and political actions, empowering them to become critical community citizens (Maloy & Thomson, 2023).

Recognising the unique benefits of socially engaged arts (SEA) in educational settings, documented through a growing body of research, case studies, and action programmes, is crucial for enhancing students' social engagement through art practices. Meyer and Wood (2019) stress the importance of nurturing socially engaged leadership among art teachers through service learning, which can encourage student reflection and action toward becoming educational leaders. Socially Engaged Arts provide a distinct platform for students to participate in democratic processes and actively cultivate empathy within society. Students can better understand civic responsibility and community involvement by incorporating art practices emphasising social engagement. Moreover, integrating socially engaged art in education can help bridge communities and drive social change. Bergaust (2020) discusses how the pedagogical perspectives in Education for Socially Engaged Art contribute to enhancing the social aspects of art practices, emphasising art's role in connecting individuals and fostering collaborative efforts for societal betterment. This collaborative aspect of socially engaged practices focuses on promoting constructive social change rather than commercial or object-based outcomes, aligning to foster social engagement among students through art. In the same line of thinking, Kpodo (2024) stresses the importance of visual arts education in fostering creativity, critical thinking, and cultural awareness among students, essential elements for promoting social engagement through art practices.

Integrating art into education allows students to explore their identities, develop innovative projects, and embrace diversity in higher education settings. In the context of inclusive education, arts integration has been identified as a valuable approach to meeting the diverse needs of students. In that context, Koch and Thompson (2017) highlight additionally the importance of providing support to teachers in integrating arts into instruction for students with disabilities, emphasising the role of arts integration in creating inclusive learning environments.

The transformative power of socially engaged arts in weaving the social engagement of students is not just a multifaceted and enriching approach but a beacon of hope. It fosters creativity, critical thinking, and community involvement among learners. With their philosophy of engendering social bonds and providing spaces for creative/imaginative communications, socially engaged arts have the potential to transform contemporary society.

Amidst economic and geopolitical turmoil and the pandemic crisis, the value of art and culture for society was transformed from indistinguishable in words to vital in practice. In the face of scepticism, creators and advocates, including art teachers, are tirelessly highlighting their social awareness. The European-funded CARE/SS project¹, a unique and innovative initiative, was born to meet this need and tackle the challenge of integrating new technologies in arts education. By merging Art Education with Socially Engaged Arts, this project took a significant step in addressing the challenges of our times.

Education research projects (Hetland & Winner, 2000; Ioannidou, 2022) have shown that incorporating art practices into the curriculum can positively impact students' and teachers' social development and overall performance, i.e. higher levels of empathy, tolerance, and social skills than those who do not engage in such activities. This outcome suggests that art practices can help all involved in education better understand themselves and others, leading to more meaningful social interactions. Artistic pedagogy opens spaces for dialogue in social contexts based on artistic and pedagogical practices, considered elements in constructing an ordinary world (Helguera, 2011). Socially engaged arts are known for bringing together people from all social strata and ages, attempting to create intersections and uncover solutions. An overarching conclusion from most case studies and research is that teachers, as critical facilitators, should engage in formative activities that enhance imagination, facilitate unexpected connections and empower teachers and students to recognise the potential of the arts to address their concerns. Encouraging experiences that challenge and simultaneously resonate with societal realities to bring them to light or provoke critical examination is not typically a focal point in education faculties or school curricula. Educators are responsible for ameliorating the prevailing notion that art education in primary schools lacks emphasis as a cultural and social entity. On one hand, art teachers must act as intermediaries, facilitating a cohesive connection between the individual and the prescribed curriculum. On the other hand, the curriculum should encompass a social context and relevance to the students' lives. This fact is the fundamental gap that CARE/SS came to fill.

The third deliverable of the CARE/SS project (PR3) evaluated local teacher training programmes based on innovative educational practices emerging through mainly blended and, in some cases, online learning and a transdisciplinary approach to socially engaged art education. In practice, the discipline of Arts education for teachers and their students offers an excellent opportunity for such a critical pedagogical approach to the curriculum and the holistic cultivation of teachers, students, and the broader community. Even when designing the project, we believed that implementing evidence-based social engagement interventions, especially for students, presents challenges in school settings, requiring a shift in policies and programme delivery. The arts-based participatory approaches attempted in training, microteaching, and implementations, which have yet to be systematically adapted to curriculums, hold the potential to validate student voices and address socio-political issues, thereby engaging students in critical citizenship and social justice. Due to their relatively

¹ Erasmus+, KA2: Strategic Partnerships for higher education, KA220-HED - Cooperation partnerships in higher education. <https://care-ss.frederick.ac.cy/>

vague messages, such arts-based social practices have faced educational challenges for years. However, the CARE/SS project used blended/online learning and new technologies to create inclusive learning environments and artistic practices where every voice is heard and valued. The aim was to empower individuals to engage with societal issues and contribute to positive change. Following the Guide-eBook2 (Vella, 2024) for reflection and action, teachers and students engaged with contemporary social issues around sustainable development and systematised in the programme's Guide within the Big Ideas framework. The notion of 'big ideas' is loosely based on Wiggins and McTighe (2011), who explain that understanding –in contrast to rote learning– is based on grasping broad principles or core concepts rather than multiple, 'smaller' bits of information and formulas. Understanding these more profound principles permits learners to apply their understanding to new situations. This emphasis on depth, rather than breadth, is reflected in the decision to focus on five concepts (i.e. *Public space, Respecting diversity, Sharing Knowledge, Collaborative Processes, and Transforming the world*) that are so relevant to socially engaged arts that they can easily be expanded and transferred from one discipline to another. This strategy allows these ideas to guide educators to reflect on, develop, and implement effective teaching and learning methods at different levels of the educational system.

Integrating socially engaged arts into the various local teacher training programmes proved crucial for preparing educators to create socially inclusive and environmentally conscious learning environments. What was new in these expressions of social value was that they were presented as rooted in solidarity rather than a political imperative. Educational spaces transformed into providers of community solidarity through the arts, and trainers and trainees became spokespersons for a social shift on critical issues of community, public life, equal living, and others, with the impetus to seek a solution through the arts. Suppose the CARE/SS project takes root as a practice in all educational institutions and levels. In that case, this shift towards solidarity may profoundly impact the understanding of culture as a public value.

Aims and Objectives of Training Courses and Implementation Activities

CARESS's groundbreaking initiative pioneers a comprehensive approach to meeting two critical global needs. It centres on fostering digital preparedness, adaptability, and proficiency within the education of both educators and organisations engaged in arts and cultural education and advocacy. Moreover, it aspires to deliver high-quality arts education that is intertwined with real-life issues, promoting vital skills such as critical and innovative thinking, social and intercultural competence, and active citizenship. Furthermore, it endeavours to enrich the capabilities of educators and organisations involved in arts and sustainable development education.

The five countries implemented interventions (training courses, seminars, workshops) in which the teaching methodologies of 'the socially engaged art education' framework had been developed, starting in February 2023 and extending till January 2024. The recruitment of trainees/teachers depended on each partner's accessibility to these teachers' groups. Contacts with diverse actors, such as schools, teachers' associations, and educational authorities, occurred in various ways and mixed media according to schedule. The project demonstrated adaptability by making local adjustments to match the programme's timetable with the in-service teachers' schedule. The university semesters set the periods for the partners whose courses were aimed at pre-service teachers. Also, each partner identified the number and type of courses within their programmes of study adapted to the project's needs (blended learning).

The initial numbers of training courses, trainees, and activities (blended, microteaching, implementations) have not just met but exceeded the initial minimum goal of seven local teacher training courses by a significant margin, giving an impressive amount for the time PR3 has been running. In fact, twelve blended or online courses were delivered for in-service and pre-service teachers, a testament to the project's success and the dedication of all involved. The anticipated participation to involve 100 teachers (approx. 20-25 per country) was far exceeded, reaching the quadruple number of 413 in- and pre-service generalist teachers, with minimal participation of arts-oriented teachers. Most of the participants were acquainted with the essential concepts required for the project's success, which included Collaborative processes, Inclusion/Diversity, Public space, and Social involvement. However, the level of digital skills amongst the trainees varied among the partner countries, with most having only basic skills. Although they could perform satisfactorily, they needed further familiarity with more arts-specific applications.

All partner universities have successfully developed training sessions according to the guidelines provided by the Training Guide. The average duration of each training course was estimated to be approximately 40 hours, including face-to-face meetings, museum/cultural visits, workshops, synchronous online meetings, and asynchronous activities, which are optional and compulsory on educational platforms.

The participants were tasked with grasping the theoretical framework and, even more challenging, establishing the connection between theory and practice. Art played a crucial role in this process and was harnessed to facilitate the comprehension and mastery of theory when putting the taught concepts into practice. After all, this suits the concept that art is not merely an accessory but a valuable primary resource, serving as an additional language of communication beyond restrictive linguistic conventions, enabling a more universal and direct understanding of concepts. Consistent with the original project design and philosophy, trainers focused on multimodality, interdisciplinarity, participation, experiential learning, and collaborative teaching processes by involving the department in nearly every lesson and several hands-on activities.

Participants had the opportunity to delve deeper into the course content using two rich online resources, the CARE-full and eLearning platforms of AUTH, where they had access to ample relevant material. They also engaged in various artistic processes, experimented with different digital media, and explored artistic forms and practices to promote critical and dynamic teaching and learning processes in any educational context. Trainers aimed to cultivate a learning culture where participants felt safe and willing to engage, collaborate, express themselves, provide and receive feedback, and reflect, ultimately returning to the classroom with expanded knowledge and a desire for new explorations and achievements.

The entire course process provided an unprecedented experience of interaction, meaningful communication, and collective action with all group members. An overwhelming majority (approximately 90%) of participants and attendees expressed enjoyment of the learning process and identified its strengths. The essential elements were highlighted as the departure from the typical teacher-centred approach and the invitation for active group or individual work involvement. The variety of art forms was also appreciated. Further, participants acknowledged the role of art in their active engagement in the course, recognising that their involvement facilitated retention and made learning more memorable. They appreciated the freedom and creativity fostered by emphasising the process rather than the result. Active involvement in experiential activities was met with enthusiasm. Collaborations in the purely

experiential sessions liberated students who had hesitated to communicate in larger groups and encouraged impressive results. Additionally, trainers and trainees utilised their digital technology knowledge to contribute to the Padlets, Canvases, and other applications created for the course, sharing short stories, poems, and various narratives.

The projects at the end demonstrated their ability to translate theory into practice by establishing a learning environment that promotes participation, collaboration, and creativity through art and digital technology.

The final assignments required them to design an intervention in an elementary school classroom using one of the strategy cards in eBook 2 as a model. Their teaching scenarios were based on the big ideas. Their projects needed to outline the rationale, objectives, steps for implementing the activities, and the necessary means and materials. Each project also contained a narrative message for the audience and concluded with a group reflection.

One example is briefly described to illustrate the overall project. This teaching scenario was based on the concept of *Collaborative Processes*, offering four categories of partnerships with a wide variety of activities proposed by the group:

1. A collaboration between first and sixth-grade classes using music as a medium. The children from the two classes learn and sing a traditional continental song together ("The Bitter Laurel Flower"). The song is then orchestrated for better timing, after which the children arrange it in rap or another genre they agree upon, blending tradition with modern musical trends.
2. An intergenerational collaboration between 6th-grade children and members of the neighbourhood Open Care Centre for the Elderly (KAPI). The aim is to exchange knowledge about how children play today and how they played generations ago. They discuss values such as respect and kindness in play and the materials used in group and individual games then and now. The group explores whether play materials affect children's entertainment and behaviour during play.
3. Cooperation between the sixth grade of a school in Thessaloniki (Greece) and the sixth grade of the Intercultural School of Thrace. Children with diverse cultural backgrounds and life experiences engage in teamwork activities to create an intercultural collage and game, promoting a more profound understanding and respect for differences while strengthening their identities. This also enhances children's technical skills using advanced digital collaborative tools such as Padlet and Wordwall for digital literacy. Their art-based postings (pictures, drawings, texts, songs) aid in self-expression and creative engagement, especially for students underrepresented in traditional teaching.
4. Collaboration between a 6th-grade school and the inclusive theatre group "En Dymein," comprising artists with and without disabilities who integrate the "unlikely," "strange," "different," and "foreign" into their art and life, promoting empowerment. The group and the children meet at school, get to know each other, form mixed groups, and rewrite traditional fairy tales from the perspective of a character, breaking down stereotypes usually found in these tales. Finally, they perform their adaptations for the entire school.

This group aligns with the programme's goals by emphasising collaborations and using diverse art forms to create inclusive communities, fostering intercultural dialogue, and promoting respect and acceptance of diversity.

To assess whether and to what extent CARE/SS' theoretical goals are achieved, the partner universities carried out the research by using quantitative and qualitative methods. The scientific team of the Aristotle University of Thessaloniki was responsible for the preparation/ development of the monitoring and evaluation tools for the teacher training courses. All partners adopted the developed and agreed protocol for the PR3. The tools, including a Table for data collection (Trainees), are adapted to the specificities of each TTP, an overall Evaluation Questionnaire, and a final assessment phase with three feedback questions for personal interviews. Data were collected mainly through qualitative research tools due to the number of attending teachers and the need to gather data that will probe deeply into the courses' effectiveness.

Furthermore, each partner submitted a country report based on a standard template, concisely describing the local programme and analysing the data collected. The training courses were conducted and assessed to promote evidence-based reforms to deliver quality education, competency transfer, and practical training. Trainees were required to collaborate and implement aspects of their learning in schools (micro-teaching for pre-service teachers or implementation of small arts education units by in-service teachers), attempting to bridge theory regarding socially engaged arts into practice.

eBook 3 (Ioannidou, 2024) provides comprehensive case studies of teacher education courses developed by all partners and the outcomes of their implementation. These case studies are valuable for future research, particularly in integrating similar strategies into curricula and European educational policies. Each country/partner university contributes chapters delineating the aims and scopes of the training, exemplary activities, and the application of micro-teaching or short arts units in schools, shedding light on various aspects of the training. eBook 3 allows readers to explore 15 activities (3 per country) and 25 applications (5 per country).

All country reports also include analyses of the questionnaires and interviews to capture the appropriateness and relevance of teacher training according to trainers and trainees. The individual qualitative reflections, complemented by the participants' comments and the trainers' conclusions, complete the country reports. An assessment tool (AT) was created for the quantitative part, which is composed of the following dimensions/constructs. The four dimensions of the AT include a. Satisfaction of participants' expectations and aspirations, b. Domains of contribution, c. Conceptions of usefulness, d. The usefulness of digital media arts as a teaching method. In all countries, results obtained from qualitative interviews pointed out that participant trainees acknowledged the importance of promoting the philosophy of the Critically Engaged Arts as a promising and effective curriculum framework in schools and other educational and cultural entities. Finally, eBook 3 highlights the methodology, advantages, challenges, flexibility, and value of the transformative pedagogical framework for online or blended learning implemented in arts education by adopting the socially engaged arts philosophy in the context of critical pedagogy. It concludes with a general assessment of the training courses' critical findings that stress essential issues while offering ideas for further research and improvement suggestions.

Detailed and very useful not only for the development of research in this field but also for their practical application through examples and good practices are the other four eBooks²

² <https://care-ss.frederick.ac.cy/index.php/resources/project-results-e-books>

that highlight the importance of weaving social engagement through art practices in education. In particular, eBook 1 discusses the current educational challenges in European countries. eBook 2 provides a comprehensive guide for contemplation and action, outlining the theoretical framework, practical strategies, and exemplary practices developed by the partners in their training programs and courses. eBook 4 explores the cultivation of professional communities among the participants and the broader community, analysing the dynamics of the arts and their impact on society. eBook 5 covers the theoretical foundations for educators on various concepts and issues in socially engaged arts, critical arts education, and sustainability. It also offers numerous detailed examples of teaching and social engagement through the arts in educational institutions.

Concluding Remarks

Several common issues emerged from all five countries' research reports. These demonstrate the widespread impact of training courses as both a process and an opportunity for igniting creative dialogues concerning the diverse ways the arts may significantly contribute to major social issues. When considered as points of critical dialogue, such courses can activate students at all levels of education.

This pioneering initiative, executed through training programmes implemented in five participating countries and universities, involved participants in exploring the role of arts in contemporary society and education. By employing a diverse range of pedagogical techniques, including the extensive use of new technologies and digital applications, the participants were able to engage in meaningful discussions surrounding this critical theme. Additionally, the participants were incentivised to produce creative artistic works, allowing them to showcase their unique talents and imagination.

The teacher training programmes' results and subsequent research and evaluation provide compelling evidence supporting the adoption of this educational approach in daily teaching practice.

During their training, pre-and in-service teachers were offered the opportunity to explore creative and innovative ways of utilising digital educational content. The assessment projects they presented highlighted the positive impact of the CARE/SS project on their personal growth and professional development, as well as their knowledge of social and artistic issues and their newly acquired methodological skills in teaching. During the interviews, they spoke of gaining a deeper understanding of the reasons and the ways to connect arts with critical social issues and how this awareness could make them more responsive to social, ethnic, linguistic, and cultural diversity. Armed with this knowledge, they could develop arts units focused on broader sustainable development goals, civic engagement, and participation while embracing common values.

The trainees were exposed to socially engaged arts examples to help them understand the relevance of the work of contemporary artists who focus on issues of social change, collaboration, and justice. Implementation in schools or microteaching and workshops at the partner universities, with the aid of the "*arts in the box*" package, considerably enhanced the quality and experiential aspect of their training. The project's impact and transferability were advanced by equipping trainees with the skills necessary to serve as agents of change with a multiplier effect. By doing so, the project's influence was extended to their respective cohorts and students.

The project faced several challenges, including time constraints and a blended audience that included in-service, pre-service, generalist, and art teachers with varying levels of familiarity with the subject. Despite the success, some partners encountered difficulties related to permits and face-to-face participation, while others had large numbers of participants who were immobile. Additionally, obtaining official permissions proved to be time-consuming and, in some cases, prohibitive to developing the applications as planned in the project. Furthermore, there was a need for more time for deeper reflection, with interludes between presentation, preparation, exercise, and feedback. Finally, concerns were raised about whether the programme emphasised digital applications and methods of familiarisation with the arts more than the substance of the SEA theme.

Despite these challenges, the project achieved several accomplishments. It received a warm reception, and trainees actively participated in the program. There was good interaction between trainees, and they used digital applications satisfactorily. Furthermore, local socially engaged art projects demonstrated the construction of students' voices and subjectivity through creative collaboration, highlighting the potential of the arts to engage students in meaningful ways critically. Moreover, there was an interest in further training, particularly concerning socially engaged arts and collaborative art practices.

In the light of Critical pedagogy, it is evident that should encourage the development of critical thinking skills. Art enables individuals to critically assess reality and take a stance against it by prompting aesthetic judgments. Art articulates the objective and universal aspects of human experience through the subjective and individual, profoundly contributing to the critical understanding of social realities, human relationships, and the distinct issues and challenges therein.

The selection of artworks goes beyond engaging the senses; it aims to evoke deep emotions and feelings among participants. By nurturing these emotions, art could mould the individual's personality, fostering a profound sense of empathy and emotional connectivity among trainees and trainers. After all, emotion in art is not a mere existence for its own sake but a powerful tool that strives to divert attention from individual trivialities and daily habits towards pivotal human concerns, fostering a sense of shared humanity.

Implementing CARE/SS art actions provided a powerful platform for engaging with essential aspects of human existence. As Brecht succinctly noted, these artistic collaborations sparked deep contemplation and prompted reflection on everyday life. Socially Engaged art, as facilitated through the CARE/SS training and implementations, served as a beacon of hope, bolstering individuals' confidence while playing a pivotal role in supporting social causes. It also raised awareness about the significance of social, emotional, and artistic (SEA) development and emotionally conveyed its ideals and objectives.

In this context, the CARE/SS project integrated art and creativity into the curriculum, significantly and positively impacting participants' social and emotional development. The local training programs enhanced participants' artistic skills and promoted teamwork, communication, and problem-solving abilities crucial for social engagement. These hands-on experiences inspired future and in-service teachers to engage with others, contribute to their community, and educate their students to become analytical and critical thinkers capable of examining their life circumstances and broadening their perspectives on social equality. These collaborative art practices notably contribute to character education and the promotion

of social justice, facilitating emotional and physical reconnection among community members (Gingrich & Choudhrey, 2021; Ioannidou & Mitakidou, 2022).

In conclusion, fostering the social engagement of students through art practices involves harnessing the transformative power of socially engaged arts, nurturing leadership through service learning, bridging communities through collaborative art practices, and promoting inclusivity through arts integration in education. Hence, critical art education can act as a catalyst for social change, personal development, and inclusive learning environments.

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Contact email: mioannidou@eled.auth.gr

Using ChatGPT for Course Curriculum Design: A Systematic Review

Michelle Celine Jörgens, August-Wilhelm Scheer Institut gGmbH, Germany

Florian Beier, August-Wilhelm Scheer Institut gGmbH, Germany

Sebastian Kreibich, August-Wilhelm Scheer Institut gGmbH, Germany

Dirk Werth, August-Wilhelm Scheer Institut gGmbH, Germany

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Abstract

Large Language Models (LLMs) based on artificial intelligence, specifically Generative Pre-Trained Transformers (GPTs), have experienced an upswing since the publication of ChatGPT in 2022. Numerous studies and stakeholders have already investigated the application of ChatGPT within the educational sector. However, the diversity of the settings studied, and the methods used have led to heterogeneous results and unstructured existing insights. Therefore, the objective of this paper is to examine and consolidate literature focusing on the use of ChatGPT for curriculum design. We searched two electronic databases, Clarivate's Web of Science and EBSCO, to screen for journal articles or reviews published until February 2024 using a pre-determined syntax. From the list of results, two independent reviewers selected relevant literature. In total, twenty-four articles were selected and reviewed in detail. Our findings indicate that ChatGPT is used for curriculum design in various educational fields. It supports educators in generating learning activities, content, and creating assessments. Using ChatGPT for curriculum design shows benefits, such as resource savings, but also challenges, such as the output quality, highlighting the crucial role of educators in output revision. Further research should focus on empirical determination of output quality and the comparison of different techniques to determine effective ways of using ChatGPT for curriculum design.

Keywords: ChatGPT, AIED, Curriculum Design, Course Design, Educational Technology

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Introduction

The Chat Generative Pre-Trained Transformer (ChatGPT), released to the public by OpenAI on November 30th, 2022 (OpenAI, 2022), has emerged as a significant technological innovation. Since then, ChatGPT has proven remarkable capabilities in natural language understanding and generation, making it a versatile tool across various domains, including education. A recent study revealed that ChatGPT is widely used in various educational contexts, including higher education and K-12 education (Hadi Mogavi et al., 2024). For instance, ChatGPT may act as a tutor to support students with their homework by answering questions or providing explanations for complex concepts (Zhang & Tur, 2023). However, ethical concerns, privacy issues, and the risk of manipulation pose challenges for the use of ChatGPT in education (Tlili et al., 2023).

Apart from the use by learners, ChatGPT can also help educators to improve educational processes and thus improve the teaching quality, which impacts the learning success of students (Sagin et al., 2023). Educators can benefit from ChatGPT in many ways, such as brainstorming, generating course content and materials, or creating assessments (Sagin et al., 2023). Besides these use cases, it is conceivable that ChatGPT could potentially be used by educators to design course curricula. Curriculum design is a critical component of the educational process, including three main elements: planning content, determining the purpose, and organizing the learning. It influences the quality of education and the effectiveness of learning outcomes (Walker, 2003). Hence, a well-designed curriculum ensures that educational objectives are met, content is delivered in a coherent and logical manner, and students acquire the necessary knowledge and skills (Lattuca & Stark, 2009). Traditional curriculum design processes involve extensive research, collaboration among educators, and continuous refinement. Experienced educators are needed to develop curricula and interact with various stakeholders, which involves a great deal of time and effort (Walker, 2003). Despite these efforts, challenges such as the alignment of curriculum with industry needs, the incorporation of diverse perspectives, and the adaptability to changing educational paradigms persist (Lattuca & Stark, 2009). By leveraging ChatGPT, educators may be able to reduce the time and effort required for curriculum design and keep learning objectives up-to-date with current trends and best practices, thus better preparing students to meet the challenges of today's working environment. However, while most of the literature on the use of ChatGPT by educators focuses on content creation and assessment (Lo, 2023), its use and utility for the purposes of curriculum design is less researched.

This paper aims to address this gap by setting a specific focus and conducting a systematic review of the existing literature on the use of ChatGPT for course curriculum design, identifying its benefits, challenges, and potential future directions. Following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses 2020 (PRISMA 2020) framework (Page et al., 2021), we analyzed a variety of studies to examine the following research questions:

RQ1: What are the current practices of using ChatGPT for curriculum design?

RQ2: What are the benefits and challenges of using ChatGPT for curriculum design?

RQ3: What are future directions and practical recommendations for educators and institutions considering the adoption of ChatGPT for curriculum design?

This paper attempts to offer a comprehensive examination of the existing research and practical applications to provide insights into how ChatGPT can be effectively used for

curriculum design. By identifying the benefits and challenges, the study provides valuable insights for educators and researchers.

Methodology

The systematic review follows the guidelines of the PRISMA 2020 framework (Page et al., 2021). Based in this framework, we subdivided our procedure in three main steps. First, regarding our determined research questions, we identified the literature that must be included. After that, the identified literature was screened with respect to the fit of the content. Lastly, the selected literature was analyzed in detail and the findings were used to answer our research questions.

Identification

To determine the syntax for the systematic review, a trial-and-error approach was used, which led to the most promising results. The determined syntax was *ChatGPT AND (course OR curriculum) AND (design* OR develop* OR plan* OR creat* OR craft*)* and was used within the databases Clarivate's Web of Science and EBSCO. The asterisk was used to include all the words containing those word components and thus broaden the search, making sure to not miss any potentially relevant literature. Inclusion criteria were defined to select relevant literature. The inclusion criteria consisted of formality-based and content-based criteria. On the formal side, only literature published in 2022 or later was included, since ChatGPT was published to the mainstream in 2022. Moreover, article types to be included were restricted to journal articles, papers, and reviews. Conference materials, editorials, commentaries, working papers, and white papers were excluded. We required the literature to be published or to be early access, which led to the exclusion of unpublished or pre-printed literature. Additionally, all literature not published in English was excluded from the review. Content-based decisions were made based on the title and abstract. To be included, the title or abstract had to be associated with curriculum design with ChatGPT. The selection criteria are summarized in *Table 1*.

Criterion	Inclusion	Exclusion
Topic in title or abstract	associated with curriculum design with ChatGPT	not associated with curriculum design with ChatGPT
Article type	journal articles, papers, reviews	conference materials, editorials, commentaries, working paper, white paper
Publication	published or early access	conference materials, editorials, commentaries, working paper, white paper
Language	English	not English

Table 1: Selection Criteria

Using the determined syntax and applying the selection criteria, the database Clarivate's Web of Science returned 77 and the database EBSCO 192 results, which were transferred to an Excel sheet. From these results, 28 redundant articles and 21 non-English articles were excluded, resulting in a total of 220 formally qualified articles.

Screening

To ensure an unbiased content-based selection, two independent reviewers screened the titles and abstracts of each article and assessed whether a particular article should be included or excluded from the review. The independent assessments of the reviewers were compared. In case of differing assessments, a third independent reviewer screened the title and abstract and submitted an additional assessment, leading to a surplus in favor of one of the previous assessments. By following this process, decisions could be made regarding the inclusion or exclusion of those articles. A more detailed screening of the main body of the remaining literature resulted in the exclusion of 18 articles. After the content-based selection, 24 articles were identified to be relevant and were reviewed in detail. This systematic approach is displayed in *Figure 1*.

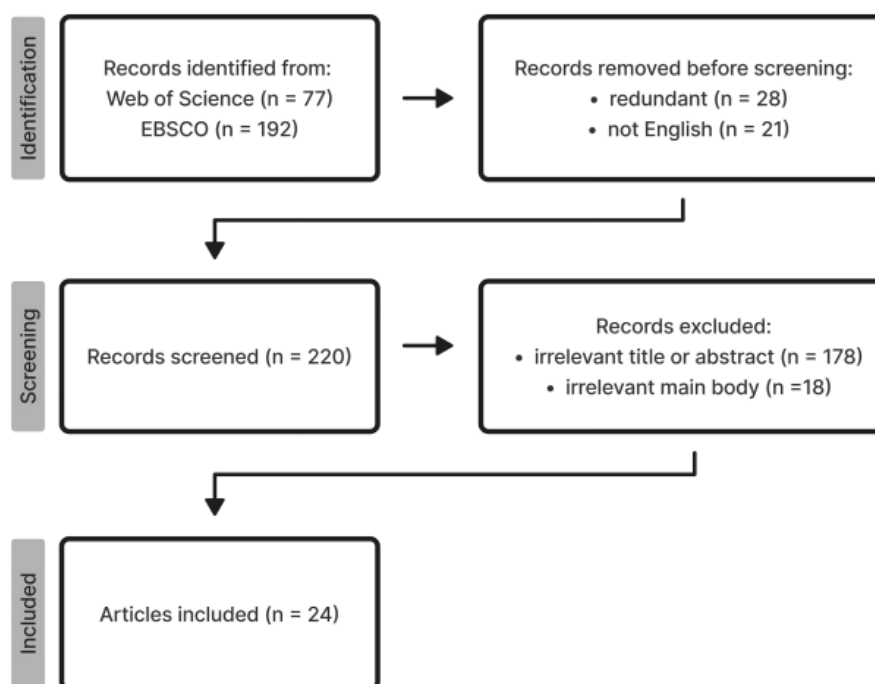


Figure 1: Systematic Approach for Identifying Relevant Literature

Selected Literature Analysis

The included articles were collected in a separate Excel sheet and were reviewed by two independent reviewers with a focus on the used methodology and the key findings. After summarizing the content for the two categories, the findings from the two reviewers were compared to ensure that all relevant content was included and to avoid any ambiguities.

Within the eligible articles, we derived six topics with a deductive approach by coding the findings, identifying connections between the findings, and categorizing the findings accordingly. The final derived categories concern the types of research used within the literature, the educational sectors addressed by the articles, the benefits as well as the challenges when using ChatGPT for curriculum design, the recommendations for the use of ChatGPT for curriculum design, and the suggested further research directions identified by the present articles.

Results

The findings of the systematic review are presented according to the six identified categories.

Types of Research

Within the identified literature, various methods were used. Most authors conducted literature reviews, screening the opportunities of AI for education, and thereby addressing the ChatGPT use for curriculum design (Bahroun et al., 2023; Baskara & Mukarto, 2023; Castonguay et al., 2023; Demmar & Neff, 2023; Jin & Kim, 2023; Ratten & Jones, 2023; Sagin et al., 2023; Zhang & Tur, 2023; Kostikova et al., 2024; Leng, 2024; Shorey et al., 2024). Besides the reviews, many researchers adopted an exploratory approach, some of them incorporating either qualitative or quantitative analysis to assess their results (Bonner et al., 2023; Bozzetto & Lo, 2023; Han et al., 2023; Koutropoulos, 2023; Meron & Tekmen Araci, 2023; Pham et al., 2023; Smith et al., 2023; Al-Worafi et al., 2024; Bringula, 2024; Kostikova et al., 2024; Leng, 2024). For example, Davis and Lee (2024) generated a course outline through prompting and used interviews and journals for data collection, while Jin and Kim (2023) used the GPT-technology to dynamically generate and personalize content, subsequently evaluating its impact on the learning effect. Alipio et al. (2023) authored a perspective article in which the role of ChatGPT in health since education was explored. Purwasih and Sahnun (2023) focused on a slightly different context and thus solely relied on qualitative descriptive research methods such as observations, interviews, and focus groups to analyze the deviant actions by students and to derive recommendations for the use of ChatGPT in the educational context. Yang et al.'s study (2023) focused on ChatGPT's logical level. Hence, they conducted quantitative research by using various tests to assess its capabilities and to conclude on its usefulness for teacher tasks.

Educational Sectors

We identified several educational sectors addressed by the literature. Seven articles were focusing on the medical sector (Alipio et al., 2023; Castonguay et al., 2023; Han et al., 2023; Smith et al., 2023; Al-Worafi et al., 2024; Leng, 2024; Shorey et al., 2024). Moreover, the pedagogical sector was considered within two articles (Apostolos, 2023; Davis & Lee 2024). Within the science sector the subsectors programming (Bozzetto & Lo, 2023; Jin & Kim, 2023; Bringula, 2024), finance (Bozzetto & Lo, 2023), and engineering (Pham et al., 2023) were identified. Other addressed sectors are the language sector (Kostikova et al., 2024), the design sector (Meron & Tekmen Araci, 2023), the management sector (Ratten & Jones, 2023), and the journalism sector (Demmar & Neff, 2023). The allocation of the reviewed literature is displayed in *Table 2*.

Sector	Literature
Medical	Alipio et al., 2023; Castonguay et al., 2023; Han et al., 2023; Smith et al., 2023; Al-Worafi et al., 2024; Leng, 2024; Shorey et al., 2024
Pedagogical	Apostolos, 2023; Davis & Lee 2024
Science	Bozzetto & Lo, 2023; Jin & Kim, 2023; Pham et al., 2023; Bringula, 2024
Others	Meron & Tekmen Araci, 2023; Demmar & Neff, 2023; Ratten & Jones, 2023; Kostikova et al., 2024

Table 2: Allocation of Educational Sectors

Benefits

Upon reviewing the literature, we found three primary benefits of using ChatGPT for curriculum design: support of the curriculum design process, personalization of learning, and reduced resource demands due to ChatGPT's support.

ChatGPT has the potential to aid educators in diverse aspects of curriculum design and acts as a competent partner for brainstorming (Meron & Tekmen Araci, 2023; Sagin et al., 2023). When starting to design curricula, learning objectives build the base for further steps. To identify and phrase these objectives, ChatGPT can support in drafting (Koutropoulos, 2023; Meron & Tekmen Araci, 2023; Sagin et al., 2023; Smith et al., 2023; Yang et al., 2023; Al-Worafi et al., 2024). Many authors highlighted the potential application for creating a lesson plan, course plan or curriculum in the format of a schedule or outline (Baskara & Mukarto, 2023; Bonner et al., 2023; Bozzetto & Lo, 2023; Castonguay et al., 2023; Han et al., 2023; Kostikova et al., 2024; Koutropoulos, 2023; Meron & Tekmen Araci, 2023; Purwasih & Sahnan, 2023; Ratten & Jones, 2023; Sagin et al., 2023; Yang et al., 2023; Zhang & Tur, 2023; Al-Worafi et al., 2024; Davis & Lee, 2024; Leng, 2024). Moreover, Koutropoulos (2023) prompted ChatGPT to produce a course policy and to determine prior skills and knowledge that are needed for a specific, previously created course. Next to those higher level outline activities, many authors addressed the potential support in the creation of concrete content or learning materials (Baskara & Mukarto, 2023; Castonguay et al., 2023; Han et al., 2023; Jin & Kim, 2023; Koutropoulos, 2023; Meron & Tekmen Araci, 2023; Sagin et al., 2023; Smith et al., 2023; Yang et al., 2023; Zhang & Tur, 2023; Bringula, 2024; Kostikova et al., 2024; Leng, 2024) as well as in the design of concrete learning activities (Koutropoulos, 2023; Sagin et al., 2023). Finally, the technology can be applied to create assessments (Alipio et al., 2023; Bonner et al., 2023; Bozzetto & Lo, 2023; Han et al., 2023; Sagin et al., 2023; Yang et al., 2023; Bringula, 2024; Kostikova et al., 2024; Leng, 2024). When specified, the considered use for assessment creation was mostly focused on the creation of assessment questions, e.g., Han et al. (2023) prompted ChatGPT to create questions for assessing the achievement of learning objectives.

Another capability of ChatGPT is to use it not only for generic generation but also for personalization purposes. It can be used for personalizing content (Alipio et al., 2023; Baskara & Mukarto, 2023; Jin & Kim, 2023; Sagin et al., 2023) and lesson plans (Baskara & Mukarto, 2023), it can offer personalized learning experiences (Bahroun et al., 2023; Ratten & Jones, 2023; Zhang & Tur, 2023; Leng, 2024) such as personalized instructions (Zhang & Tur, 2023) and feedback (Bonner et al., 2023; Zhang & Tur, 2023), explanations or learning paths (Alipio et al., 2023) and it can provide personalized information (Leng, 2024). Kostikova et al. (2024) critically reflected on the personalization aspect by mentioning that ChatGPT can be a tool to personalize learning, but it also runs the risk to offer less personalization by missing the capability to fully understand and adapt to the learner needs.

Based on ChatGPT's capability to support educators in various fields of the curriculum design process, resource savings were often mentioned and thus turn out to be a key benefit of ChatGPT use within the curriculum design process. Even though one article reported that using ChatGPT to create a course is not resource-efficient (Koutropoulos, 2023), in eight of the reviewed articles, reduced workload, hence reduced time commitment were elaborated as benefits (Bonner et al., 2023; Han et al., 2023; Meron & Tekmen Araci, 2023; Sagin et al., 2023; Zhang & Tur, 2023; Bringula, 2024; Davis & Lee, 2024; Kostikova et al., 2024).

Additionally, Jin and Kim (2023) pointed out that the use of ChatGPT for course content development paves the way for cost-effectiveness.

Challenges

The review revealed various challenges that educators are facing when using ChatGPT for curriculum design. These challenges refer to the quality of the generated output and the correct use of prompting techniques.

A previous review paper, which focused on the use of ChatGPT in school education (Zhang & Tur, 2023), reported that the most recurrently cited weaknesses are related to output quality issues. More specifically, we differentiated between issues related to *information quality*, i.e. the nature of the output, and *content quality*, i.e. the matter of the output. Challenges related to information quality included inaccurate or misleading information (Han et al., 2023; Koutropoulos, 2023; Smith et al., 2023; Zhang & Tur, 2023; Bringula, 2024; Davis & Lee, 2024; Kostikova et al., 2024; Leng, 2024), outdated or redundant information (Davis & Lee, 2024), biased information (Baskara & Mukarto, 2023; Smith et al., 2023; Leng, 2024), an inappropriate format of learning objectives (Koutropoulos, 2023), and missing differentiation between evidence-based and non-evidence-based sources (Shorey et al., 2024). Challenges related to content quality included incomplete syllabi (Al-Worafi et al., 2024), missing context (Baskara & Mukarto, 2023; Koutropoulos, 2023; Davis & Lee, 2024; Kostikova et al., 2024; Shorey et al., 2024), missing or unspecific learning objectives (Al-Worafi et al., 2024), a lack of transparency in content generation (Shorey et al., 2024), generic (Meron & Tekmen Araci, 2023) or pattern-like content (Bringula, 2024), a lack of alignment between curriculum components such as activities, assessments, objectives, and materials (Koutropoulos, 2023) as well as missing human nuance (Baskara & Mukarto, 2023; Kostikova et al., 2024). Moreover, Yang et al. (2023) emphasized that there are currently no evaluation criteria for the assessment of ChatGPT generated lesson plans.

The literature review suggested that the effective use of ChatGPT for curriculum design is considerably dependent on the user's experience and knowledge about prompting techniques. One of the challenges with prompting is that the same prompts may produce different outputs (Davis & Lee, 2024), which requires users to become more proficient in prompting to achieve the desired results. Moreover, it was found that ChatGPT demonstrates difficulties in handling certain types of questions, encounters issues with the recognition of accents and dialects, and lacks contextual understanding (Zhang & Tur, 2023). This requires additional effort for prompting, manually editing and restructuring the output (Meron & Tekmen Araci, 2023). Thus, creating learning units and course curricula using ChatGPT requires experienced human course developers (Meron & Tekmen Araci, 2023; Shorey et al., 2024).

Recommendations

Based on the benefits and challenges mentioned above, this chapter consolidates strategic recommendations for the effective use of ChatGPT in curriculum design. While ChatGPT can significantly reduce the workload of educators, it remains crucial to maintain a balance between AI-driven assistance and the expertise of human educators to optimize the outcomes. More specifically, this includes co-working with ChatGPT and reviewing the generated content to enhance the reliability and precision of the output (Alipio et al., 2023; Baskara & Mukarto, 2023; Castonguay et al., 2023; Han et al., 2023; Meron & Tekmen Araci, 2023; Bringula, 2024; Davis & Lee, 2024; Kostikova et al., 2024; Shorey et al., 2024).

Furthermore, educators need professional development regarding AI technologies so that they can meaningfully integrate such technologies as learning tools (Castonguay et al., 2023). Collaborative efforts and cross-verification techniques can improve the reliability of AI-generated content and ensure that educators are proficient in utilizing these tools to refine their teaching methods (Shorey et al., 2024).

Additionally, the literature review revealed a call for revisiting and updating existing educational practices to integrate AI technology into curriculum design. This includes the redesign of curricula, teaching methodologies, and assessment formats to enhance learning experiences and outcomes through more interactive and adaptive learning environments (Ratten & Jones, 2023). Here, curriculum design can benefit from taking pedagogical theories into account to ensure that AI integration aligns with ethical, regulatory, and professional considerations (Demmer & Neff, 2023).

Further Research

With respect to further research suggestions and possibilities, two articles generically suggested studying the new opportunities resulting from the use of AI for educational purposes (Bahroun et al., 2023; Leng, 2024). Furthermore, it was suggested to design an academic curriculum by collaborating with AI (Bahroun et al., 2023; Purwasih & Sahnan, 2023). To validate results originating from the collaboration with ChatGPT, further research should focus on deriving and establishing evaluation systems (Purwasih & Sahnan, 2023; Al-Worafi et al., 2024). Baskara and Mukarto (2023) recommended conducting further research to find out about limitations that ChatGPT faces in terms of processing more complex or abstract concepts. Moreover, the authors advised to conduct more research in higher education language learning context, specifically to investigate the relationship between ChatGPT and language learning and its potential to substitute human teachers. Smith et al. (2023) also focused on a specific educational area, encouraging further research on LLMs use in social psychiatry education.

Discussion

This literature review has led to many new insights, which are discussed below in order to answer our questions of interest about current practices, benefits and challenges, and further directions and implications for the use of ChatGPT for curriculum design. In addition, we critically reflect on limitations of our research.

Current Practices

Our findings revealed that ChatGPT is used for curriculum design across a wide variety of subjects. This suggests that a key quality of ChatGPT may consist in the capacity to support educators in designing curricula independent of the subject area. These findings demonstrate the great potential of ChatGPT as a tool for facilitating and enriching the teaching process in diverse educational settings (Zhang & Tur, 2023).

While applicability may be broad, we found that the reviewed literature showed a considerable heterogeneity with respect to the methodologies used. More specifically, articles reported exploratory research including single case studies as well as quantitative and qualitative methods. This methodological heterogeneity suggests that since the release of

ChatGPT, standards and guidelines for using ChatGPT for education and for curriculum design have not yet established, representing a potential challenge for its use.

Benefits and Challenges

Our review showed that the integration of ChatGPT into curriculum design processes offers notable benefits for educators. It can support brainstorming and designing curricula aligned with learning objectives and learning needs. By providing alternative teaching and assessment strategies, ChatGPT may make the process of curriculum design more efficient and effective and may promote the creation of innovative and personalized curricula. By streamlining the initial stages of curriculum design, using ChatGPT saves time and effort for educators to refine and innovate their teaching methods and strategies (Koutropoulos, 2023; Meron & Tekmen Araci, 2023; Sagin et al., 2023). In the future, innovative curricula will be necessary to address and promote future skills of learners needed in a future digitalized working environment. At the same time, educators can leverage ChatGPT as a valuable resource to improve their digital competence, which is crucial for the effective integration of technology into teaching practices (Zhang & Tur, 2023).

Despite these benefits, several challenges persist in using ChatGPT for curriculum design. A primary concern is the quality of the generated output. Issues such as inaccurate or misleading information, outdated content, and lack of context can compromise the effectiveness of ChatGPT-generated materials and necessitates additional review and validation by educators (Koutropoulos, 2023; Zhang & Tur, 2023). Moreover, the quality and relevance of ChatGPT's output heavily rely on the user's ability to craft precise and effective prompts. While this could represent an initial barrier for using ChatGPT, inconsistent outputs from ChatGPT also enable a learning curve for educators in mastering these techniques.

Future Directions and Practical Recommendations

Since the absence of standardized guidelines may represent a barrier, future research should focus on the development of standardized guidelines and best practices for using ChatGPT for curriculum design. This includes ethical implications of using AI in education, such as data privacy and the potential for misuse. Moreover, establishing evaluation criteria for the quality and effectiveness of ChatGPT-generated materials will be crucial in ensuring consistent and reliable outcomes. Additionally, empirical studies comparing the efficacy of different prompting techniques and AI models will provide valuable insights into optimizing the use of ChatGPT for educational purposes. However, maintaining a balance between AI-driven support and human expertise is crucial. Educators should actively review and refine ChatGPT-generated content to ensure its accuracy, relevance, and alignment with educational objectives (Alipio et al., 2023; Castonguay et al., 2023). Training on effective prompting techniques and the integration of AI tools into teaching practices may empower educators to leverage ChatGPT more effectively (Shorey et al., 2024).

Moreover, exploring the integration of ChatGPT with other educational technologies could enhance its capabilities. For instance, combining ChatGPT with adaptive learning platforms or educational data analytics tools could provide more personalized and data-driven educational experiences and can also help address some of the challenges related to content quality (Castonguay et al., 2023).

Limitations

Our systematic review is subject to limitations. Regarding the methodological procedure, the objectivity of this review was ensured by the inclusion of three independent researchers for literature selection and evaluation. However, due to the nature of systematic reviews, subjective influences cannot be completely ruled out. Furthermore, due to a lack of clarity and filtering options, we decided not to use Google Scholar to search for articles. Although we used two other well-known and frequently used databases to compensate and opted for a highly comprehensive syntax, we may not have found all the relevant literature.

Moreover, the quality of the included papers varied. Within the identified literature, the topic was approached rather exploratively and often lacked empirical evidence. Additionally, the methods of some of the included studies were not described in detail, which leads to a lack of transparency and thus to the need for critical reflection. Therefore, the results of this review should not be taken as indisputable. Instead, they should serve as a foundation for further research in this area and should be carefully reflected and considered for practical application.

Conclusion

This systematic review disclosed the relevance of ChatGPT for curriculum design by identifying 24 relevant articles in this field. We found evidence that ChatGPT may contribute to curriculum design in various ways and thereby saving time and effort. However, the output may be insufficient in terms of information or content quality and thus needs to be carefully reviewed and revised by experienced professionals. Our review demonstrated that ChatGPT has a huge potential to take on the role of a co-creator for designing curricula when used in a critically reflective manner. Further research is needed to empirically identify best practices and to determine effective ways of prompting to fully exploit the capabilities.

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Contact email: michelle.joergens@aws-institut.de

Toward Valid and Reliable Assessment of Individual Contributions to Teamwork

Fedor Duzhin, Nanyang Technological University, Singapore
Megan Zheng Chi Lee, Nanyang Technological University, Singapore

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Abstract

In typical classroom settings, students collaborate on tasks and submit group work for grading, often relying on peer evaluations to determine individual grades. We are concerned with the method of converting pairwise peer evaluations into individual final grades. The most common way to do it is as follows: every group member has a certain number of points to distribute among the rest of the group, and the final score of every student is the average number of points she receives from other group members. We call this Pie-to-others. Assessments should be psychometrically valid and reliable. We argue that the Pie-to-others method of evaluating individual contributions to group work is valid but not reliable. Moreover, by constructing a mathematical model of peer evaluation, we can measure exactly how much Pie-to-others (or, more generally, any assessment method of individual contribution to group work) deviates from being reliable. We will explain the worst-case scenario, i.e., derive the theoretical largest possible difference between the outcome of the Pie-to-others and the fair grade a student deserves. By analyzing a large dataset (1201 students, 220 project groups, 6619 evaluations) collected in large undergraduate classes in an Asian university, we estimate that, in practice, about 1% of all students are misgraded by the Pie-to-others. Finally, we will present an easy fix to the pie-to-others method that makes it reliable.

Keywords: Mathematical Model, Group Work, Peer Evaluation, Game Theory

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1. Introduction

Group work and peer evaluation are widely employed in professional settings, schools, and educational settings across different fields. In classroom settings, it is recognised for its benefits in developing soft skills such as fostering active participation among students, teaching students responsibility (Weaver & Cotrell, 1986), and hard skills such as fulfilling learning objectives of a course (Tu & Lu, 2004; Weaver & Cotrell, 1986). Therefore, instructors need to grade students individually and distinguish their grades for the project. Furthermore, as collaborative settings have the possibility of unequal contribution within groups (Kennedy, 2005), peer evaluation serves as a way to rate and compare an individual's contribution to the project. The instructor determines the final contribution scores of each student by submitting the peer evaluation scores to a grading mechanism.

In practice, students work together on a common task such as a project in a team of at least three students. The instructor observes and grades the end result of the project. However, as the instructor is unaware of the individual contributions of team members unlike the team members, the instructor has to grade their individual contributions in a practical, valid, and reliable manner.

2. Setup

Idealised Assumption. There exists an objective truth that is known to the students but not to the instructor, with the objective truth being n numbers whose average is 100.

Definition 2.1 (Peer evaluation matrix). A matrix of peer evaluation A is created based on the contribution scores reported by each student. Each column j (A_{*j}) represents the scores reported by student j to all other students i and each row i (A_{i*}) represents the scores received by student i from all other students j . Furthermore, the average of each column is 100.

The diagonal entries of the matrix may not necessarily be defined. In other words, students may or may not do self-evaluations.

Definition 2.2 (Pie-to-others). A group of students work as a team on a project. At the end of the project, everyone evaluates the contributions of their teammates (except his own) by distributing an average of 100 points among the rest of the group. The final score of every student is the product of the average number of points he receives from his teammates and the group score.

Example 2.1 Suppose the peer evaluation matrix for a group of four students, A, B, C, D is:

Student	A	B	C	D	Average
A	-	120	150	120	130
B	110	-	100	120	110
C	90	75	-	60	75
D	100	105	50	-	85

Table 1: Example of a Peer Evaluation Matrix for a Team of Size Four

The individual contribution of a student is given by the percentage of their contribution as compared to the average in the team. For example, the average here is 100, and student A

contributed 130% as compared to the average of 100, and is awarded a score of 130 out of 100 for their individual contribution.

Suppose that the group score for project is 72 out of 100. Then the final individual grade for A for the project is given by $(72/100) \cdot 130 = 93.6$. The individual grades for this project are reflected in Table 2 below.

Student	A	B	C	D
Final grade	93.6	79.2	54	61.2

Table 2: Final Individual Grades

Definition 2.3 (Pie-to-all). Pie-to-all works in the same way as Pie-to-others except that self-evaluations are permitted. Therefore the diagonals of the peer evaluation matrix are non-zero.

Definition 2.4 (Mechanism). A mechanism is a method of converting pairwise peer evaluations into individual final grades. Ideally, a mechanism is reliable and valid to encourage truth-telling. Pie-to-others and Pie-to-all are examples of a mechanism.

Since peer evaluation typically counts towards a student's final grade and students understand how mechanisms work, students are interested in maximising their peer evaluation scores by gaming the system. Therefore, it is ideal for these mechanisms to be psychometrically valid and reliable.

Definition 2.5 (Validity). A mechanism or peer evaluation is valid when it incentivises collective truth-telling from students.

Example 2.2 Suppose the true contributions of A, B, C, D are as follows:

Student	A	B	C	D
True contribution scores	110	120	60	110

Table 3: Example of True Contribution Scores for a Team of Size Four

A valid peer evaluation should be:

Student	A	B	C	D	Average
A	-	118	97	114	109.67
B	124	-	106	124	118.00
C	62	64	-	62	62.67
D	114	118	97	-	109.67

Table 4: Valid Peer Evaluation

Definition 2.6 (Reliability). A mechanism is reliable when a student is awarded exactly what they deserve (see Figures 1 and 2 for examples) or as close to their true individual contribution or objective truth n as possible.

However, an unreliable mechanism is one that assigns students that deserve the same grade different grades (for example, for any given true contribution score, n_i , the yellow regions in Figures 3 and 4 indicate that the students deserving n_i will receive a score lying in a range).

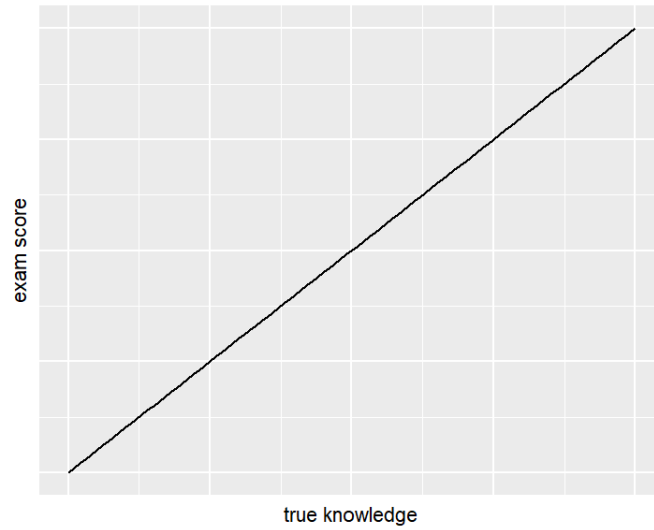


Figure 1: Example of a Reliable Mechanism

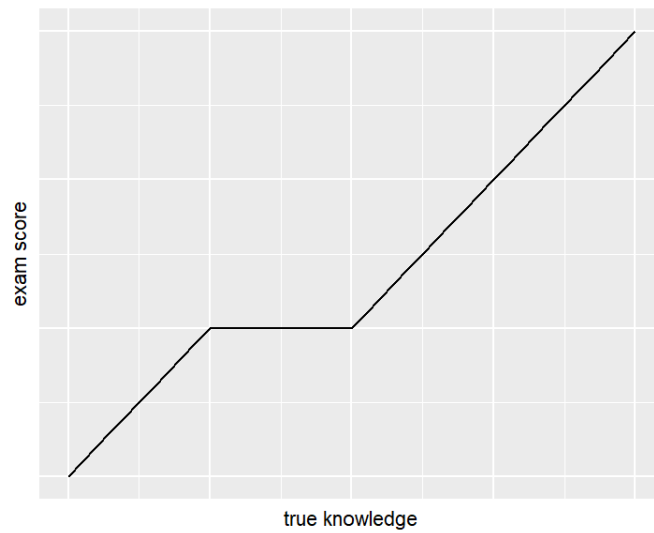


Figure 2: Another Example of a Reliable Mechanism



Figure 3: Example of an Unreliable Mechanism

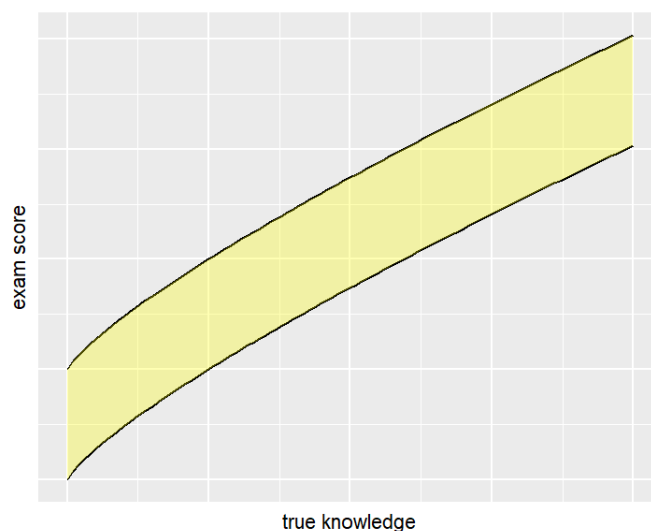


Figure 4: Another Example of an Unreliable Mechanism

3. Literature Review

In the literature, some mechanisms include awarding the same scores to team members and normalisation methods (Chowdhury, 2020; Couturier, 2018; Kaufman et al., 2000; Kennedy, 2005; Li, 2001; Malcolmson & Shaw, 2005).

One type of mechanism used in practice is awarding the same scores to everyone in the group. Although it is a fairly straightforward method, it has been criticised for its unfairness and impracticality. In practice, students contribute unequally in a team and should be graded according to their effort.

Another type of mechanism is normalisation methods. Normalisation methods are common grading methods used in practice that belong to a family of similar contribution assessments (Couturier, 2018; Kaufman et al., 2000; Li, 2001) that utilise Pie-to-others or Pie-to-all (Malcolmson & Shaw, 2005). Normalisations involve cardinal assessments and have been favoured due to its simplicity, transparency, and the preservation of the rankings (ordinal) of students' contributions (Li, 2001).

In Li (2001), the effectiveness of Pie-to-others against biased or inaccurate grading was investigated and found that without an additional bias factor, biased or inaccurate grading would skew the grades of students under Pie-to-others. This finding was consistent to an observation made in Chowdhury (2020), where normalisations were only effective if students were indifferent about the scores of their peers. In reality, students in a group tend to be partial to friends or collude to undermine their peers. Apart from biased or inaccurate grading, Pie-to-others was also used to identify free riders and ineffective team members in Couturier (2018).

However, in Kaufman et al. (2000), Pie-to-others and Pie-to-all were compared against one another to investigate the differences between self and peer ratings through statistical tests and correlations. Likewise, in Malcolmson & Shaw (2005), a similar type of investigation which compared the differences between Pie-to-others and Pie-to-all was conducted. However, they were done so in an arithmetically straightforward way which involved averages and standard deviations. A qualitative investigation was also conducted on Pie-to-

others by evaluating students' feedback on their experiences with peer evaluation. Similar types of quantitative and qualitative analyses on Pie-to-others were also conducted in Kennedy (2005). A narrow spread of scores resulting from Pie-to-others was obtained in both Kennedy (2005) and Malcolmson & Shaw (2005).

4. Research Gap and Aim

Together, the literature highlighted that there were peer evaluation mechanisms studied from quantitative and qualitative perspectives. Yet, the mechanisms presented in the literature were investigated through simple arithmetic or focused on free-ridership. While free-ridership and qualitative feedback are important problems to study as free-ridership undermines the objectives of group work and qualitative feedback allow students to improve, a deeper investigation can be carried out by studying mechanisms that fairly grade students so that every student is rewarded appropriately and according to their effort. Hence, quantitatively designing a fair grading mechanism provides a more nuanced outcome than, for instance, identifying free riders. Therefore, this paper seeks to study grading mechanisms designed with game theoretic and mathematical ideas by:

1. Studying the theoretical unreliability and validity of Pie-to-others.
2. Quantify the practical unreliability of Pie-to-others using a dataset of real peer evaluations.
3. And finally, curing the unreliability of Pie-to-others.

5. Pie-to-Others

Theorem 5.1 Pie-to-others is unreliable.

Example 5.1 Suppose that the objective truth or ground truth g is $(150, 75, 75)$ for a group of three students A, B, and C. Assume that Table 5 is a possible peer evaluation submitted.

Student	A	B	C	Average
A	-	133	133	133.0
B	100	-	67	83.5
C	100	67	-	83.5

Table 5: A Possible Peer Evaluation

Suppose that the ground truth for the same group is instead $(150, 150, 0)$. Assume that Table 6 is a possible peer evaluation submitted.

Student	A	B	C	Average
A	-	200	100	150
B	200	-	100	150
C	0	0	-	0

Table 6: A Possible Peer Evaluation

In both versions, although A's contribution is the same, her individual scores are different. Hence, we sought to find the theoretical range of scores a student can receive under Pie-to-others given that all team members report the truth.

Theorem 5.2 The maximum and minimum scores received by a student whose contribution is average (i.e., 100%) is:

n	3	4	5	6	7
Maximum score	133.33	150	160	166.67	171.43
Minimum score	100	100	100	100	100

Table 7: Maximum and Minimum Scores Received by an Average Student Under Pie-to-Others

Theorem 5.3 (Contribution levels and observations of scores received under Pie-to-others). Below average contributors are rewarded with higher scores than they deserve while students that contributed to more than half of the work are rewarded with lower scores than they deserve under Pie-to-others.

Example 5.2 Suppose that the below average contributor has a true contribution of 30% while the above average contributor has a true contribution of 150%. Table 8 reflects the minimum scores received by the below average and above average students.

n	3	4	5	6	7
Below average student	36	32.53	31.37	30.86	30.59
Above average student	133.33	142.11	145.45	147.06	147.95

Table 8: Minimum Scores Received by a Below Average Contributor and Above Average Contributor Under Pie-to-Others

Deducing from Theorem 5.3, students who contributed below average receives more than what they deserve, and are better off. However, for a student whose true contribution is more than half the work (above average), the maximum score the student could receive is less than what they deserve and are worse off.

These observations made are highlighted by the purple and red points in Figures 5 and 6, where the purple points represent below average contributors, and the red points represent above average contributors.

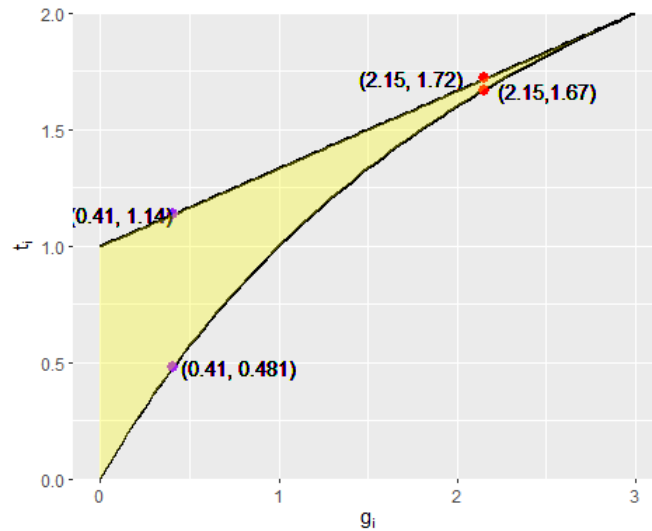


Figure 5: Range of Theoretical Contribution Scores for $n = 3$

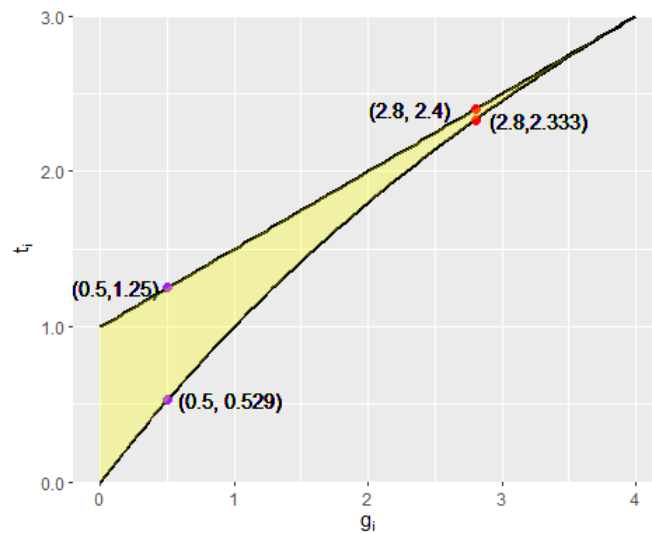


Figure 6: Range of Theoretical Contribution Scores for $n = 4$

In both Figures 5 and 6, the yellow regions reflect the ranges of scores student i may possibly receive depending on how much the rest of their teammates contribute to the project for a given true contribution g_i . Furthermore, the figures reveal the discrepancies in scores between the true contribution g_i and individual score t_i (for example $g_i = 0.5$ and $0.529 \leq t_i \leq 1.25$ in Figure 6). Therefore, there are errors in the scores under the mechanism. These observations and Theorem 5.3 allow us to conclude, theoretically, that Pie-to-others is an unreliable mechanism that does not reward students appropriately according to their effort.

Theorem 5.4 (Score discrepancies in the worst-case scenario). Under Pie-to-others, the maximum possible error, $t_i - g_i$, is $100 - \frac{2}{n}g_i$.

From Theorem 5.4, we can deduce that for a student who contributed below average or close to zero can improve their scores by at most 100%, while a student who contributed above average will always receive strictly less than what they deserve.

The absolute relative error, $E_i = \left| \frac{t_i - g_i}{g_i} \right|$, was also calculated for average, below average, and above average contributors.

Theorem 5.5 The largest absolute relative error, E_i , of student i is largest when their contribution is minimal (i.e., below average). The varying contribution levels and the respective E_i are summarised below in Table 9, where $n \geq 3$.

Performance	Largest E_i
Below average ($g_i < 1$)	$\frac{1}{g_i} - \frac{2}{n}$
Average ($g_i = 1$)	$1 - \frac{2}{n}$
Above average ($g_i > \frac{n}{2}$)	$1 - \frac{(n-1)^2}{n^2 - 2n + g_i}$

Table 9: Largest E_i Corresponding to Different Performances

The next analysis conducted was calculating the practical unreliability of Pie-to-others using the Peer eval dataset. This dataset was obtained from several mathematics courses offered over a period in Nanyang Technological University (NTU) that had a total of 1201 students, 220 project groups and 6619 evaluations.

The true scores g_i in Peer eval were sorted in descending order. Then a letter grade was awarded to each g_i and resulting score t_i in the following manner (which was modelled after an old system used in NTU):

- A+: top 5%
- A: next 10%
- A-: next 15%
- B+: next 40%
- B: next 15%
- B-: next 10%
- C+: last 5% (all letter grades lower than B- were aggregated into C+)

Finally, we counted the number of instances where a student was misgraded, i.e., the letter grades of g_i differed from the letter grades of t_i . A sample of the results can be found in Table 10 below.

Student ID	g_i	t_i
fqHNjQ	A	A
retOzp	A	A-
vOiJFL	B	B
RdHXGD	B	B
NIAWWWh	B-	B
sjyGpd	B-	B

Table 10: Sample of Results of Group nm8 From Peer Eval Dataset

Theorem 5.6 (Unreliability of Pie-to-others). From Peer eval, under collective truth-telling, Pie-to-others is 1.17% (2 d.p.) unreliable. In other words, 1.17% of the students were misgraded.

We also noted that Pie-to-others was not too unfair as extremes were uncommon, as shown below by the small percentage of cases with higher score differences in Table 11.

Score difference	Number of students	% cases
0	1124	93.6
1	71	5.9
2	4	0.3
3	2	0.2

Table 11: Percentages of Cases With Score Differences

Theorem 5.7 (Validity of Pie-to-others). Pie-to-others is a valid assessment.

Proof

Misreporting by a student does not affect their score when everyone else reports the truth. Hence, the best strategy is to report truthfully.

For example, suppose a ground truth $g = (50, 100, 150)$ and the peer evaluation is:

Student	A	B	C	Average
A	-	30	60	45
B	70	-	140	105
C	130	170	-	150

However, if student A decides to misreport, the new peer evaluation matrix is:

Student	A	B	C	Average
A	-	30	60	45
B	110	-	140	125
C	95	170	-	132.5

Student A's individual score remains the same while his teammates' changes. Therefore, there is no incentive for A to misreport and the best strategy for each student is to report honestly.

6. The Cure for Pie-to-Others

In Section 5, we proved that Pie-to-others is valid but unreliable. We will modify Pie-to-others to allow self-evaluations and use normalised medians to evaluate individual grades. This improved assessment is called Median Pie-to-all.

Example 6.1 Table 12 is an example of a peer evaluation matrix for a group of students A, B, C, D under Pie-to-all.

Student	A	B	C	D	Median	Normalised median
A	140	130	130	110	130.0	128.4
B	100	120	120	110	115.0	113.6
C	75	70	90	80	77.5	76.5
D	85	80	60	100	82.5	81.5

Table 12: Example of a Peer Evaluation Matrix Under Pie-to-All

Theorem 6.1 (Validity and reliability of Median Pie-to-all). Median Pie-to-all is (i) valid and (ii) reliable.

Proof

- (i) Valid: Misreporting by a student does not their score when everyone else reports the truth. Therefore, the best strategy for students is to report truthfully.

For example, suppose a ground truth $g = (x_1, x_2, \dots, x_n)$ for a group of n students A, B, ... , N. Under collective truth-telling, the peer evaluation is:

Student	A	...	I	...	N	Median
A	x_1	...	x_1	...	x_1	x_1
...
I	x_i	...	x_i	...	x_i	x_i
...
N	x_n	...	x_n	...	x_n	x_n

However, suppose student A decides to misreport, where $x'_1 \neq x_1$ and the average of (x'_1, \dots, x'_n) is 100. The new peer evaluation matrix is:

Student	A	...	I	...	N	Median
A	x'_1	...	x_1	...	x_1	x_1
...
I	x'_i	...	x_i	...	x_i	x_i
...
N	x'_n	...	x_n	...	x_n	x_n

Student A’s individual score remains the same while his teammates’ changes. Therefore, the best strategy for each student is to report truthfully given that everyone else is honest.

- (ii) Reliable: Using the Peer eval dataset, Median Pie-to-all was found to be reliable. Furthermore, reconsidering Example 5.1:

Suppose that the ground truth g is (150, 75, 75). Assume that Table 13 is a possible peer evaluation submitted under collective truth-telling.

Student	A	B	C	Median
A	150	150	150	150
B	75	75	75	75
C	75	75	75	75

Table 13: A Peer Evaluation Submission

Suppose that the ground truth for the same group is instead (150, 150, 0) and that Table 14 is a peer evaluation submitted under collective truth-telling.

Student	A	B	C	Median
A	150	150	150	150
B	150	150	150	150
C	0	0	0	0

Table 14: A Peer Evaluation Submission With Different Ground Truth

In both versions, while A's contribution is the same, her individual scores also remain the same.

7. Conclusion

As pedagogical methods evolve and group projects become increasingly integral to the educational curriculum, the need to fairly assess students is also increasingly salient. As unequal contributions often happen in collaborative settings, peer evaluations offer insights into an individual's contribution to the task to course instructors for individual grading. Unsurprisingly, as students are often interested in maximising their scores and may game the system, they can be dishonest during their peer evaluations. Therefore, from a psychometric perspective, it is pertinent to employ valid and reliable mechanisms.

Although the prior mechanisms presented in the literature were successful in identifying free riders or provided qualitative feedback to aid a student's learning, this paper set out to use mathematical approaches to conduct a nuanced investigation into Pie-to-others. We had evaluated the theoretical and practical unreliability of Pie-to-others and found it was about 1% unreliable. However, Pie-to-others was proven to be a valid assessment. Pie-to-others was enhanced by permitting self-evaluations and replacing normalised averages with normalised medians, also known as Median Pie-to-all.

As this study had assumed the existence of an objective truth, it may be challenging to definitively quantify it in practice. Notwithstanding this limitation, the assessments in this study are easy to implement for educators.

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Contact email: fduzhin@ntu.edu.sg

*Early Promotion and Dissemination of Quantum Computing in
Young Venezuelan Students*

Dafne Carolina Arias-Perdomo, Universidad Central de Venezuela, Venezuela

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Abstract

This project addresses the educational challenges faced by secondary and diversified education levels in Venezuela, particularly in teaching physics and advanced scientific concepts like quantum computing. Quantum computing is an exciting field at the crossroads of physics and computer science. Given the shortage of specialized teachers and the late exposure to fundamental physics concepts in Venezuela, this initiative seeks to engage high school students, especially girls, in quantum sciences early on. This project aims to showcase the teaching process for young Venezuelan girls who are 15-20 years old while also working with a mix group of high school students aged 14-17. Through virtual and face-to-face activities, students were introduced to the core principles of quantum computing, fostering curiosity and understanding. The first results indicate a significant improvement in students' conceptual grasp and interest, with progress among female students. This project highlights the importance of early and inclusive STEM education in developing future innovators and closing the gender gap in scientific fields.

Keywords: Quantum Computing, STEM Education, Gender Inclusivity, Venezuelan Education, Physics Education

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Introduction

Navigating the educational challenges of teaching Science, technology, engineering, and mathematics (STEM) subjects in Venezuela involves numerous factors. In particular, teaching physics at secondary education levels faces significant obstacles, including a shortage of specialized teachers [1-3]. This deficit results in many students encountering fundamental physics concepts for the first time at the university level, which is considered too late. Previous studies have documented this issue, further exacerbated by massive emigration [4]. Efforts to foster scientific curiosity in young people often need more mathematical and pedagogical tools. Although children are familiarized with basic principles like force, energy, and movement from a young age, a comprehensive and formal classroom approach remains rare.

As we can see, the shift to higher education reveals a significant gap, with students often needing better preparation for scientific fields. Besides this issue, the shortage of specialized teachers is compounded by students' need for more interest in scientific disciplines, as careers like physics are often perceived as not lucrative. Job prospects and financial rewards tend to influence vocational choices, diverting interest from scientific disciplines. However, this perception is far from reality since it is essential to note that physicists, thanks to their ability to solve complex problems, find opportunities in diverse fields, where they apply theoretical and experimental models to practical situations [5]. Integrating long-standing physical and computational concepts into the curriculum can inspire more students to explore scientific and technological areas, including quantum computing.

Quantum computing represents a technological revolution capable of transforming industries, justifying significant investment. For Venezuela, introducing young people to this technology early is relevant for developing human capital and preparing future innovators in other areas, such as cryptography or healthcare. Given the complexity of quantum computing, which requires a deep understanding of physics and mathematics, initiatives like the work done in this project are essential for demystifying and disseminating this knowledge among high school students and young people.

Finally, encouraging the inclusion of girls in physics and science is essential for several reasons [6]:

- Interactive teaching reduces the gender gap in learning outcomes, fostering higher academic achievement among female students.
- Despite existing barriers, women's equal presence in academia indicates untapped potential.
- Representing women in teaching and research positions challenges gender stereotypes and contributes to a diverse and inclusive academic environment.

In Venezuela, while there is no exclusion of women from any career, female participation in research and development decreases at higher levels, with about 30% presence in specific research centers [7]. Encouraging girls' inclusion in physics and related fields is not just a matter of equality but a necessity to close the gender gap, harness all talented minds, challenge gender role perceptions, and design equitable work environments.

With this in mind, we designed an educational approach to introduce the concept of quantum computing to students through a series of one-hour talks. These sessions began by contrasting classical/Newtonian mechanics with quantum mechanics, highlighting the limits of our

current classical computers. From there, we delved into critical topics such as qubits, superposition, entanglement, and the practical applications of quantum computing with their leading actors. This approach aimed to make complex quantum concepts accessible and engaging for students and show the current applications.

The foundational knowledge required for understanding quantum computing is rooted in quantum physics. The topics covered in these sessions are illustrated in Fig. 1.

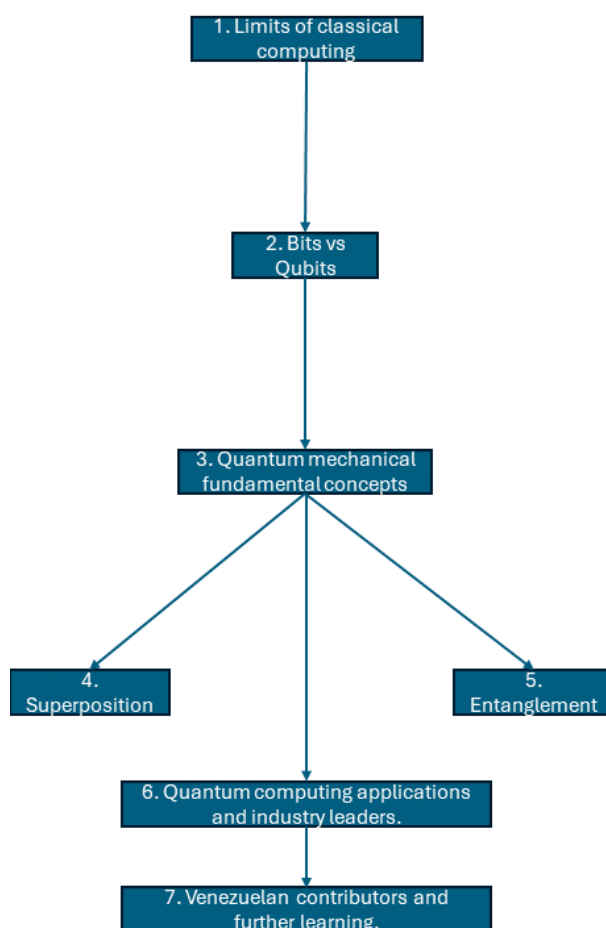


Figure 1: Flowchart of Cover Topics During the Project.

Methodology

The project employed a comprehensive methodology combining virtual engagement and face-to-face activities to introduce quantum computing concepts to young girls and high school students—this multi-faceted approach aimed to address diverse learning needs and maximize student engagement.

During the virtual engagement activities, young girls created videos before and after the lectures on quantum computing, fostering expectation and active participation and evidencing progress in their conceptual learning. Strategies included stratified sampling to select diverse participants and performing pre- and post-intervention assessments.



Figure 2: Girls Created Videos Before and After the Lectures on Quantum Computing, Fostering Active Participation and Demonstrating Their Progress in Conceptual Learning Through Virtual Engagement Activities.

The face-to-face activities were carry on at the "UEPC Nuestra señora de las Mercedes de Aragua" in Maracay, Venezuela, on October 2023. We targeted third-year middle school students, first-year high school students, and second-year senior high school students. Each session introduced fundamental quantum computing concepts, such as qubits, superposition, and entanglement, tailored to students' educational levels and prior knowledge, as agreed in Fig. 1.

Group	Age Range	Total Students	Girls	Boys
Third-Year Middle School Students	14-15	23	10	13
First-Year High School Students	15-16	14	5	9
Second-Year Senior High School Students	16-17	29	9	20

Table 1: Students Groups Attending Presential Lectures.

Due to the diversity of the class (see Table 1), a traditional teaching mode was adopted, followed by class discussions, which fostered enthusiasm among students.

Despite initial skepticism, students' curiosity and participation increased as the lecture progressed. In the case of the First-Year High School Group, female students asked insightful

questions about the limitations and career paths in quantum computing. Also, during the Third-Year Middle School Group, female students showed heightened interest when the Grover Algorithm was explained using the video game "Among Us," indicating the effectiveness of using culturally relevant and engaging examples to capture attention. Last, in the Fifth-Year Senior High School Group, the male students expressed significant interest in job opportunities related to quantum computing and the presenter's professional journey.



Figure 3: A Face-to-Face Class at 'UEPC Nuestra Señora De Las Mercedes De Aragua'. The Sessions Targeted Various Student Groups and Introduced Fundamental Quantum Computing Concepts Such As Qubits, Superposition, and Entanglement, Tailored to Their Educational Levels.

Further studies are still needed, mainly designed surveys to assess the program's effectiveness in greater detail.

Discussion

This comprehensive methodology underscores our commitment to transforming educational paradigms and empowering young people, especially women, in Venezuela through quantum science literacy.

To understand the basics of quantum computing, participants are already motivated to learn more, as evidenced by their active engagement and enthusiasm during virtual and face-to-face sessions. The main obstacle at this point is to expand the curriculum to include more technical aspects, particularly the mathematical foundations required for a deeper comprehension of quantum computing concepts.

In a school context, mathematics is one of the subjects that inspires the most fear [8]. This fear often arises from a need for more understanding and the perceived complexity of mathematical concepts. Recognizing that these advanced topics require a solid mathematical foundation, the curriculum will include a comprehensive introduction to mathematical techniques essential for quantum sciences, such as linear algebra. A first proposition is made in Fig. 4. These skills equip students with the tools to navigate and excel in these challenging yet captivating subjects.

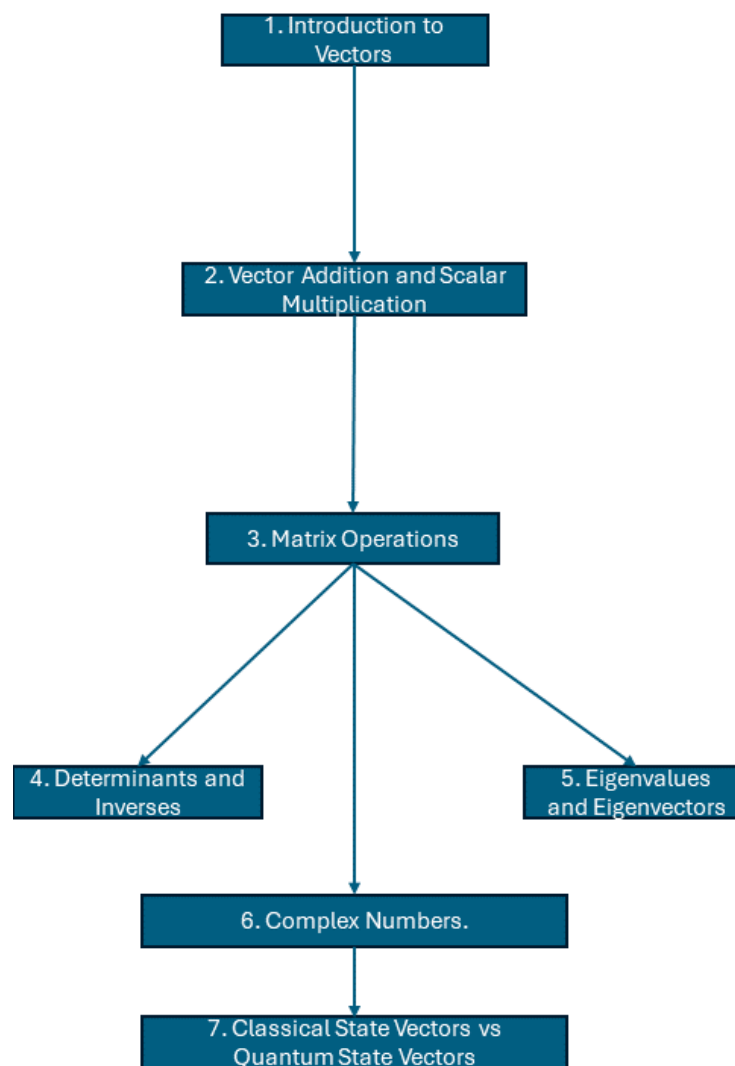


Figure 4: Flowchart of Possible Topics to Include a Comprehensive Introduction to Mathematical Techniques Essential for Quantum Sciences, Based on the Projects Qubit by Qubit [9] and QWorld [10]. These Concepts Require Multiple Lectures to Cover Thoroughly and Cannot Be Completed in a Single Session.

An essential aspect of our approach involves addressing and overcoming the fear of studying math. One girl from the virtual activities shared her perspective, highlighting the everyday anxieties and negative perceptions about math, especially at her age and grade level. She noted that seeking help, finding instructional videos, and utilizing various resources can significantly alleviate these fears. This testimony reflects a broader sentiment that, despite the intimidating nature of math, with the proper support and resources, students can overcome these barriers.

Mathematics is essential for understanding and applying concepts in quantum computing. For these concepts to take root and be applied, they must first be understood and valued by the target community. Although the topics outlined in Fig. 4 up to point 4 are part of the Venezuelan high school curriculum, we propose a more focused approach toward quantum computing. This approach will include practical activities integrating programming, highlighting its significance in the field. Programming deepens the understanding of quantum computing concepts and empowers students, particularly women, by providing valuable skills and opening up diverse career opportunities [11].

Conclusion

The project has addressed some of the significant educational challenges faced by secondary and diversified education levels in Venezuela, particularly in teaching basic quantum computing concepts. The first findings of this work indicate a significant improvement in student's conceptual understanding and interest in quantum computing. Including practical activities and culturally relevant examples, such as the Grover Algorithm explained through the video game "*Among Us*," effectively engaged students and fostered curiosity.

The implications of these findings suggest that early and inclusive STEM education is vital for developing future innovators and closing the gender gap in scientific fields. Introducing students to quantum computing concepts early on and providing a supportive learning environment can inspire a new generation of scientifically curious and technologically adept individuals.

However, the study also identified limitations, particularly the need for more specialized teachers and a more comprehensive curriculum that includes the necessary mathematical foundations for understanding quantum computing. As mentioned, the main obstacle now is to expand the curriculum to incorporate more technical aspects, particularly linear algebra and programming. Programming deepens the understanding of math concepts and empowers students, especially women.

Further research is needed to assess the long-term effectiveness of this educational approach, including designed surveys to gather detailed participant feedback. These studies will help refine the curriculum and teaching methods, ensuring that the initiative continues to meet the learning needs of students and contributes to closing the gender gap in STEM fields.

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The success of these activities was supported by various individuals and organizations, including Unitary Funds for further developing this project in <*Quantum|Chamitas*>, a pioneering initiative focusing on accessible, high-quality quantum education in both Venezuela and France for girls in STEM. The teaching staff of "*Las Mercedes de Aragua*": Prof. Ana Mercedes Ocha, Prof. Edalis Martinez Saavedra, Cecilia Anis, Prof. Maryit Flores, Prof. Rubén Briceño, Prof. Nérida Jiménez, Prof. Ana Pacheco, Prof. Blanca Valderrama, and Dr. Zulay Perdomo. Thanks also to the Womanium organization. Thanks to Mélissa Vaca provided invaluable support throughout the project, and to Prof. Dr. Pio José Arias González which is currently helping develop the math curriculum.

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Contact email: carolina@quantumchamitas.com

Fostering Global Citizenship Through Poetry: Teaching and Learning Interconnectedness in Language, Literature and Culture From Value-Creating Education

Valentina Dughera, DePaul University, United States
Ericka H. Parra Téllez, Valdosta State University, United States
Giulia Pellizzato, Harvard University, United States

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Abstract

This paper explores teaching and learning practices inspired by Value-Creating Education, i.e., the pedagogical commitments and perspectives shared by the Japanese educators and Buddhist activists Tsunesaburo Makiguchi (1871–1944), Josei Toda (1900–1958), and Daisaku Ikeda (1928–2023). More specifically, authors focus on poetry as a key resource in teaching and learning aimed at fostering global citizenship at different levels of the school system, from Middle School to Higher Education. After introducing the main perspectives and commitments of Value-Creating Education, the paper examines the relevance of teaching and learning interconnectedness through examples from the authors' praxis as teachers of language and literature, as well as fellow researchers in the rapidly expanding field of Ikeda / Soka Studies. The first example concerns activities from an intermediate language and culture course Pellizzato co-designed and taught at university level to exemplify how, in Ikeda's view, teachers can foster the wisdom to perceive one's interconnectedness thanks to interacting with poetry and nature. The second example concerns literature in middle school as a tool for exposing students to interconnectedness and empowerment. Through engaged reading of poetry, such as original Cantos from Dante's *Commedia*, Dughera shows how literature and teachers have a crucial impact on the character development of students. The third and last example concerns the fostering of dialogic bridges through poetry to enhance language learning in a higher education Hispanic literature course. Drawing connections between poetic narratives from different global contexts and world languages, Parra enables students grow through detecting interconnectedness.

Keywords: Global Citizenship, Teaching Literature, Poetry, Interconnectedness, Value-Creating Education, Education for Sustainable Development

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1. Introduction

This multi-author paper focuses on Value-Creating Education and the burgeoning field of Ikeda / Soka studies. The authors' aim is to stimulate debate and research in international and global education through examples from their teaching practices, which are informed by the pedagogical commitments and perspectives shared by the Japanese educators and Buddhist activists Tsunesaburo Makiguchi (1871–1944), Josei Toda (1900–1958), and Daisaku Ikeda (1928–2023).

The paper begins by introducing Value-Creating Education and outlining the authors' approach to Global Citizenship Education through the teaching of literature, introducing the role poetry can play in teaching and learning from Middle School to Higher Education. Pellizzato introduces the main concepts of the paper and discusses an example of sustainability education activities from the intermediate language and culture course she co-designed and taught at Harvard. Subsequently, Dughera outlines what Ikeda means by poetic mind, or *shigokoro*, discussing her teaching practice of Dante's *Commedia* in middle school as a tool for exposing students to interconnectedness and empowerment. Finally, Parra Téllez focuses on fostering the students' awareness of interconnectedness through poetry and dialogic bridges, to enhance language learning in a university-level literature course.

2. Value-Creating Education, Interconnectedness, and *Shigokoro*

Value-Creating Education is a rapidly expanding field of research (e.g., Goulah 2024; Bosio & Guajardo 2024; Nuñez & Goulah 2021), particularly developed in the perspectives of global citizenship education (see Sharma et al 2023; Sharma 2020, 2020b; Sherman 2019; Goulah 2018; Guajardo & Reiser 2016; Takazawa 2016; Urbain 2013, 2010; Obelleiro 2012; Goulah & Ito 2012) and the teaching of language and literature (see Inukai 2021; Goulah 2019, 2017, 2013, 2012, 2012b, 2011; Ito 2017; Okamura 2017; Gebert 2013; Hatano 2013, 2012). The term refers to the pedagogical commitments and perspectives shared by the Japanese educators and Buddhist activists Tsunesaburo Makiguchi (1871–1944), Josei Toda (1900–1958), and Daisaku Ikeda (1928–2023). Each one established unique ideas and contributions, but all of them share significant commitments and perspectives (Goulah 2021). The most important among these is arguably the principle of value creation, or *sōka*, which became the namesake of Makiguchi's pedagogical vision.

What is, then, the creation of value in education, according to Tsunesaburo Makiguchi? Goulah (2024) provides the following synthesis:

Value-creating pedagogy distinguishes truth from value and seeks to clarify the often-confused psychological processes of cognition (understanding something as it objectively is) and evaluation (determining its relevance to life). [...] Facticity alone does not make truth meaningful to our lives, Makiguchi argued. Rather, the significance of truth in our lives comes from the subjective and contingent meaning or value we create from it. (5-6)

In short, Makiguchi advocated for a pedagogical practice aimed at fostering the learners' ability to create value, or subjective and contingent meaning, based on enabling them to hone their cognition and evaluation skills (Sherman 2016; Goulah & Gebert 2009; Goulah 2009; Gebert & Joffe 2007; Kumagai 2000).

This will sound familiar to researchers and practitioners of education today, when critical thinking is at the center of scholarly debate (e.g. Cursio & Jahn 2024; Canale 2021; Nardi 2017; Tittle 2011). It should be considered, though, that Makiguchi was active during the late Nineteenth and early Twentieth century, at a time when the ideological authority of the emperor and the Japanese state cannot be overemphasized (Goulah 2015; Gebert 2009; Ito 2009). During these very decades, through his four-volume opus *Sōka kyōikugaku taikai* (The System of Value-Creating Pedagogy, Makiguchi 1981-1996, vols. 5-6), Makiguchi maintained that creating personally and socially meaningful value from accurate cognition of truth is what demonstrates agency, opens possibility, and generates genuine happiness, which is the ultimate goal of education, along with the positive advancement of daily human life and living (Goulah 2024).

Today, the views of Makiguchi, Toda, and Ikeda shape a number of schools based in Asia, Europe and the Americas, from kindergarten to university level, and inform the perspectives and practices of thousands of educators in multicultural, multiracial, and multilingual contexts (Goulah 2021oxf). As educators and philosophers of education, Ikeda, Toda, and Makiguchi share a commitment to the ethic and practice of global citizenship, defined by Ikeda as:

- The wisdom to perceive the interconnectedness of all life.
- The courage not to fear or deny difference but to respect and strive to understand people of different cultures and to grow from encounters with them.
- The compassion to maintain an imaginative empathy that reaches beyond one's immediate surroundings and extends to those suffering in distant places (Ikeda 2021, 6-7).

In this view, interconnectedness – and the perception learners have of their interconnectedness – plays a key role. In Ikeda's cosmic perspective informed by Mahayana Buddhism, dialogical engagement with nature is an interaction between alive and sentient beings, not between a subject and an object. Going beyond a mechanistic conception of nature, Ikeda understands the environment as a “semantic whole” (2010, 173) that holds together humans, their cultures and their natural environment. This understating of interconnectedness is key to environmental education, sustainability education, as well as global citizenship education according to a number of scholars. Ikeda's perspective is unique, though, in connecting one's perception of interconnectedness with what he calls *shigokoro*, or the poet's expansive and all-encompassing heart, mind, or spirit (Goulah 2024).

3. An Example of Sustainability Education and Global Citizenship Education Through an Intermediate Italian Language and Culture Course

I come to Value-Creating Education as a scholar of literary studies seeking to articulate empowering teaching and learning practices for students of language and literature courses at the university level. My teaching praxis is informed by two converging lines: the research I developed in the field of Transnational Literature and Translation Studies, on one side, and the work I carried out as a Teaching Assistant and a Pedagogy Fellow at Harvard, on the other. Both these lines gained further breadth as I developed my pedagogical research through my second PhD, currently ongoing at DePaul University, centered on the value of dialogic interactions with literature and nature in Daisaku Ikeda's educational philosophy.

Through the courses I co-designed and taught at Harvard, I sought to integrate dialogic interactions with literature and nature in my students' learning experiences. In doing this, I

was inspired by Value-Creating Education as well as the innovative language teaching methodology practiced at the department of Romance Languages and Literatures of Harvard University, under the direction of Dr Nicole Mills and Dr Maria Luisa Parra Velasco. As a result, my students obtained higher-than mean results, while my courses obtained higher-than mean student evaluations. I collaborated with my course head, Dr Chiara Trebaiocchi, to revise the Italian curriculum from beginner to advanced level. I won interdepartmental funding for course-innovation, which I used to innovate an intermediate language course, centered on the different facets of sustainability, which is the example will I focus on for this subsection of the article.

Poetry and engagement with literature serve multiple purposes in this course:

- They allow to integrate scientific data with personal experience through the vicarious experience of narration (both in reading and writing);
- They open spaces for collaborative meaning-making and dialogic engagement;
- They afford students with opportunities to engage in meaningful conversations in the target language, igniting one of the strongest drives for proficiency improvement;
- They foster the students' ability to appreciate each other through appreciating their respective contributions to collaborative creative work.

The course is designed to revisit structures, refine speaking, writing, and oral skills, and advance critical and meaningful exchanges through the discussion of environmental, cultural, economic, and social issues of sustainability. Based on evidence from scholarly literature (e.g., Goulah 2017), as well as insights from the departmental Environmental Group I co-founded, the course features a series of practical assignments, meant to assess the students' understanding of specific language structures while guiding them to think critically around environmental, cultural, economic, and social issues of sustainability discussed in class per each module, and to make connections among the various topic discussed in class. Every semester, students engage in these assignments with excitement, commitment, and renewed sense of purpose. From a pedagogical perspective, practical assignments are key in connecting language learning with local communities (Parra Velasco 2013), enhancing the achievement of learning goals through situated learning, and expanding the walls of the classroom (Rodgers 2018).

Based the principles of Value-Creating Education, I restructured some units of the course to afford students opportunities to engage in meaningful conversations in the target language, connect the subject matter with their interests, and meet with activists and professionals in the field of environmental sustainability. To connect language learning related to sustainability and climate issues with the local community, we engaged students in activities taking place out of the university classroom.

Thinking in terms of truth and value based on Makiguchi's philosophy of education mentioned above, in this course "truth" could be identified with the grammar and cultural content, alongside the relationships of cause and effect linking us to society and the environment, while "value" could be identified as what the curriculum means to students, and what become capable of doing through what they learn. To facilitate the students' engagement in terms of value creation, I designed activities in which they could take the lead in the learning process, collaborate to make meaning, and bring in their interests and individualities.

To exemplify how dialogic engagements with literature and nature can be experienced as value-creating education, I conclude by describing a creative collaborative writing activity I designed, based on a poem.

During a lesson, the teacher presents the first half of a poem centered on how human civilization is harming natural and animal life: Giorgio Caproni's *Versicoli (quasi) ecologici* [Almost ecological versicoli]. The teacher works collaboratively with students to clarify the meaning of the text. A grammar focus ensues, based on the PACE model (Shrum & Glisan 2016). Then, working in pairs, students are invited to complete the poem through a scaffolded collaborative writing process:

- Each student writes 10 words that could fit in the continuation of the poem, recalling recently acquired vocabulary;
- Students exchange papers; each student picks at least 3 words from their colleagues' list, and continues the poem including those words;
- Students read out loud their poems and comment on each creation and their collaborative writing experience in the target language.

Each time this activity is performed, when at the end students read what they created, a mutually appreciative sound of amazement resonates in the class, or laughter sanctions successful communication through playful texts. This is just one example of how teachers can foster collaboration and mutual appreciation in the classroom, enabling students to experience and reflect on interconnectedness through playful and shared effort of meaning-making.

My hope is that, through these experiences, students can learn to tune into their *shigokoro*, besides honing their global citizenship skills while learning Italian language and culture effectively, creating more opportunities for experiencing hope and joy in learning (Nuñez & Goulah 2021). As Ikeda writes, reflecting on the work of the Cuban poet José Martí: “The poetic spirit [is] an indispensable bridge between the individual and the whole. I think that the poetic spirit could be defined as that which fuses the pulse of the human heart with the rhythms of nature and the universe. In that vast and eternal plane, our lives are elevated and expanded toward the direction of happiness and peace” (Ikeda 2010, 123).

4. Teaching Literature in Middle School: A Tool for Cultivating the Poetic Mind

Differently from his predecessors, Ikeda has not specified any pedagogy or teaching method (Inukai, 2020). He focuses on the crucial importance of human interactions which nurtures the holistic growth as human beings. Education is this kind of relational process (Goulah, 2015; Inukai, 2020). Keys to realize human education in its broader meaning (and so, keys that have to be present and vivid in the attitude of a good teacher) are mentor and disciple (or teacher-student) relationship and dialogue (Goulah & Ito, 2012). In the opinion of Goulah (2019) Ikeda calls the constant and never-ending transformation of the individual a “human revolution” from the private and isolated “lesser self” (*shoga*), strongly influenced by his own desires, to the “greater self” (*taiga*) of an identity coexistent with all phenomena and universe across space and time, and this inner transformation is what Ikeda intends to become “fully human.” According to Ikeda this type of human revolution takes shape through dialogic value creation and value-creative dialogue (Goulah, 2012). Human revolution could break the spirit of abstraction that is the leading cause of the global economic meltdown (Goulah, 2010b). This change of the individual's heart (and actions) happens through learning. Goulah (2012y) asserts that “human revolution through human education is the

dialogic process of realizing the other in the self and self in the other” and the Ikeda calls students in “learning to learn and to derive wisdom from knowledge” in the path to become fully human.

What does Ikeda himself assert are the defining characteristics of human education? One way to answer this is with the following: “Being born human does not make one a human being. Don’t we really only become human when we make tenacious effort to live as human beings? [...] That’s why education is so important. We need human education to become human beings” (Ikeda, 2021, p. ix). Goulah (2021b) argues that Ikeda’s philosophy of human education is twofold: on one hand it calls us to encourage and person right in front of us, believing in everyone’s unlimited and precious potential, and on the other hand, it urges our awakening to the full scope of our humanity and humanness. This is what Ikeda calls the never-ending process of being and becoming more and more “fully human”. This can be done through a consistent dialogic engagement with others (nature, cultures, people), in this sense Ikeda envisions this through a perspectival shift from *education* to *mutual fostering* (Goulah, 2021b). Drawing a relationship with the concept of mutual fostering, Inukai, and Okamura (2021) stress the importance of the teacher’s human revolution as the core of human education. The shift of attitude of the teacher towards students is expressed in the relationship of trust and care between them, thanks to which they become together fully human (Inukai & Okamura, 2021). Quoting Ikeda “As a diamond can be polished only by another diamond, so human beings can be refined only by other human beings” (Garrison et al., 2014).

In a recent work Goulah (2020) underlines that this approach is rooted in the Buddhist principles of causality and ecological interdependence across infinite reaches of time and space. Considering this, even “competition” (*kyōsō*; 競争) becomes the cause of unlimited “co-creation” (*kyōsō*; 共創) of value. This philosophy of human education is not limited to the context of schooling (Goulah, 2021c). In fact, Ikeda pursuing the goal to “becoming fully human” enlarges the concept of education, already in his works in 1960 and 1970s, including every place of the human existence, for example families, intended as a major site of education (Ikeda, 1977). Everyone should seriously try to expand the inherent qualities that make us human in his or her own unique way. For Ikeda ([1996] 2021), these inherent qualities are courage, wisdom, and compassion that are also the three qualities of a “global citizen.” Goulah (2021c) asserts that Ikeda advocates for four interlocking commitments and ideals to put in action this kind of transformative human education. They are a commitment to dialogue (*taiwa*), a commitment to global citizenship (*sekai shimin*), a commitment to value creation (*sōka kyōiku*) and a commitment to creative coexistence (*kyōsei*)¹ (Goulah, 2021b, p. 202).

Considering the broader frame of human education and the approach to consider education as mutual fostering, what is the poetic mind (*shigokoro*)? According to Ikeda, poets are “free from the fetters imposed by institutions and ideologies,” “perceive the unlimited potential of the individual that transcends the trappings of society,” and “recognize the bond that links all humankind and intricacies of the invisible web of life” (Ikeda, 1988, p. 3). He continues

¹ *Kyosei* has been translated into English as “symbiosis”, “coexistence”, and “creative coexistence”. “Creative coexistence is the most comprehensive translation for Ikeda since it encloses his vision of interdependence. According to this principle, human beings should act in peaceful and harmonious coexistence by creating value (for themselves and for others) in each moment and through every interaction they have with everyone and everything (Goulah, 2021d). I’ve had this note since the other three commitments are unraveled through this work in different sections.

stating that the poetic spirit “imparts hope to our life on earth, gives us dreams, and infuses us with courage; it makes possible harmony and unity and gives us the power no army can vanquish to transform our inner world from utter desolation to richness and creativity” (Ikeda, 1988, p. 3). Starting from this, through the readings of high-level literature students (even which are considered “low grades”) can empathize with the whole (Ikeda, 2010) and be fostered as engaged and committed future citizen who will create a new golden humanity’s future. What is called by Ikeda the “poetic mind” (Japanese *shigokoro*) is the expansive and all-encompassing heart, mind, or spirit of the poet (Goulah, 2024), the ability that everyone possesses to appreciate and empathize with the life and the suffering of others. So, what we are calling “the poet” is not defined by a job title or a certain career. We are talking about an attitude, an innate potential that everyone possesses.

5. Literature as a Tool to Cultivate Empathy and Empowerment: A Personal Praxis

I’m a middle school teacher of Italian and History in a non-traditional school in Italy. Moreover, I’m undertaking a second Ph.D. at the DePaul University College of Education in the “Value-Creating Education for Global Citizenship” program. Italian middle school is comparable to 7th-8th-9th grades in US. My students are from 11 to 14 years old, not so little, and not so grown. It is not at all rare that teachers of these subjects restrict themselves to a mere transfer of notions, grammar rules, lives of literatus and events. I personally use my subjects to dig into the human condition with my students, teaching them about cause and effect, human dynamics, and interconnectedness. In doing this, literature is an amazing tool to foster all the abilities above mentioned and let my students experiment true empathy and empowerment. Very often, literature is taught through lecture with the support of recap and synopsis of books and poems. It is quite rare that students are involved in the actual reading of original works. This is way more frequent with very young students, such as middle schooler. Taking into consideration my lessons about Dante and his *Commedia*, I would like to share how I organize the activity with my students and what I consider as assumptions of my work with them keeping in mind three aspects: 1) the poetic mind if an innate attitude of each human being, 2) students as young human beings instead of “little”, 3) “children are poets by nature” (Ikeda, 2006) and they will be fully able to catch the heart of the poet.

My lesson is structured following these steps:

- I read out loud the “canto”
- I read it again
- I make my paraphrasis
- I ask them to try to make some little part of paraphrasis
- We engage all together in a dialogue on the topic (main part of the activity)
- I ask everybody (even me) to write down anything in any forms or shapes. Nobody is asked to produce on the very topic just read together but rather “inspired by”

Personally engaging with feelings, emotions and thoughts of the poet, students naturally interact and build a dialogue in three directions: with the poet (a dialogue trough ages), with themselves (they investigate in the depth of their inner self), with others (they interact with fellows). Dialogue is the door to experiment true empathy, and dialoguing trough these different levels, they experiment what Ikeda calls the “imaginative empathy”. They naturally put themselves in other shoes. Others that can have lived centuries ago or in their immediate surroundings. Engaging in this profound interaction, at the end of the activity they can feel “I’m able”, “I’m powerful”. And they actually do! Recurring implications of this kind of activity (that is set once a week) are that:

- Students experiment the actual imaginative empathy
- Emerging empowerment
- Even “low grades” or “troublemakers” students enjoy and get involved, experimenting a sense of been able, deep and mature

Effects of this activity are tangible even in the dynamic of the group that is directly impacted by these experiences. Of course, middle schoolers remain middle schoolers and of course argues and conflicts are always presents, however the group naturally builds a stronger and deeper bond and in crucial occasions each member can more easily adopt a tool already used and tested. In this sense literature could be used as a precious instrument, not only to know everything about Dante or figures of speech, but to enter in touch with the brave heart of the poet who bears the struggles of his/her society. As results, entering in touch with the heart of the poet is entering in touch with our own poetic spirit, the innate ability to empathize with life and suffers of others. Fostering this ability in young students could lead to future global citizens used to manifest this innate aspect in creating a peaceful coexistence with others.

6. Interconnectedness: Teaching and Learning Latinx Poetic Narratives and the Japanese Poem “The Sun of Jiyu Over a New Land”

To continue with the dialogue above, another way to cultivate global citizenship in Higher Education is the practice of interconnectedness. During one semester (16 weeks), this study examined how poetic narratives from global and local contexts connected three important parts. 1) students’ experiences were based on their cultural background, 2) students choose the readings for the final project on Hispanic/Latinx literature texts, and 3) they made connections with the poem “The Sun of Jiyu Over a New Land” (1993) by the educator, peace maker and poet Daisaku Ikeda (1928-2023). The purpose of the learning experience was to strive to grow from social justice poetic narrative common encounters.

Within Ikeda/Soka Studies education, scholarly literature explains concepts from the philosophies and practices of Tsunesaburo Makiguchi (1871-1944), Josei Toda (1900-1958), and Daisaku Ikeda (1928-2023) in dialogue with other philosophies and theories (Inukai, 2021). Interconnectedness is a value-creating pedagogical approach that allows to connect the individual with society. In other words, to connect the micro and macro spectrums toward a global citizenship. To this respect, when discussing transformative education approaches, value creating pedagogy is “a knowledge system comprising methods for cultivating individuals capable of creating value” (Goulah, 2021). The goal of education, as aim of the value creating education, is “to enhance this value of human character (Goulah, 2021). When people are empowered to realize the full scope of their possibilities willingly unite in solidarity to confront global issues.

Students connected by practicing critical and friendly dialogue. It is a fundamental Buddhist concept that illustrates the idea that all human beings are in close relation with all others and with all other living beings and the environment. People cannot live isolated; therefore, they reach each other by different means of communication and dialogue. In the 1996 lecture at Columbia University “Education for Global Citizenship”, interconnectedness is an element for wisdom to perceive “all life and living” (Urbain, 2010). Dialogue is a means of interconnectedness and coexistence to restore humanity (Urbain 2010; Goulah & Ito 2012; Bradford, 2018, 2021; Sharma, 2018; Rita, 2021; Goulah, 2009, 2010).

In Higher Education teaching and learning world languages, literature has been a tool to contextualize and to apply students' language learning skills. Then, fostering future professionals in world languages within contemporary societies, the focus of this empirical research was the praxis of dialogue as the principle of dialogic connections to design literature-based learning opportunities for diverse Spanish language learners. As a background, Ikeda (2020) discusses that we learn to know ourselves and others when we are trained in the ways of being human. Then, he engages a dialogue with the readers by stating, that it is by immersion in "the ocean of language" and dialogue fed by the springs of cultural traditions (Ikeda & Rees, 2018; Ikeda, 2020). Ikeda believes that dialogue holds the key to understanding each other.

Within secondary literature, in teaching languages, the Socratic dialogue (Socrates 4th Century) is a genre of literary prose that enhances critical thinking. Bakhtin (1981) analyses dialogue in poetry as the internal dialogism of the word. The subjective form of dialogue has the power to shape style and finds the way to express the unstudied present. The dialogue between the reader/listener and poetry creates a dialectical relationship toward an active understanding.

Based on the above information, to answer the research question: what is the purpose to cultivate interconnectedness in teaching and learning experiences? Students participated in a survey answering the following questions: 1) How did you feel about your language skills when talking about interconnectedness (a state of being connected reciprocally) with the social issues that you identified in "The Sun of Jiyu"? 2) How did reading in the Spanish language various literary genres and making connections helped you to practice your language skills? 3) How by being aware of your own goals and audience (GRASP) will help you to apply the Spanish language to your own context?

During one semester, 6 learners were asked to read and to listen to short stories, poems, drama and essays from their virtual text *Aproximaciones* (2022). A selection of three weekly reading comprehension *Questionnaires* was required to prepare for the post-reading discussions with specific scaffold prompts based on the readings. To this regard, the VoiceThread platform was the space for practicing interpretative, interpersonal, and presentational modes of communication, according to the American Council of Teaching Foreign Languages (ACTFL). Nevertheless, the final project asked them to interconnect personal, local and global experiences between two course readings with the Spanish version poem "The Sun of Jiyu in the New Land" (1993) by the Japanese educator, philosopher, poet and peace maker Daisaku Ikeda. For the final project, learners designed the project-based learning GRASP (G-goal, R-role, A-audience, S-situation and P-project) to create connections with personal and global narratives Zehnder, Alby, Kleine & Metzker (2021). Introducing the GRASP was a challenge for Spanish learners who usually expect to follow instructions on how to design a final project. In other words, learners, first practiced, how to comprehend complex Spanish texts while reading and listening; second, they engaged in a multimodal communication in VoiceThread to discuss their ideas and to create an "active negotiation to share information, feelings and opinions." Lastly, they created an independent base-project learning known as GRASP. Thus, learners practiced in a safe space spoken and written information to engage in applying the Spanish language at Intermediate level of proficiency.

7. Interconnectedness: A Personal Praxis Conclusion

The purpose of cultivating interconnectedness in teaching and learning leads to fostering global citizenship. Thus, by facilitating world language poetic narratives content from different Latinx countries and adding the Japanese poem “The Sun of Jiyu Over the New Land”, learners designed their own goals, situation and audience in the creation of a written project-based learning tool GRASPs to gain awareness of their own connections to map their own communities. The dialogue in the VoiceThread platform allowed them to realize how the American culture and social justice were perceived from another perspective. Therefore, the surveys were a tool for self-reflecting on their perceptions and discovered ways of interconnectedness with other cultures by finding common points between local and global personal and social experiences. It was an exercise to cultivate global citizenship awareness.

This empirical research findings showed that at the end of the semester, and after students’ read the Spanish version of “The Sun of Jiyu Over a New Land”, they were able to find connections among multiple genres: poetry, short stories and dramas. Students also found connections among topics such as discrimination, gender, migration and coexistence when comparing fictional characters’ stories and poetic voices.

In the dialectical relation, learners’ self-reflection focused on the use of the language “to bring communities together.” The purpose was “to map communities” (Goulah 2021) and “to embrace a global philosophy” (Ikeda, 2010). Within the learner’s comments on the Latinx readings, it was outlined the “need for unity and the knowledge that we are the same in different ways.” One learner said, “We are all the same at heart, and while there might be much variation, we cannot help but resemble each other.” To this regard, solidarity was the result of connecting “personal narratives” to confront global issues (Goulah, 2021). Among other concerns, it was “the idea of freedom” and how to “contribute their talents to the world.” It was also “to focus on who the audience was.” In other words, caring for oneself and others. In sum, learners’ GRASPs comments and self-reflections evidenced that the goal of education, as aim of the value creating education, is “to enhance this value of human character” (Goulah, 2021, p. 5).

For further research, the survey will include the key words interconnectedness, global citizenship, and its relationship with the interpretative, interpersonal and presentational modes of communication. Each communicative stage could also allow further research in the practice of the language dialogues and conversations.

Another impacting point was the takeaway. One anonymous comment referred to the hope of “incorporating some Spanish literature as a comparison to American texts” based on the experience to compare Latinx literature with a Japanese poem.

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Contact emails: gpellizzato@fas.harvard.edu
vdughera@depaul.edu
ehparra@valdosta.edu

Rethinking Academic Dishonesty: Challenging Indonesia's Cultural Pressure for Collectivism and Altruism

Christa Olivia Geraldine, Universitas Pelita Harapan, Indonesia
Niyu Niyu, Universitas Pelita Harapan, Indonesia

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Abstract

Despite mitigation efforts implemented across nations, academic dishonesty is an enduring issue within the education sector. A popular form of it in Indonesia is contract cheating, which is difficult to unveil and trace due to the culture of collectivism and altruism deeply rooted within its society. Indonesia is reputed for its culturally hospitable and helpful ethos; however, it is suspected that the same cultural aspects also serve as the foundation of this phenomenon to thrive. This paper aims to explore and analyze the persuasion process that university students do in contract cheating and the influential cultural factors behind it. These cultural factors, which are embedded in interactions between students and ghostwriters resulting in voluntary assistance and subsequent deception following assignment submission, are identified and analyzed using Piaget's Cognitive Development Theory and Hofstede's six cultural dimensions. Additionally, this study presents perspectives from ghostwriters and students who engage in contract cheating on societal judgments against them, accompanied with societal perceptions and attitudes towards contract cheating. Employing phenomenology as its main method, this research gathers data through literature reviews and interviews with three main informants, two of whom have experience as voluntary ghostwriters in contract cheating. Results indicate that various cultural dimensions, cultural pressures, and expectations of compliance significantly influence individuals' susceptibility to engage in contract cheating, especially when familial or professional ties are involved. Collectively, these cultural factors cultivate an environment for contract cheating to thrive remarkably while remaining tacit in modern society.

Keywords: Academic Dishonesty, Contract Cheating, Indonesian Culture, Collectivism, Altruism

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Introduction

Academic dishonesty is a major problem that has been getting recognition as time goes by (Whitley & Keith-Spiegel, 2002), with various implementations of the practice ranging from peeking at other student's answer sheets to full-fledged plagiarism. Various studies revealed that the percentage of college students who participate in academic dishonesty can go up to 98 percent (McCabe et al., 2012) while still increasing over the past several decades. The practice flourishes within society as if it belittles integrity and ethics, which is mentioned as one significant mainstay where high standards of behavior are employed to be a criterion of evaluation towards the quality of higher education given in any university community (Speight, 2016).

One of the many academic dishonesty practices is contract cheating, which is defined by Lancaster (2022) as the practice where third parties are used by students to help them accomplish their educational studies by replacing them in doing assessments in courses. It is carried out in various ways that yield several different benefits, with one of the most popular being through a formal or informal work agreement that generates income. On this side, contract cheating has grown to the extent that it runs as a profitable industry that students are able to access (Lancaster, 2022) with many of the third parties, referred onwards as ghostwriters, taking considerable profit out of the capital resources circulating inside the discreetly operating market. Offers of contract cheating services have even been openly marketed on the internet, giving the industry more spotlight and inviting more users to make transactions. On the other side, ghostwriters who accept contract cheating propositions from students without the promise of any financial benefit are also common. Cases like this happen when students give other types of non-financial benefits to the ghostwriters involved.

Developing countries like Indonesia are not exempted from the academic phenomenon impacting all levels of education. Locally referred to as "*joki tugas*", the practice has grown into a worrisome phenomenon, especially where it meets the culture of collectivism and altruism. These values are deeply rooted in various layers of its society, earning it the title of one of the most hospitable countries in the world. On par with Pakistan, Indonesia was on the 47th place out of 53 nations in terms of individualism index values conducted by Hofstede and Pedersen (2002), with a considerably low score.

In the Indonesian culture, these two values manifest in commendable forms. Collectivism can be found in how people treat one another, particularly in a group setting involving a number of people. So can altruism, which relates to the high levels of selflessness in people, where they would be more willing to help others in times of need. These two values contribute to shaping the image of Indonesian society in the eyes of the world, where non-Indonesians often perceive the Indonesians to be hospitable and helpful.

Unfortunately, the same ways that make people be on their best behaviors in a culture, which are formed and passed down to younger generations with the best intentions, are not always utilized with the best intentions. The two values put pressure on the young generation to think that being helpful and generous will make them more accepted in the society, successfully shaping the tendency in children with ineptitude in social skills or less power among their peers to lean towards people-pleasing tendencies. At the other end of the social power spectrum, there are also students who exploit these students with this submissive trait to serve their own interests.

Many studies do not deeply explore the cultural underpinnings of academic dishonesty in Indonesia, especially because they did not consider the effect of sociocultural aspects towards academic dishonesty behaviors. This flaw creates a gap between behavior and factors that drive them into acting it out, which will be covered in the study. The strong values in the Indonesian culture strengthen the hypothesis that the contract cheating phenomenon among Indonesian university students is highly influenced by these values, and the very values, which are strongly embedded in their personalities by society, become one of the main drivers for them to engage in academic dishonesty in general. It is assumed that there are additional factors to be further identified and analyzed in this study.

Cognitive Development Theory

As Piaget proposed, there are important mental processes that happen as individuals learn about the environment surrounding them (Piaget, 1952), the same applies to the phenomenon of contract cheating. Children construct their own understanding of the world through experiences they obtain while interacting with the environment around them. This can be done through connecting with their peers, the power figures in charge of them, or simply observing other people that are available for them to learn from. This also implies that the process of persuasion taking place in the phenomenon did not start simply because the student wants to cheat; it is implied that there is an underlying cause of that action that they gained from a mental process happening during their childhood after observing such behavior from their surroundings.

In this theory, a child goes through four stages during their growth, which are the (1) Sensorimotor Intelligence, happening from birth to 2 years of age, (2) Pre-operational Thinking, undergone at ages 2 to 7, (3) Concrete Operational Thinking, from age 7 to 11, and (4) Formal Operational Thinking, happening after age 11. The most relevant stages to the contract cheating phenomenon are the concrete and formal operational stages, in which children are already at the age of seven where formal education starts.

Hofstede's Six Cultural Dimension

Another lens to look at the presented problem is a cultural lens that Geert Hofstede formulated in 1980. To understand cultural differences, Geert Hofstede categorized culture into six main dimensions. The understanding gained from the research results will explore academic dishonesty practices by specifically examining the power distance dimension and the individualism-collectivism dimensions.

The Power Distance dimension, which talks about how important hierarchy is for a society, is defined by Hofstede and Bond (1984) as "the extent to which the less powerful members of institutions and organizations accept that power is distributed unequally". This dimension emphasizes dependency on hierarchy and right inequality between power holders and non-power holders. In Indonesian culture, authority and hierarchy are deeply ingrained within society. People are expected to regard their superiors with respect and not question because it would be considered rude and unmannerly.

As the polar opposite of individualism, collectivism has its roots in sociology, among which was Ferdinand Tönnies who conceptualized the renowned notions of *gemeinschaft* and *gesellschaft*. Defined by Hui (1988), collectivism consists of a collection of feelings, beliefs, behavioral intentions, and behaviors related to solidarity and concern for others. In daily life,

it can be seen through how much people consider whether their decisions and/or actions would impact others, how much they are willing to share resources, how susceptible they are to social influence, how much they are concerned with how others see them, how much they value interdependence, and how much they feel involved in others' lives (Hui & Triandis, 1986).

From the country's own ideology, Pancasila, Indonesian society has been taught about the concepts of collectivism and altruism. Together, the five moral pillars of the country encourage closeness, selflessness, and willingness to help others. This teaching is then realized and referred to as "gotong royong" in local communities, which is a practice of building collective effort to achieve a specific goal. Its importance is instilled by participating in activities in the surrounding environment, which is related to the smallest organizational unit closest to and observable by children from even before school-age, namely the nuclear family. Nations with a strong collectivism value tend to encourage members of society to perceive themselves as a small part of a bigger community, and they are taught to be loyal to their communities because these communities protect them (Hui, 1988). Members of the community share a "salient sense of we-ness" which reflects high levels of cohesivity to the point that they feel what they do (Hui, 1988). In Indonesia, this value is visible in attitudes of the society that places in-groups like family and peer groups as of high importance (Hofstede Insights, 2024).

Altruism, as the last concept incorporated in the study, is also an essential value in the Indonesian culture. Despite having different definition by subfield, we generally view altruism as "a motivational state with the ultimate goal of increasing another's welfare" (Batson & Shaw, 1991). It also relates to high levels of selflessness in people, where they would be more willing to help others in times of need. Together with collectivism, these two values contribute to shaping the image of Indonesian society in the eyes of the world, who is often perceived as hospitable and helpful.

Methodology

This study applies phenomenology as a qualitative-descriptive approach to understand the contract cheating phenomenon and provide a comprehensive description.

Literature review enables exploration of Indonesia's cultural aspects and values, subsequently helping identify gaps and collect findings that may have been overlooked before in research that do not apply cultural viewpoints in its analyses. In-depth interviews were conducted with three key informants who are young adults selected because of their hands-on experience as ghostwriters involved in contract cheating with and without financial benefits during their time in university and after completing their undergraduate education. All informants willingly gave consent for their interview results to be used as data in this study. The identities of the three informants are not disclosed to maintain privacy and confidentiality.

Findings and Analysis

Along with the formulation of the six cultural dimensions concept, Hofstede pioneered the analysis and scoring of nations of the world on the dimensions since 1986. The Culture Factor Group has made the data publicly available on a website titled Hofstede Insights, which exhibits results, analysis, and explanations of the six cultural dimensions of various

nations. The figure below displays comparable results for three countries: France, Indonesia, and the United States of America.

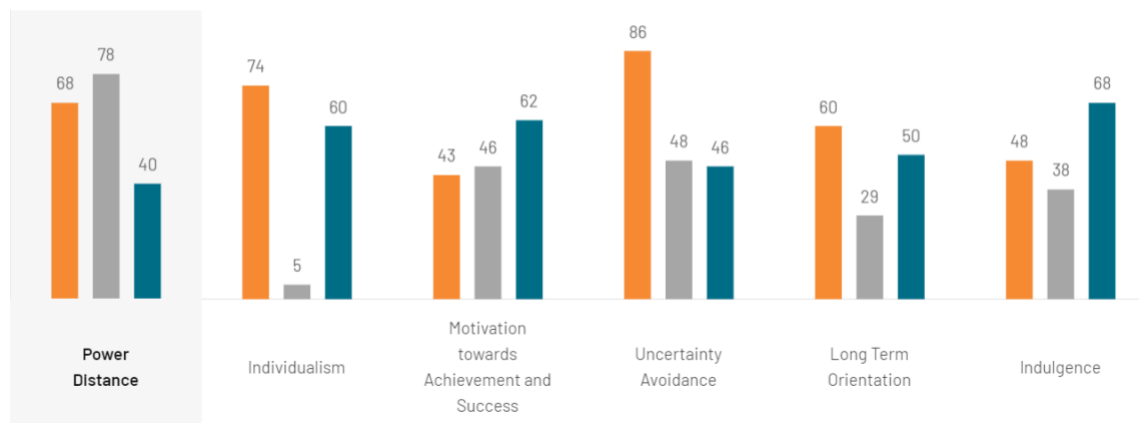


Figure 1: Country Comparison Tool: Hofstede's Six Cultural Dimensions in France (Orange), Indonesia (Gray), and the United States of America (Green) (Hofstede Insights, 2024).

The Power Distance Index (PDI) for Indonesia reaches a score of 78 out of 100 points, which shows that Indonesia depends heavily on hierarchy and that there is a stark contrast between the rights given to power holders compared to those given to non-power holders (Hofstede Insights, 2024). This also means that even in terms of social standing, a person will have an advantage over another person if they are perceived as being in a higher position. Examples of these figures include being a superior at work or a classmate coming from a more reputable social background. Meanwhile, from the same graph, Indonesia only scored 5 out of 100 points in terms of individualism. The score is a strong indication of how the country holds in-groups on high regard, preferring conformity to the norms and ideals set in society and the in-groups to which they belong (Hofstede Insights, 2024).

Two main concepts that the Indonesian society values highly are family loyalty and filial piety, which tie an individual to responsibilities to cater to the needs of their family regardless of one's own condition. These are concepts widely understood and implemented in a nearly forceful way despite parts of the family refusing to adhere to these norms. An individual is expected to practice filial piety, being loyal to their parents and siblings for as long as they live, including taking care of the parents when they grow old. These values are shown in interpersonal interactions, nationwide customs, and norms in daily life. For example, there is a common concept in Indonesia that if two people are getting married, they have to "marry the entire family", implying that responsibilities to maintain relationship with the extended family will also fall upon the partner's shoulders, including providing financial aid and supporting other family members in need. These social expectations contribute towards a student's cognitive development by imposing selflessness and readiness to help, even when the student is actually unwilling to do so.

Aside from the student's personality traits that are dependent on their cultural background, institutional-level causes are not out of the question (McCabe et al., 2012). One factor is the fact that factors that determine students' tendency to cheat include the culture of the classroom under the influence of the professor and the culture of the university (Speight, 2016:105). Like the role of a parent within a family, educators hold control over the atmosphere through rules and regulations in a classroom setting within a university. The tendency to engage in academic dishonesty can arise from the levels of authority

implementation abilities of the professor; on one end of the spectrum, the implementation of an educator's authority in the form of excessive restriction and discipline can cause students to resort to doing everything possible to excel academically and satisfy the educator according to the high scoring standards applied in the class.

Meanwhile, on the other side of the spectrum, negligence and too much freedom given by the educator are also a potential trigger. A laissez-faire leadership style implemented in a classroom provides a base for students to think that they will get what they want in class, leading them to think that the course and attendance in class are but a formality (İhtiyaroğlu, 2019). Further supported by the passive and insensitive attitude of the educator, students' motivation to truly learn something in class plummets and thus rendering them prone to engage in academic dishonesty.

Either learning setting enables a situation where students learn to arrange systematical and well-coordinated efforts to cheat instead of putting honest efforts to improve academically. A basic example of the practice happening inside a classroom is when students share answers during an examination. This behavior is learned since children first enrolled in grade schools, making it impactful on the development of their moral and ethical foundations. This behavior is also nurtured by the examples students have been able to observe from authority figures, who sometimes provide unethical examples, such as overlooking students who copy each other's answers, or even engaging first-hand in academic dishonesty practices in various ways. The role models partaking in this process, such as teachers, principals, and school counselors all have their own leadership styles and can choose to apply a stricter or looser approach in disciplinary actions. Both the strict discipline or negligence done by these authority figures can nurture the growth of the perception that people are permitted to do so without significant consequences given by society (Speight, 2016), because it is seen as a selfless act of aid and guidance towards one another. It is assumed that these practices thrive because there is a lack of punishment from the authority figures in charge. Students then perceive that this behavior is acceptable, aside from them gaining academic advantage along the way.

When students start mimicking academic dishonesty practices at grade school level, a student who engages in contract cheating tends to only see as far as themselves being of help to other students, but it changes as they realize that it is also a way to obtain social benefits. Students find that after partaking in acts of academic dishonesty and providing help to others, they gain more favor and positive reception by their peers, and they feel like they rise up to a position within the social circle where they can befriend others more easily. This peer acceptance reinforces the belief that academic dishonesty behaviors are permitted, as long as authority figures are kept in the dark about it.

The inconsistency between the ideal situation and the reality around them creates conflicting double standards in a student, where they can apply one standard that is more socially accepted for a specific situation but measure the same situation with a different standard when their involvement in it is required. In terms of academic cheating, the two standards usually consist of one that follows the social norms and ethics and one that brings advantage to themselves. The usage of the standards differs based on whether the situations involve fulfilling their interest or simply restating ideal perceptions towards the same situation that happens generally. The two roles in a contract cheating transaction manifest these standards differently; students have pressing interests to fulfill their roles in society, and therefore apply double standards that benefit them more. However, they regard the overall practice as

reprehensible behavior. On the other side, ghostwriters adhere to a stronger moral compass when it comes to implementing the double standards unto themselves. Despite engaging in contract cheating for other people, they are able to apply the ethically correct standard unto themselves because they feel that it is the right thing to do.

Repetitive exposure of academic dishonesty from the environment at the concrete and formal operational stages of cognitive development theory serves as a nutrition for double standards in a student, which will soon be crucial in their higher educational level, where some students finally came upon the realization that ghostwriting activities can bring more than mere social benefits. When students develop enough financial awareness, their motivation shifts from simply gaining social benefits menjadi lucrative benefits. From the student's side as an initiator with responsibilities to maintain above-average academic records, they feel that spending time completing these assignments is a less advantageous option compared to spending time doing an activity that is more financially, socially, or emotionally rewarding. In implementing the double standard, students generally choose to apply a stricter standard towards other people's academic cheating behavior in general yet favor the more lenient standard towards themselves for the sake of fulfilling their interest.

Meanwhile, the rewards can be different from the ghostwriter's side depending on their underlying motivation. A part of the ghostwriter community is only willing to offer their service for financial benefits, but there are also some who will volunteer to help regardless of whether the drive behind their service offer is genuine or forced altruism.

Compared to the students, ghostwriters have double standards that, on one side, is stricter towards themselves, but more lenient towards other's academic dishonesty behaviors on the other side. Despite the ghostwriters having a morally and ethically just view towards academic dishonesty and contract cheating specifically, they still engage in it because the drive to do it is stronger compared to their concern of the looming ethical consequences. In practice, the actions done as the application of the double standards varies according to what the ghostwriter deems suitable with the student's interest. These actions range from simply giving pointers on what to do, to writing complete sections in the said assignment verbatim.

Although the existence of double standards fosters inequality and unfairness in an academic context, this shows that both students and ghostwriters still possess a certain level of academic integrity, albeit partial and biased according to their respective standpoints and interests. Their acknowledgement of their obligation to adhere to academic integrity values is observable from their understanding of moral and ethical standpoints of what they do and how they are fully aware of the existing social standards. They still have full understanding that their participation in contract cheating is something that is ethically wrong, yet due to their desire to fulfil their conflicting interests, they will still engage in contract cheating activities and reap benefits from them.

Consequently, many students take advantage of the situation because there are societal expectations to be fulfilled to uphold the cultural values. One has to always be helpful in every situation to be labeled as a good person. The implementation of these two values goes wrong because they are used to taking advantage and putting pressure on other people to do them a "favor" despite not aligning with ethics and social norms. Like fuel to fire, both values backfire and actually worsen the phenomenon of academic dishonesty existing in society.

Indications of this practice are also found at higher levels of education. However, the differences in interest that motivate students to engage in contract cheating at each level make the factors driving this practice across levels of education cannot be generalized. For undergraduate students, the two underlying reasons found by all three informant ghostwriters are unwillingness and low self-confidence to do assignments. Students whom they helped have a profile of full-time students who were not employed during their studies, so they actually had enough time and resources to complete their assignments on their own. However, they regarded themselves as unable to do these assignments alone as a result of unwillingness, and so asked for the ghostwriters to “help” them, eventually dumping the workload unto the ghostwriters and contributing little to the tasks that were supposed to be their responsibility.

At master and doctoral levels, the practice does not necessarily die down. Meanwhile, at These students have a set of motivations and drives that differ greatly from their undergraduate counterpart. A big part of the graduate students community comprises of people in the rise of their career with an established status. Some, but not all, students with an ongoing career and a hierarchical superiority in their workplace tend to strategize to use their authority to take advantage of available resources and manpower, which results in ‘delegating’ their assignments to subordinates they deem capable. It is where power distance, collectivism, and forced altruism affect ghostwriters into complying to ‘help’ their superiors. This practice is normalized in workplaces, and subordinates might even earn advantages such as the superiors’ willingness to overlook missed deadlines or petty mistakes that others are reprimanded for. Meanwhile, refusal might be perceived as an act of disobedience with possible consequences like receiving unfair treatment from superiors or ostracism from peers.

Based on the discussion, we can outline the flow of the contract cheating process between a student and a ghostwriter. The findings and the process of contract cheating are summarized in the model below.

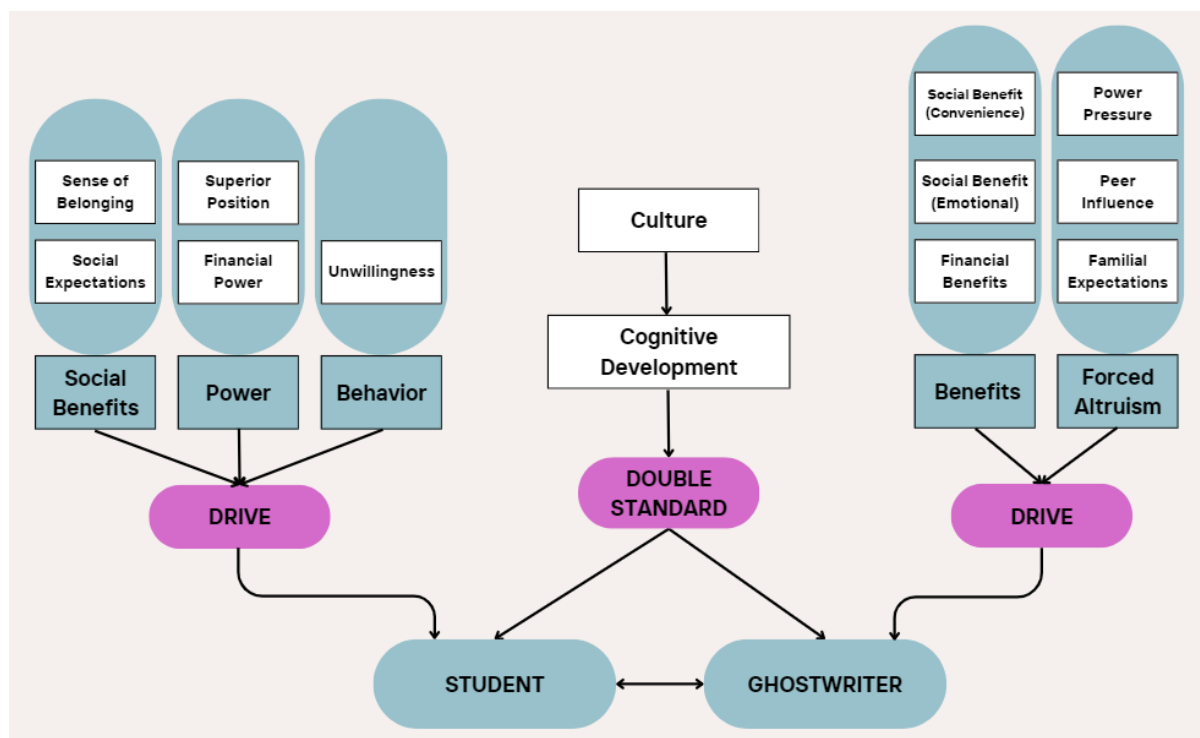


Figure 2: Contract Cheating Process Model.

At the center of the model are the student and the ghostwriter, who are both affected by the double standards and their respective drives. The double standards part consists of three elements: culture, in this case “Indonesian”, plays a big part in affecting the cognitive development of an individual, which in turn sets up the double standards that affect both roles. Both the student and the ghostwriter involved have motivations that drive them to perform contract cheating, each with different influential factors. A student who initiates contract cheating is driven by the prospects of awaiting social benefits, which consist of fulfilled social expectations and a sense of belonging. A certain degree of power play might also be present, which happens due to them being in a superior position that can directly or indirectly influence the ghostwriter, or because they have the financial power and means to do so. And the single and most personal of all the factors is unwillingness to do assignments they must complete on their own, which makes up the behavior factor.

The student and the ghostwriter interact with each other while being affected and driven by all these background factors. During interaction, the student urges the ghostwriter to ‘help’ them by playing on their altruistic value, imposes power over the ghostwriter, and may offer benefits for the ghostwriter. Meanwhile, other than to obtain benefits, the ghostwriter feels the pressure to comply because either they sense the power pressure as a subordinate, they receive peer pressure from the fellow student, or expectations to manifest family loyalty and filial piety. Not all of these factors have to be present at the same time; it could be only one or two depending on the case and the relationship between the two individuals. Nevertheless, these factors play their respective parts in influencing the decision-making process of the ghostwriter until they finally comply with the demands of the student, and the contract cheating practice is set in motion.

Conclusion

The essence of academic dishonesty, especially contract cheating, are all done by students for the sake of putting up a façade of high academic and social performance. Students’ motivations of contract cheating revolve around shaping an image of a stellar pupil in the eyes of their superiors in the academic world. From the ghostwriter’s point of view, social performance is more essential to uphold, particularly due to the existence of direct and indirect pressure from the students and their relatives. The collectivism values, including filial piety, family loyalty, as well as altruism and selflessness, are more prominent in influencing the ghostwriter into helping the student without regard to their willingness to help.

Inside the student’s and the ghostwriter’s life, they both carry the load to perform their best as a functional part of the society according to their respective role as a child, a sibling, and a scholar. To fulfil their roles, they deliberately engage in academic dishonesty acts for the sake of attaining the ideal image, albeit disobeying the ethics and moral standard that society adheres to in the process. Like a coin with its two sides, students cover one side to show the better-looking side, despite knowing full well that the dirty side does not cease to exist. Consciously, they are aware of it being a serious breach of academic integrity, but they push through while bearing the burden of societal and cultural demands on their shoulder.

Limitations of the research lie in the fact that the three key informants are not part of the systematically arranged professional network of ghostwriters such as those marketed publicly. The research focus also limits perspective to how culture, in this case Indonesian, impacts the process of academic dishonesty. It takes the perspective of ghostwriters who

engage in contract cheating as voluntary participants without the intention of gaining financial incentives and does not discuss much about the viewpoint of ghostwriters offering services for financial benefits.

Decision makers at the institutional or governmental level will have to review the existing system and applied methods used to encourage student's academic and character development, and reconsider more effective and practical ways to tackle this issue to eradicate the double standards in the society.

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Contact email: christa.geraldine@uph.edu

A Theoretical Perspective on Videogame Storytelling and Teacher, Parents, and Students Perception

Anila Plaku, Aleksander Moisiu, Albania
Kristos Bratja, Aleksander Moisiu, Albania

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Abstract

The purpose of this study is to cross-analyze the perception of different stakeholders (teachers, parents and students) on storytelling through the videogame medium while using a general theoretical perspective on videogame storytelling. The research question would be as follows; “What are the divergences and convergences in the perceptions of teachers, parents, and students regarding the integration of storytelling in videogames for educational purposes?” The study population is composed of educators, parents and students. This study uses mixed methods as research instruments; surveys and unstructured interviews were used, which were designed based on Storytelling in videogames literature. From the findings of the research, it is noted that the concept of education through the medium of videogame storytelling is divisive among all three target groups, particularly between parents and teachers as opposed to students. Both parents and teachers express concerns about the typology of content in videogame storytelling, especially regarding violence or mature themes. While there is an overall divergence in perceptions between students and the group of teachers and parents regarding distraction or time-wasting, from the latter group's perspective, students perceive storytelling through the medium of videogames as beneficial for concentration, engagement, and critical thinking.

Keywords: Videogames, Storytelling, Parents, Students, Teachers

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Introduction and Literature Review

“The art of storytelling is as old as humanity itself, for in every tale lies a lesson waiting to be learned” (Aristotle). Throughout human history, storytelling has served as the primary and most common means of teaching and learning. Through myths, legends, and tales, cultures worldwide conveyed lessons with the dual purpose of helping to make sense of complex issues and entertaining generations at the same time. Both storytelling and education experienced a significant milestone in the 15th century with the invention of the printing press by Johannes Gutenberg. This revolution democratized access to knowledge and education by making books like Euclid's “Elements” widely available, fundamentally changing how information was disseminated and learned.

In the modern era, digital storytelling and video games represent the latest evolution in the marriage of storytelling and education. For example, “Minecraft Education Edition” is used in classrooms worldwide to teach subjects such as history, mathematics, and science through interactive and engaging lessons. Similarly, “Civilization VI” allows students to learn about history, geography, and the development of civilizations by managing resources and making strategic decisions in a game setting.

Alaa Sadik emphasizes that students are nowadays no longer passive consumers but active constructors of knowledge. This is enhanced by the significance of meaningful activities facilitated by the use of technology, pushing students to construct knowledge in novel ways previously inaccessible (Sadik, 2008, p. 487). This perspective is also shared by Truong-White and McLean, asserting that meaningful technology integration enhances social learning contexts and empowers students to create new knowledge, solve problems, and employ critical thinking (Truong-White & McLean, 2015, p. 5). A similar approach to the topic is noted by Strotmmen and Lincoln, who underscore that the importance of the pedagogical approach in leveraging technology for educational purposes lies not in the technology itself, but in how it is employed in learning environments (Strotmmen & Lincoln, 1992, as cited in Sadik, 2008, pp. 487-488).

The Digital Storytelling Association describes digital storytelling as a contemporary manifestation of the ancient art form, highlighting the medium's ability to adapt across different formats. Recently, this transition has created a bridge between storytelling and video games—a bridge not yet fully built between the two mediums and the process of learning. A similar picture is highlighted by both Sadik (2008) and Truong-White and McLean (2015), who assert that video games serve as effective tools for narrative learning and literacy enhancement, providing students with opportunities to engage with structures, narrative, character development, empathy development, emotional bonding, and other practical narrative techniques (Sadik, 2008, p. 490; Truong-White & McLean, 2015, p. 12).

Furthermore, the educational strength of video games goes beyond the macro notion of storytelling. They further cultivate critical thinking and problem-solving by encouraging the audience to explore mathematical puzzles and social and cultural dilemmas, while also offering an engaging and non-addictive pedagogical approach when done right. This emphasizes interactive learning, active participation, motivation, and especially enjoyment. Enjoyment is really a key word when it comes to video games as a learning medium. In the 1990s, video games were commonly referred to as “edutainment,” thus establishing a bridge between education and entertainment.

The current landscape of scholarly research on the topic is very rich and becoming increasingly international. Western countries have participated in the cause since the 1980s, beginning with Thomas Malone's examination of how video game design elements could engage students and enhance learning (Malone, 1981). Asian countries, especially Japan and South Korea, have long been integral to the discussion, focusing on cognitive and social benefits such as spatial reasoning and social collaboration (Matsuda & Hiraki, 2006). In India's case, for example, the idea of video game usage for educational purposes is more recent, focusing on bridging educational gaps in developing areas.

Despite the promising perspective, there is also pushback towards the topic. Lee and Peng (2016) highlighted the potential for video games to decrease concentration, arguing that the overstimulation of the brain during extended gaming sessions can make it harder for students to focus on less stimulating educational content (Lee & Peng, 2016, pp. 112-125). Smith and Johnson (2017) explored the risk of over-reliance on digital media, finding that excessive use of video games might lead to a disconnection from traditional learning methods, potentially diminishing the effectiveness of physical education (Smith & Johnson, 2017, pp. 78-91; Anderson et al., 2019, pp. 245-260). Franks et al. (2019) discussed the physical and cognitive implications of prolonged screen exposure, noting how extended screen time can lead to eye strain and general fatigue, negatively impacting cognitive and physical development (Franks et al., 2019, pp. 213-225). Additionally, Papp et al. (2020) examined the addictive nature of video games, especially those with gambling-like design elements, which can create compulsive behaviors and interfere with students' academic effectiveness (Papp et al., 2020, pp. 173-185).

To balance the benefits of interactive learning through video games while mitigating the negative effects of screen fatigue, Franks et al. (2019) recommend several strategies. These include taking regular breaks during gaming sessions, practicing ergonomic habits to reduce physical strain, and integrating a variety of activities that do not involve screen use. The importance of teaching students how to manage their screen time responsibly is also emphasized. By encouraging students to balance their screen time with other non-digital activities, educators can help minimize fatigue while still benefiting from the interactive and engaging nature of video games (Franks et al., 2019, pp. 226-230). Papp et al. (2020) suggest that the structured use of video games can prevent addiction and enhance learning outcomes. When video games are integrated into educational settings in a controlled manner, they can facilitate learning and improve academic performance without leading to addictive behaviors (Papp et al., 2020, pp. 186-192). Furthermore, augmented learning research by Smith and Johnson (2017) supports the idea that well-designed educational games can provide significant learning benefits. These games, if implemented correctly, can enhance focus, engagement, and cognitive skills without fostering addiction. The key is to balance the interactive elements of games with educational content, ensuring that the primary goal is learning rather than prolonged engagement for its own sake (Smith & Johnson, 2017, pp. 78-91).

From an international point of view, education through video games is in the implementation stage throughout developed countries. In South Korea, the Digital Textbook project aims to replace traditional textbooks with digital versions that include interactive and game-based content. One example would be Anyang Middle School, which has incorporated digital textbooks into their curriculum. Similarly, in Japan, at Tokyo Metropolitan Kokusai High School, gamified learning is used to teach English and other foreign languages to their students via interactive storytelling and problem-solving. A similar application is noticed in

King's Cross Academy in London and Bournville School in Birmingham, which have implemented a GlassLab that helps students improve their problem-solving and critical thinking through interactive and immersive video game-based activities. Scandinavian countries are well known for their avant-garde educational system, which places a high value on interactive and student-centered learning. In Finland, the University of Helsinki's Teacher Training School uses teaching methods that include the popular game Minecraft to teach history, geography, and coding.

In the case of Albania, video games as a learning method are in their infant stages. Research seems to be minimal while the implementation stage is dependent on the individual desire of the teacher rather than institutional. Cela (2020) in the Journal of Educational Innovation emphasizes the challenges that video game-based learning would face in Albania. Mrs. Cela points out that video games are predominantly viewed as forms of entertainment and harmful ones for that matter, which contribute to addiction, distraction, and violence. Secondly, the challenge of infrastructural barriers and a traditional curriculum that wouldn't accommodate the implementation of video game-based learning in the country of Albania. While acknowledging these setbacks, Cela (2020), Kërcaj (2019), and Berisha (2021) have acknowledged the benefits of adapting video game-based learning. Benefits such as engagement, motivation, critical thinking, collaboration, communication, enhanced cognitive skills, and emotional empathy development (Cela, 2020; Kërcaj, 2019; Berisha, 2021).

The added value of this paper is contributed by undertaking a cross-analysis of the stakeholders' perspective on video game usage for educational purposes. By using a mixed methods approach, combining surveys and open-ended questionnaires, it intends to identify and understand the divergences and convergences.

Methodology

Research Design: This study employs a mixed-methods approach, combining both quantitative and qualitative techniques to provide a comprehensive understanding of stakeholders' perceptions regarding the use of storytelling in videogames for educational purposes. The study encompasses three key stakeholder groups: teachers, parents, and students, ensuring a diverse representation of perspectives.

Participation in the study: The study population consists of 379 teachers, 738 parents, and 1225 students, totaling 2342 participants. This broad sample size enhances the reliability and generalizability of the findings, capturing a wide range of perspectives from each stakeholder group.

Data Collection

1. **Quantitative Data:** A structured questionnaire was designed and distributed to the participants electronically according google form. This questionnaire uses a five-point Likert scale.

The questionnaire is divided into five main sections. The first, "*Demographic section*", encompasses demographic questions, capturing essential background information from parents such as gender, age, zone, and place of residence, as well as educational attainment. The second section, "*Technology Based Learning*", delves into technology-based questions, inquiring about the frequency and challenges of using the internet, computers, and cell

phones for educational purposes. These questions aim to provide an overview of the usage of information technology in schools, its benefits and challenges. The third section, “*Movie and Animated Movies based learning*”, focuses on learning through movies and animated films, assessing respondents' interest in and perceived effectiveness of these media as educational tools. This segment highlights a non-interactive yet technological form of education. The fourth section, “*Simulation games from real life based learning*”, examines simulation games, also known as serious games, which emulate real-life scenarios such as business management or emergency assistance. These questions capture interest in and the potential educational benefits of non-technological but interactive learning methods. Finally, the fifth section, “*Video Game based learning*”, explores video game-based learning, which combines technological and interactive elements. This section evaluates interest in video games as teaching tools and the associated challenges and benefits. An open-ended question at the end invites stakeholders—parents, teachers, and students—to share their opinions on interactive based learning, enriching the quantitative data with qualitative insights.

Data Analysis

1. **Quantitative Analysis:** Statistical techniques, including descriptive statistics (such as mean, median, and standard deviation) are employed to analyze the survey data. These analyses facilitate the examination of overarching trends, differences, and similarities in stakeholders' perceptions across demographic variables and stakeholder groups.
2. **Qualitative Analysis:** Thematic analysis is utilized to analyze the qualitative data gathered from interviews. This method involves systematically identifying, organizing, and interpreting recurring themes, patterns, and nuances present in the qualitative responses. By examining emergent insights and divergences/convergences in perceptions, thematic analysis provides a deeper understanding of the underlying factors shaping stakeholders' attitudes towards storytelling in educational videogames.

Integration of Findings: The quantitative and qualitative findings are integrated to provide a holistic understanding of stakeholders' perceptions. Triangulation of data sources enhances the credibility and validity of the study, allowing for a more robust interpretation of results and the formulation of comprehensive recommendations for practice and future research in the field of educational videogame design and implementation.

Findings

Comparative Overview of the Stakeholders Perceptions

Table 1. Comparative Table based on Stakeholder Interest

	Extremely Interested	Very Interested	Somewhat Interested	Little Interested	Not at all Interested
Students	34%	27%	27%	8%	5%
Teachers	21%	45%	25%	7%	2%
Parents	14%	35%	35%	11%	6%

Table 2. Video game learning obstacles

Obstacles and Challenges	Student Distraction	Worry about Screen Time	Addiction Possibility	Monitoring Difficulty	Lack of Adaptation to the Curriculum.	Negative Video Game Bias	Resistance to Change and Preservation of Traditional Teaching
Mean Teachers	3.01	3.25	3.33	2.99	3.09	2.89	3.05
Mean Students	2.53	2.51	2.50	2.47	2.47	2.42	2.50
Mean Parents	2.95	3.24	3.24	3.09	3.07	2.91	3.07

Table 3. Video game learning positive aspects

Positive Aspects	Concentration and Engagement Improvement	Critical thinking about characters and stories presented in video games	Emotional connection with the characters and their events.	Mathematical Intelligence Enhancement by solving puzzles.	National Values Promotion	International Culture Curiosity Enhancement	Learning Responsible Technology Usage
Mean Teachers	3.70	3.65	3.70	3.91	3.90	3.92	3.85
Mean Students	3.41	3.37	3.30	3.44	3.41	3.48	3.45
Mean Parents	3.26	3.22	3.24	3.56	3.48	3.56	3.41

The stakeholders' perceptions are divided into three categories: Negative, Positive, and Neutral. Consequently, the negative perceptions are divided into: Justified Concerns, Holding to old traditions and fear of innovation and evolution, and Bias/Disinformation. Below, the full table of the negative perceptions of the stakeholders is shown:

Table 4. The negative perceptions of the stakeholders

Justified Concerns	<ul style="list-style-type: none"> ○ Decreased concentration ○ Disconnection from the learning environment ○ Screen fatigue ○ Screen addiction
Holding to old traditions and fear of innovation and evolution	<ul style="list-style-type: none"> ○ Usage of technology in schools should be as minimal as possible. ○ Kids should not be learning with computers; the teaching should be done through the blackboard and chalk as the go-to method. ○ Practical learning is done through the teacher and traditional learning, not via computers. ○ The issue with modern teaching is not the methods but the curriculum.
Bias and Misinformation	<ul style="list-style-type: none"> ○ Digitalization limits students' analytical skills and makes them lazy ○ Technology equals aggressiveness, distractions and no social life. ○ Technology limits the student's imagination, analytical skills and makes them lazy

Discussion

Appeal on Video Games as a Teaching Method

As mentioned above, based on the comparative table of stakeholder interest, it shows that the students tend to be the group most excited about the idea of video games as an educational tool. This is illustrated by the disparity in “extremely interested” responses between the stakeholders: 34% from the students, 21% from the teachers, and merely 14% from the parents. Teachers are overall the most intrigued by the matter; this is reflected in them showing the highest combination of “extremely interested” and “very interested” responses at 66%, compared to the students' 61% and the parents' 49%. In addition, the teachers show the lowest response percentages in all three categories: “somewhat interested” (25%), “little interested” (7%), and “not at all interested” (2%). The opposite is true for the parents, who lead in response percentages: 35% for “somewhat interested,” 11% for “little interested,” and 6% for “not at all interested”.

Obstacles and Challenges

As per the “obstacles and challenges” table above, teachers seem the most concerned, on average, when it comes to the challenges and obstacles. More specifically, teachers tend to be the most concerned about “worry about screen time” (mean = 3.25) and “addiction possibility” (mean = 3.33). Parents share similar concerns with slightly different frequencies. Similarly, they seem most worried about screen time (mean = 3.24) and “addiction possibility” (mean = 3.24). Also, similar to the teachers (mean = 2.89), the parents are least worried about “negative video game bias” (mean = 2.91). On the opposite side of the spectrum, students tend to perceive fewer obstacles, with the lowest mean scores across all categories. Their lowest score is for “negative video game bias” (mean = 2.42).

Positive Perspective

On the other side of the spectrum, the stakeholders seem to have higher scores, on average, when it comes to the positive aspects that might come from adopting video game-based learning. Teachers, while being the most aware of the challenges involved, are also the most excited about the benefits. They particularly value the potential for video games to enhance international culture curiosity (mean = 3.92) and mathematical skills (mean = 3.91). It seems that the lowest score was given to literature and storytelling-related benefits such as “critical thinking about characters and stories presented in video games” (mean = 3.65). Similarly, “emotional connection with the characters and their events” is among the lowest scores from the teachers (mean = 3.7). Parents seem to be the most cautious regarding the positive aspects that video game-based learning offers, while students tend to be more neutral. Both groups recognize the benefits of video games in promoting international culture curiosity and enhancing mathematical intelligence. While both parents and students see substantial potential for video games contributing positively to education, they do not see video games as a storytelling medium in education as the main benefit. Parents gave the lowest average score (mean = 3.22) to “critical thinking about characters and stories presented in video games”.

Overall, teachers show the most positive perceptions, while recognizing both the benefits and challenges on average. Parents share many of these views but remain cautious about potential negative impacts. Students, while acknowledging some educational benefits, do not have

ground-breaking average perceptions towards the benefits and are the least concerned about the potential drawbacks.

Open Questionnaire Analysis

Building upon the quantitative analysis previously conducted, which focuses on average, it is essential to understand the qualitative aspect of the stakeholders' perceptions. Based on the open questionnaire responses, it is revealed that the students are the least engaged group, indicating a possible, and relatively understandable based on the age group, lack of strong opinions or a reluctance to voice their thoughts extensively. In contrast, teachers exhibit the highest level of engagement, suggesting they are the most vocal and at the same time most concerned about the current educational status quo in Albania. In the context of the parents, while less engaged than teachers, they still show significantly higher participation than students, reflecting their noticeable interest in their children's future, contributing to a balanced view of positive and negative perceptions.

Positive perceptions are highlighted via three main groups: the need for innovation and preparation of the students for the future. This is reflected by both the teachers and parents, who recognize the importance of integrating technology to prepare students for contemporary times and the future. The second positive perception is the shaking up of the traditional status quo, and thirdly, the practical benefits of video games as a means of learning. Thus, the stakeholders acknowledge the diverse educational benefits that video games as a means of education can offer.

Of course, the parents and teachers who show an optimistic approach to the matter in many cases balance it with cautious optimism which in this paper is grouped as "neutral perceptions". The neutral perceptions of the stakeholders are divided into two segments: cautious integration of technology in a traditional educational setting like that of Albania and an implementation of mixed methods to merge both the new and the old educational approaches. In synthesis, many parents and teachers advocate for a balanced approach that incorporates technology while holding on to the traditional safety net, suggesting a hybrid teaching model that combines traditional methods with new technological tools.

Moving back to the justified concerns of the stakeholders, there is a need to analyze them further. Teachers and parents express their concerns regarding video games' potential to affect students' concentration. Lee and Peng (2015) mention that extended gaming sessions can overstimulate the brain, thus making it harder for students to focus on less stimulating educational content (Lee & Peng, 2016, pp. 112-125). On the other hand, Prensky and Gardner (2018) argue that it all depends on the design of the game; a well-designed educational game can enhance focus and concentration when used in a balanced manner. They suggest that these games can aid in the development of cognitive skills through augmented learning (Prensky & Gardner, 2018, pp. 45-58).

The second concern revolves around the disconnection from traditional learning environments, which can be seen as an extended problem of concentration, as mentioned above. Smith and Johnson (2017) explored the issue of over-reliance on digital tools potentially diminishing the effectiveness of traditional education methods specifically (Smith & Johnson, 2017, pp. 78-91). This is also supported by Anderson et al. (2019), who emphasize that excessive usage of digital media can lead to disengagement from traditional learning, negatively impacting social interactions and overall learning experiences (Anderson

et al., 2019, pp. 245-260). However, Williams and Brown (2020) take a more optimistic view, advocating for less excessiveness and a more balanced approach, suggesting that integrating digital and non-digital methods can mitigate these risks while promoting healthy screen use (Williams & Brown, 2020, pp. 112-125).

Screen fatigue is a universally acknowledged concern, especially with youth spending so much of their leisure time in front of multiple screens. This is such a hot topic that IT companies in the recent past have tried to innovate screen technology specifically for educational purposes. Franks et al. (2019) discuss the physical and cognitive implications of prolonged screen exposure, such as eye strain and general fatigue, which can hinder students' academic performances (Franks et al., 2019, pp. 213-225). To balance the benefits of interactive learning through video games while mitigating screen fatigue, Franks et al. (2019) recommend regular breaks, ergonomic practices, and integrating non-digital activities to reduce physical strain and fatigue (Franks et al., 2019, pp. 226-230).

Lastly, screen addiction is a significant concern for both parents and teachers. The study by Papp et al. (2020) acknowledges that video games can be addictive, particularly those with gambling-like elements such as loot boxes, which can create compulsive behaviors (Papp et al., 2020, pp. 173-185). As mentioned above when discussing distraction and lack of concentration as the first concern, it vastly depends on the ethical responsibility of game designers (Brown, 2018, pp. 112-118). Both Brown and Papp et al. argue that structured use of video games can prevent addiction while enhancing learning outcomes. When integrated into educational settings in a controlled manner, video games can facilitate learning and improve academic performance. Smith and Johnson (2017) also support the idea that well-designed educational games can enhance focus, engagement, and cognitive skills without promoting addiction, provided they are implemented with a balanced focus on learning (Smith & Johnson, 2017, pp. 78-91).

Conclusions

This study reveals significant divergences also convergences in the perceptions of their stakeholders regarding the use of video games for educational purposes. Students seem excited and highly supportive of video game-based learning, with 61% of them being either "extremely interested" or "very interested". This enthusiasm is portrayed throughout all demographics: gender, age, place of residence, and even combinations of them. However, students show the least engagement in open questionnaires when it comes to the topic.

In contrast, teachers demonstrate the highest engagement in open questionnaires, highlighting their deep interest and investment in video game-based learning as an alternative educational method. Similar to the students, 66% of the teachers represent a combination of "extremely interested" and "very interested" answers. Similarly, the interest is reflected throughout all demographics. In addition, the unique teachers' point of view comes from the positive aspects and challenges that video game-based learning brings. With the teachers having the highest average means in both categories, they know the vast benefits, but they also know that the obstacles would be significant in the case of Albania.

While students and teachers seem to be overall homogeneous, parents have a more divided perspective (49% of the parents are either extremely or very interested in the matter), depending highly on demographics as well. For example, older parents tend to be against video game-based learning. Overall, according to the open questionnaire, parents seem

dissatisfied with the current education. Some parents seem enthusiastic about exploring future-oriented, alternative methods for their children. But, on the other side of the spectrum, a substantial group of parents remain firmly opposed to digitalization of education, citing a multitude of fears and stigmas. Specifically, regarding video game storytelling as an educational method, the lowest scores were given to literature and storytelling-related benefits such as “critical thinking about characters and stories presented in video games” and “emotional connection with the characters and their events” throughout the stakeholders. Thus, they do not value the potential of storytelling in video games nearly as highly as dexterity and kinesthetic learning.

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***Fostering Students' Character in Worst Times Through Human Education:
The Importance of Teacher's Role and Attitude According to Value-Creating Education***

Valentina Dughera, DePaul University, United States

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Abstract

This paper examines the situation in which students are growing in these years impacted by a global pandemic and climate change's effects when conspiracy theories and pessimistic views have arisen even stronger. Students are exposed to them, most of all through social media. This study is questioning, which role as teachers we should cover. What is the perimeter in which teachers can act for cultivating hope and empowerment in students' minds. Considering the priority to teach students how to recognize truth and create value from that, the author suggests how to cultivate this kind of *forma mentis* in class with the purpose of fostering empowered future global citizens. The Author, speaking to educators, underlines the significance of Value-Creating education. The study takes into consideration students from 7th grade and is developed among Curriculum Studies, specifically linked to Ikeda/Soka studies and Value-Creating education. The study contributes to post-humanistic discussion about "what makes us human?" and "what to include in curriculum in order to foster humans?" through the lens of two interdependences between a) Human and social construct and b) Human and technologies. Findings and conclusion can help designing a specific curriculum for teachers' education. This is a conceptual/theoretical study. Methodology: qualitative research based on observation of students' reactions in Author's classes. Primary sources are belonging mostly to the corpus of literature in Ikeda/Soka studies, linked to Curriculum Studies. Some predominant literature in the field of post-humanism is considered. The correlation of the three fields is conducted under the lens of interdisciplinarity.

Keywords: Value-Creating Education, Empowerment, Character Development, Curriculum Studies, Post-humanism, Global Citizenship, Interdependence

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Introduction

Observing the rising of conspiracy theories, a question emerges in relation to young generations since they mold young minds, most of all if accepted and supported by parents or role models. Taking into consideration the role of the teachers in cultivating critical minds, value creating education could cover a significant role as a tool to foster future generations. The recognition of truth, the difference between “critical thinking” and “opposite thinking” are topics to be included in curriculum and the teacher is someone who has the duty to empower students. In this sense, what teachers owe to students?

Accessibility to internet and to mainstream information has caused a sort of cognitive omnipotence according to which people have started to think that everybody can become an expert just reading studies and research. This has led to a strong critic towards scientific literature. In the meanwhile, social media rose giving a larger circulation of ideas and opinions causing a flattening of the level of reliability and authority of sources: studies and opinions risk to seem equal. This is the cloth on which conspiracy theories became more powerful mostly with the spread of the COVID-19 pandemic.

Brought to the extreme, this trend generated the paradoxical situation in which even though everyone can be an expert about everything, there is always a “further” information citizens could not know. This caused a slithering thinking according to which, common people are not in the condition to know, and to have an actual impact in their close environment and in the society. This mindset is spreading even among youth. Often, parents bring this reasoning at home, calling it inappropriately “critical thinking”.

Citing Ikeda’s 2010 Peace Proposal (2010), the study digs into the Nihilism attitude which constitutes the opposite of empowerment. Right in this age where people have, in theory, more accessibility to information, they are paradoxically experimenting a decrease in the feeling of their own power. Which is the role of educators with reference to this phenomenon? Schools are primarily the milieu of the learning process and teachers have the mission to teach students about their infinite potential and impact they can have in their close environment and in the entire society. Without rendering the discussion, a quarrel on different positions, teachers should not fail in providing their students with useful tools to discern truth, learn what “critical thinking” is and how to create meaning from truth, and so, to create value from truth. This implies issues on curriculum studies specifically about what to include in curriculum to foster youth to be able to recognize truth and to educate them to their potential. Moreover, even praxis must be investigated in this perspective.

The study is framed as well in the post-humanism discourse about 2 of the three interdependencies: a) Human and Social Constructs and b) Human and Technologies.

The final suggestion is that value creating education could be a compass to navigate among the creation of meaning and teachings from the truth (creating value). Moreover, creating hope, even in the worst times is the core of education.

In his 2014 Peace Proposal, Ikeda (2014) suggests fostering youth (students) even in intangible things, such as love, courage, and hope. Cultivating solidarity and unity in young people’s heart as a tool to getting involved in social and political issues to manifest their dissensus and participate to the social discuss is vital. This is strongly auspicated by Daisaku

Ikeda and Adolfo Perez Esquivel (2018), Nobel Peace Prize Laureate, in their joint Appeal for Resilience and Hope of 2018.

The paper is intended as a brief analysis on what we, as adults, teachers, educators, and parents, owe to young people to foster them as empowered and fully human.

How Could Curriculum Help in Answering to Our Question?

What do we mean by curriculum studies? There's a slight difference between curriculum studies and curriculum instructions. Curriculum instruction is simply related to what to teach and how to teach it. Curriculum studies is ultimately interdisciplinary. It draws on multiple fields, for example, political science, law, religion, philosophy, literature, anthropology. Moreover, it is strongly linked with the worthwhile question, elaborated by Schubert (2009). What's worth challenging, what's worth becoming, what's worth transforming, what's worth loving, what's worth being. Curriculum studies engage with the hidden curriculum, the taught curriculum, and the untaught curriculum. It primarily draws on schooling, but it focuses also on educative practices happening outside classes, in the community. Even the place outside the school could be the place of curriculum studies. Schwab (1970) explained it through the lens of the four commonplaces of curriculum: subject, student, teachers, milieu (He, Schultz, Schubert, 2015).

In this study, we will take into precise consideration the final 3 commonplaces: student, teacher, and *milieu*. The student is the same person at school and at home, he or she brings everything that they hear, or drink or eat before they enter to school. They bring with them all discussions they had with their parents, and every single word or opinion they heard from them. The teacher is also curriculum. What the teacher is living impacts curriculum. Lastly, the milieu, the traditions, the culture, what's happening in the community, which are the major topic discussed in the community. These all constitute and impact curriculum.

All these topics create a net where discussions around posthumanism and human education and the human interdependencies with nature, social constructs and technology are crucial nodes of complexity. In this study we will only navigate through 2 interdependencies: humans and their own social constructs and humans and technology.

Post-humanism Interdependencies

The Post-humanist turn moves toward the so-called Anthropocene, the age of man. This is the age where the actions of human beings are impacting the planet even at a geological level (Goulah, 2020a; 2019). Humans are actually shaping or reshaping the physical nature of the planet itself, such that it's having an impact on the biosphere and the climate, speeding up the heating of the planet. It cannot be thought without the lens of the interdependence. In fact, we can try to answer to the questions: what makes us humans and how we can become fully humans, starting from the analysis of three interdependences, they are between: a) humans and their own social constructs; b) humans and nature; c) humans and technology. In this study only two of these three will be considered.

- 1) Humans and their own social constructs. Race, feminism, capitalism, gender, justice, these are some of the social constructs we're all living in. How can we look at these intersections and how this can be intended as curriculum? Social constructs are created by humans. How can we teach students and youth in general to get free from them, to realize

a new paradigm? Which is the role of teachers with reference to this interdependence? For example, changing the narrative stepping away from the traditional colonialist version (Wynter & McKittrick, 2015) or interrogating ourselves on who are laws serving? (Snaza, 2019, 2015). Remaining on the narrative importance of reality Taliaferro Baszile (2019) underlined the overrepresentation of man as human, as if human and man are synonymous, urging for a fast change in the representation thanks to the power of the artist who can draw the reality (and the representation) through art. Resonating to the role of the literature and the artist in the post-humanistic era, Ghosh (2016) who stressed the strict link existing between the artist, the literature and the politics, intended as both the voice of establishment and the political engagement of the artist. On the same topic, even Snaza (2019) urged for a reconstruction of the curriculum helped by the re-narration and the re-writing, changing the voice to be allowed. The wish of Ibrahim (2017) to form a pedagogical army of students, is resonating with the title of this study.

- 2) Humans and technology. The topic is clearly linked to this interdependence. Not only all information reaches us through media (internet and social media), but also, they are manipulated without little or no possibility to discover any change realized on them. It is truly inspiring to investigate what makes us human with reference to what is it created by humans which mimics our human actions. What is the limit of the progress of technology? What is our role as educators in teach youth how to interact with fruits of technology? AI has a prominent role in the stage of educational discussion in these days. Chat GPT and others are helping and inviting students to be used. However, AI could also help the monitoring of the school system sustaining educational human rights (Berendt & Littlejohn & Blakemore, 2020). Discourses on Ai are getting larger and more important and a scholarly is developing (Dixon-Romàn & Nichols & Nyame-Mensah, 2020; Williamson & Eynon, 2020).

What Is the Role of Education in the Post-humanistic Era?

Ikeda in 2020 said: “As I consider education in the 21st century, I would like to assert that what is most urgently needed is a paradigm shift from looking at education for society's sakes to building a society that serves the essential needs of education.” (Ikeda, [2000] (2022)). I'm teaching in Italy in middle school (from 7th to 9th grade according to US system) and I work with pre-adolescent and adolescent. In the third year of middle school in Italy, students must choose their high school. Parents are often stressing and underlying that it's important to remain aware of the future of our students, but when they talk about future, they are focusing on their professional future, on the role they will have in the society. When, as adult, we are thinking to their future only on a professional perspective, we are risking forgetting to foster them becoming fully human.

Ikeda (1993) said: “education based on hoping dialogue is far more than the mere transfer of information and knowledge. It enables us to rise above the confines of our parochial perspectives and passions.”. Teachers and educators must avoid falling in the trap, to think that their work consists only in transferring information. The failure or the success of their work, of the process of education, is not only related to how much students are able to replay in somehow or repeat information they provided them with. Teachers cannot forget this open dialogue which is the only and the most efficient tool they must let their students build up their personality, which is probably the most important role of schools and education in general.

As seen above, post-humanism analyzes the real world and what are we living and facing. Moreover, post-humanism is digging to propose which causes generated the society we're living in. That is right in this field of research that a lot of critical studies are emerging that are so precious. (Braidotti, 2017; Dillard & Okapalaoka, 2011; Ferrando, 2013; Goulah, 2019; Haraway, 2016; Ibrahim, 2017; Kim, 2015; King & Wynter, 2005; Lloro-Bidart, 2018; Snaza, 2019; Snaza, 2015; Taliaferro Baszile, 2019; Wynter & McKittrick, 2015).

Ikeda in his perspective made a further step. Starting from this actual analysis and asking what I can do, as a common person, a common citizen, today, to make a change in somehow, in order to create hope. Teachers and educators, have to always be focused on this and I think that in general, all adults, have too. That's not an option. Teachers should be focused on this and always remember it, even when they are teaching something very practical or very philosophical. They are fostering and cultivating future citizens to manifest, express and live with compassion, wisdom, and courage. In somehow living this time is our fortune since we cannot turn our face towards another direction. Teachers should always keep in mind: today, here in my environment, with this person, with these people, how can I become fully human? And how can I foster my students in becoming fully human, building up their own personality?

Critical Thinking or Opposite Thinking? (Nihilism vs. Empowerment)

In these past years the formula “critical thinking” has been overused. This increase in the use has caused a sort of misunderstanding on the term. In fact, it is usual to hear people using it describing a different process. This is the reason why this brief section is dedicated to the theoretical difference existing between “critical thinking” and a simple “opposite thinking”. Think in a critical way differs from saying no or that we do not agree. “Critical thinking” is a cognitive process aimed by the purpose to examine and carefully analyze a principle, a theory, a situation without allowing feelings or opinions to affect you. In somehow, is the clear opposite of the simple process to be in opposition on principle. To ignite a “critical thinking” process needs the courage to leave our own opinions if in the process we undercover contradictions or different explanation, or, if we find out that our thought is not logical or affected by one or more “fallacie”. This process should involve (and pursue) complexity. “Opposite thinking” instead, could be compared to the attitude of a child or a teenager who is fighting against his/her parents’ establishment. It is the disruptive attitude to destroy a different opinion only because we do not agree. In this lieu I would like to draw a parallel between a) critical thinking and empowerment against b) opposite thinking and nihilism. In my humble experience with students from 6th to 9th grade, I’ve been observing, most of all from March 2020 on, the raising of rumors about conspiracy theories, rumors created, of course, by parents and adults living close to youth. This rumors, often trimmed with the exaltation of “critical thinking”, usually lead to a disempowerment feeling in students. I’ve observed that the more youth are exposed to this kind of discussion, the greater they are cultivating a sort of lower self-esteem, such as they would be powerless. This sense of impotence walks arm in arm with what Daisaku Ikeda called “Nihilism” (Ikeda, 2010). According to Ikeda, pessimism, or nihilism permeates the whole contemporary society and represents a pathology of civilization. This trend risks to make the millennial humans’ spiritual heritage meaningless and without value. Nihilism, Ikeda (2010) warned, could manifests sometimes as arrogant confidence, some other as cool indifference. It is important to say that Ikeda faced this topic with reference to the risk for science and technology to run out of control (so with reference to the post-humanism interdependency between humans and technology). He drew our attention to the people’s egotism (the desire for perfection in

themselves and their progeny). This attitude is easily linkable to the tendency cited above of thinking that since we can have access to a big amount of information, we are able to become expert on any field and that with the help of “critical thinking” (in its wrong sense, “opposite thinking”) we can put on discussion every assumption.

On the opposite direction there is “empowerment”. In his 2014 Peace Proposal, Ikeda (2014) focused on the concept of “human revolution” explaining that it is focused on the empowerment that open one’s life on the limitless possibilities. Human revolution is realized when, thanks to an inner transformation of the individual, the courage and the hope arise and make him/her to face and break through the most tragic situations. This process, characterized by value creation ultimately transform the entire society. According to Ikeda, the accumulation of a big number of changes both on an individual and on a community level, creates the occasion for humanity to overcome all global challenges. Through the human revolution, the individual experiments happiness and feels the concrete possibility to surmount any challenge. So that, both on an individual and a societal level (micro and macro are reunited) a positive transformation is realized. This perspective is not divergent from the purpose and the core of SDGs, goals that can be concretely accomplished through the actual efforts of common people and numbers of measures enacted by Countries and Organizations, that are all linked by the aim to get people empowered (in realizing them, but also after their realization).

Value Creating (Recognition of Truth, Create Meaning From Truth) and Human Education (Ningen Kyoiku)

What is the above-mentioned process of value creation? Makiguchi, clarifying happiness in terms of value, asserted that truth is found in the correspondence between a reality and the words and concepts applied by humans to that reality. According to him, truth is embodied in the student's interaction with experience. He stated that "Truth" should not be conceived as a constituent element of value, instead, is a matter of "qualitative equivalence". Value, for the Japanese pedagogue, is the "relational power of the object measured by the quantitative response of the subject" (Makiguchi, 1972). So that, it arises from the interaction between humans and their surroundings, and it is only in this sense that value can be created; truth cannot then be a component core of value. Coming back to the topic of this study, even though managing not verified information, such as conspiracy theories or personal opinions spread as scientific assumptions, is insidious, it is crucial for educators to foster students to let them create value through the interaction they have with that info. What can I learn from that output? Is it empowering me, or it is limiting my impact? Getting used to these questions is vital while building one’s own personality and character. According to Makiguchi, educators should be a catalysator of meaning in students’ life, a guide towards empathy, consciousness, value (Goulah, 2021a; Goulah, 2015; Goulah, 2013; Gebert, 2009).

Inheriting the work of Makiguchi and Toda, Ikeda, who has never been a teacher, founded several schools and institutions named “Soka” which is the Japanese word for value creating. Until few years ago, even the pedagogy related to Makiguchi, Toda and Ikeda were commonly named Soka and easily translated with “value-creating” (education). The Japanese formula used by Ikeda is “*Ningen Kyoiku*” that has been translated in *humanistic education*, however in these years a review of the translation has been realized and now it is apt rendered with *human education*. Even though in this study the evolution of terms and translations is not covered (for a deep analysis about this topic, see Goulah, 2021b; 2020b; Goulah & Ito, 2012) it is important to notice that in Ikeda’s perspective human education is like two faces

of the same medal, on one side it is the attitude always encourage the individual in front of us on his/her full potential and to never give up. On the other side, it is vital that we, as individual, become fully conscious about the whole scope of our own humanity (and humanness) (Goulah, 2021c). Thus, human education is a process in action for becoming “fully human” and education is conceived as a mutual growth of both teacher and student. Drawing a thread from Makiguchi to Ikeda, human education is a human revolution that moves from an egocentric “lesser” self to the “greater” self while all our thoughts and actions interact across space and time (Ikeda, [1974] 2010).

Teaching Youth About Love, Courage, and Solidarity

Human education, as briefly explained above, it is not limited to schools. It overcomes the walls of school and has a concrete impact on the future of students as common global citizens. In order to foster future protagonists, it is crucial for educators to include in curriculum (what to owe) subjects, matters, and discourses that can cultivate students’ strong personalities oriented towards others, and in general, society. This is the reason why human education could not be intended without the lens of intersectionality and interdependence. The core of the education is to empower future generations (Ikeda, 2009) to fight against the sense of abstraction through a constant dialogue (Goulah, 2010). Ikeda in his 2009 Peace proposal suggested a new paradigm: the humanitarian competition, a concept conceived by Makiguchi. This competition serves for achieving same goals pursued by military or political force through a moral influence: to be respected rather than feared.

Another key aspect in Ikeda’s perspective is the need to focus on solidarity as a main topic for the education of future generations. Solidarity resonates with the principal of the mutual shared joy and is so related to the attitude explained above of the human revolution, which always comprehends others, and the mutual growth, vital aspect of human education. In his 2018 Peace Proposal, Ikeda suggested to pursue an intersectional solidarity (Ikeda, 2018). Following this thread, he proposed to consider the 5th SDG, gender equality and empowerment of women, not only as one of the seventeen SDGs, but to consider it as the propeller towards the achievement of the totality of goals (Ikeda, 2018).

Conclusions

People are experimenting an increasing feeling of hopelessness. In such situation, educators, and adults in general, cannot avoid taking action in cultivating and fostering young people’s hearts and minds towards an infinite empowerment (Goulah, 2021d; Inukai & Okamura, 2021; Inukai, 2020, Kuo & Wood & Williams, 2021). In the post-humanistic age, where actions led by humans are impacting the whole globe, we need a compass. This could be human education, characterized by the creation of value, a constant inner transformation (human revolution) and an open dialogue with others pursuing a strong solidarity (Ikeda, [2000] 2021; [1996] 2021). To become fully human, we need to feel that we are not divided from others, from situations and conditions and that we are fully capable to have a strong impact on our environment and on the whole society. This strong empowerment must be transmitted to students. SDGs are amazing input and concrete goals to be achieved and towards which we need to feel empowered. Through quality education for all (4th) and gender equality (5th) we can give a strong acceleration in the achievement of all other fifteen. If people cannot feel they can have an impact, they cannot take any responsibility and this, most of all in youth, has a tragic effect in the building of their personality.

In their *Joint Appeal for Resilience and Hope*, Ikeda and Esquivel (2018) called on young people to be authors of their own lives and the future history. The two peace builders encouraged young people to be “beacons of hope demonstrating that another world is possible” (Ikeda & Esquivel, 2018). Citing the urge of the prohibition of nuclear weapons, they affirmed their “unchanging and unbounded faith in the potential of youth”, that need to unite in solidarity to resolve any challenge. With the same hope in our hearts and conscious of the fundamental interdependence that unites all of us, we as adults need to concretely use our responsibility towards future generations and to humbly continuing ask “what do I owe to future citizen of this world?”. This simple question symbolizes the attitude of a human, always caring for his/her environment and his/her future.

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Contact email: vdughera@depaul.edu

*Using Data Comics to Communicate Complex Pandemic-Related Information:
A Pilot Workshop With Illustration Students*

Júlio Dolbeth, University of Porto, Portugal
Cláudia Lima, Lusófona University, Portugal
Marta Fernandes, Polytechnic Institute of Porto, Portugal
Heitor Alvelos, University of Porto, Portugal

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Abstract

This article details and analyzes a workshop conducted with MA students in Illustration, Publishing and Printmaking at the University of Porto, Portugal. It explored the articulation of narrative illustration and science communication to render complex, COVID-19-related information accessible to a broader public. The workshop began with a presentation of relevant theories and methodologies in science communication. Students were then invited to respond to three COVID-related briefings on media communication inconsistencies: "Oscillations of the pandemic peak", "On Tuesdays the cases rise!" and "Bad maths!" Methodologically, participants followed a process of ideation, sketching, and refinement: unpacking statistics and public health messaging, and weaving data-driven insights, creative expression, and visual storytelling. The convergence of data and illustration facilitated nuanced interpretations of the pandemic, particularly in respect to the presentation of complex data as a sequential narrative, rather than a single image or chart. The resulting data comics pointed towards an added potential for engaging and informing broader audiences with complex public health information. Six of the workshop outcomes were presented as part of the exhibition "o_U: an exhibition of meme symptoms and side effects", in Porto, Portugal, in March 2024. As a space geared towards a younger clientele, the host venue provided an appropriate context for performing an external validation of the workshop outcomes. The workshop and exhibition are part of the ongoing exploratory project "An Infodemic of Disorientation: communication design as mediator between scientific knowledge and cognitive bias" (FCT 2022.08322.PTDC, 2023-24).

Keywords: Data Comics, Design Workshops, Health Misinformation

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Introduction

The rapid rise of social media (Ortiz-Sánchez, 2020) has greatly intensified scientific distrust and the spread of misinformation worldwide, largely due to the formation of echo chambers (Raballo et al., 2022). This issue is worsened by the ease with which subjective, biased, unreliable, unverified, or intentionally misleading information can be shared, alongside the appealing and addictive nature of simplified, overarching narratives.

These simplified narratives often clash with the complex information presented by health sciences, which requires expertise not common among the general public.

Significant efforts are made to translate intricate health knowledge into concepts and language that the general public can understand, forming the basis for targeted health policies. However, health researchers and authorities typically communicate using facts, infographics, statistics, and logic, while much of the population now prefers image deconstruction, humor, rumors, and personal anecdotes (Kostadinovska-Stojchevska & Shalevska, 2018).

DiResta (2023) highlights the necessity of adapting communication strategies to the evolving landscape, asserting: "Institutional communicators and public health entities fail to grasp that the methods of communication have evolved [...]; they must recognize the influence of storytelling." This insight is central to the current research, showing how a single report of a vaccine-related adverse reaction can skew public perception of statistical evidence showing such events are rare.

Moreover, psychologists and cognitive neuroscientists have shown that cognitive processes are not purely fact-based; Goel (2022) explains this as "The reasoning mind recruits the instinctive mind" (p. 155). This suggests that health authorities and policymakers must consider subjective elements in their public interactions. While emotions like gratitude towards healthcare workers and fear of mortality are used in public health campaigns, these typically adhere to traditional authoritative discourse.

Building on these observations, this ongoing research investigates various hypotheses for combating online disinformation and distrust in health policies. This includes leveraging social network aesthetics and semantics within authoritative communication. Communication Design can help by equipping students and professionals with the technical and semiotic skills needed for effective communication. Age is also a factor, as the rapid change in online semantics can render trends outdated almost overnight. Therefore, involving younger consultants in health-related content communication and behavioral pedagogy is vital.

Workshops and pedagogical practices with undergraduate design students have proven ideal for exploring online communication prototypes. In the framework of this project, various initiatives have been developed in this context at universities in the north and south of Portugal (see Alvelos et al., 2024). The initial strategy involved creating health-related memes to test the influence of humor, but these often-lost informational value in the irony. Subsequent exercises included infographics and printed media, but the gap between factual information and interpretation persisted.

Considering these challenges, the next set of sessions explored the potential of the data comics format to communicate complex scientific content through accessible visuals and

playful aesthetics. Data Comics, familiar to younger generations, were tested as tools to promote genuine knowledge-seeking behavior. They may also lower the anticipated formality of authoritative discourse, facilitating better cognitive and behavioral engagement.

The Data Comics Workshops

A workshop with three sessions was organized for Master's students in Illustration, Editing, and Print (MIEP) at the Faculty of Fine Arts, University of Porto. Held over three sessions between February and March 2024, the workshop aimed to foster a multifaceted understanding of the COVID-19 pandemic through data comics. They were conducted as an extracurricular activity, engaging six volunteer MIEP students.

From this initiative, six "data comics" were produced to test the feasibility of design and illustration in translating complex information into accessible forms for the general public. These comics served as a counterpoint to the proliferation of statistical graphics, which, while perceived as absolutely accurate, are often unreadable to significant portions of the audience.

Session Structure

Initial Session: The overarching project and previously developed outputs were introduced. For tangible outcomes, 3 case studies were selected of situations communicated and disseminated by the mainstream media that reflect inconsistencies and misinformation — "Oscillations of the Pandemic Peak", "On Tuesdays the Cases Increase", and "Bad Maths" (on this see Lima, Barreto & Alvelos, 2024). These case studies involved proper data analysis techniques and the identification of evolving patterns, information inconsistencies in mainstream media, differing interpretations of statistical data, and the balance between both Data Comics and Infographics. Focusing on key theories and methodologies in effective information conveyance and the importance of visual storytelling in public health communication, authors such as Lima (2011), Bertin (2011), Tufte (1983) and Wurman (2000) were presented at this stage that revealed the underlying visual elements that better tackle the challenges of representing information and data.

Furthermore, a set of bibliographic references were recommended, with regards to a more comprehensible connection on the potentials of storytelling in both information and data visualization (Gershon & Page, 2001; Kosara & Mackinlay, 2013; Segel & Heer, 2010) as natural consequence for combining rigor with a narrative form. Finally, Data Comics were presented as an implicit process that combines an engaging medium with quantitative data in a sequential manner. Bach et al (2017) describes the need for this format as we rely more on data to understand the world.

In the time that remained, possible conceptual and technical approaches to the project were also discussed.

Subsequent Sessions: The subsequent two sessions were devoted to practical developments of the Data Comics, including structuring the story to be told and the hierarchy of information, experimenting with different types of illustration and charts to be included. Participants developed prototypes, encompassing narrative structures, chart selection, and stylistic preferences. While the second session was more experimental, with moments of brainstorming, the final session centered on finalizing Data Comics prototypes, addressing minor corrections, discussing outcomes, and preparing poster-sized final layouts for printing.

Student Engagement and Process

Engaging students in this extracurricular project was challenging, as they were involved in their personal research projects the workshop took place during academic term time. However, the value of the workshop lay in equipping them with tools to develop illustrated narratives to communicate science, broadening their academic output possibilities. MIEP's curriculum plan does not provide for the infographics and data of comics in its structure, which allows it to gauge a more added value to add value to it. After the Workshop, the inclusion of infographics associated with the different territories of the illustration will be discussed.

Challenges: The biggest challenge was transforming statistical data into visual narratives. Students initially focused on combining storytelling with infographics. The process involved ideation, sketching, and refinement, using freehand drawing techniques, mostly on paper, then digitally refined using Procreate on the iPad and Adobe Photoshop.

Main Concepts: The goal was to merge data-driven insights with artistic expression.

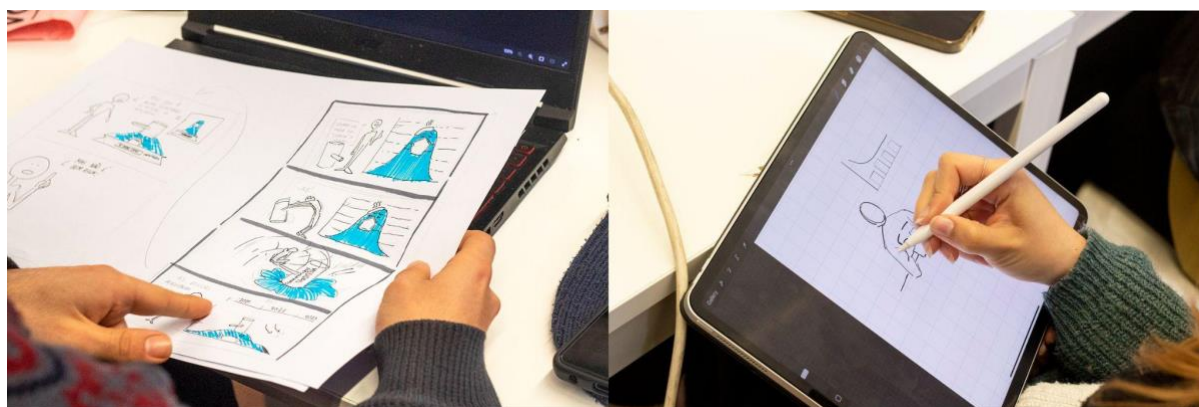


Figure 1: Images taken at the workshop - creative process, 2024 Source: Cláudia Lima

Case Study Selection

Three case studies of media misinformation in Portugal during the pandemic were selected from a larger pool to potentially highlight subsequent phenomena of disinformation. These case studies were chosen as sources for a workshop briefing, focusing on information inconsistencies in mainstream media, differing interpretations of statistical data by television anchors, and the imbalance between pedagogical and sensationalist rhetoric. These specific phenomena were used as templates for developing Data Comics prototypes.

Oscillations of the Pandemic Peak

This case study dates to the early days of the pandemic when there were numerous predictions about the peak of infections. It was widely publicized that without intervention, the number of cases would rise exponentially, leading to a peak after which the number of infections would decline. The concept of "flattening the curve" was introduced, emphasizing the need to spread out the number of infections over a longer period to prevent healthcare systems from becoming overwhelmed.

The media often failed to adequately explain that the goal was not just to delay the peak but to significantly reduce the number of infections through lockdowns and other measures. This misunderstanding was evident in the conflicting statements from health authorities. For example, on March 27, 2020, Graça Freitas, the Director-General of Health, mentioned that the peak would be delayed until May and would manifest as a "plateau of a few weeks" (TVI Notícias, 2020a). This message was confirmed by the Health Minister, Marta Temido (TVI Notícias, 2020b).

Despite these forecasts, on April 2, 2020, the President of Portugal announced that the peak had been delayed (Carmo, 2020), while Freitas reiterated the uncertainty about the peak's timing a day later (Malta, 2020). These statements, often accompanied by animated graphs showing the expected curve, reinforced the assumption that the number of cases would remain the same regardless of containment measures.

However, pulmonologist Filipe Froes clarified in an interview with RTP (2020) that the goal was to "crush the curve," not just flatten it, stressing the importance of strict adherence to social distancing to reduce the number of infections. Ultimately, the peak of the pandemic occurred at the end of March, as reported on April 8, 2020 (Maia & Ferreira, 2020).

On Tuesdays the Cases Rise!

This case study examines a pattern observed in the reporting of COVID-19 cases, where a noticeable increase in cases was reported at the beginning of the week, particularly on Tuesdays. This pattern was due to the flow of testing and clinical analysis, which slowed down over the weekends and led to a backlog of cases being reported on Mondays and Tuesdays.

Television news programs often highlighted this sharp increase in cases without explaining that it was a result of the reporting cycle rather than a real surge in infections. Accurate analysis would require comparing the number of cases with the same day of the previous week or the total number of cases in consecutive weeks. However, this context was frequently missing from media reports, leading to public confusion. Daily reports from the DGS included charts that provided a more reliable analysis of trends, but these were often ignored by the media, which preferred to create their own, less informative charts (see figure 2).



Figure 2: Graph presented on TVI's Jornal das 8 broadcast on February 3, 2021 at 8.16pm. The reporter remarked on the increase in cases (based on the previous day), stating that 'we still do not have a defined trend' (TVI and Carvalho 2021)

Bad Maths!

The third case, "Bad Maths!", focused on the misinterpretation and misreporting of statistical data by the media. Often, statistical errors and misrepresentations in the data presented by television anchors led to misunderstandings about the actual state of the pandemic. This case study highlighted the need for better statistical literacy among media personnel and clearer communication from health authorities to avoid spreading misinformation.

Summary

These three case studies were used to develop Data Comics prototypes, aiming to translate complex information into accessible and engaging formats for the general public. The selected case studies not only provided real-world examples of misinformation but also served as a basis for exploring how visual storytelling and design can improve the communication of scientific information during a health crisis.

Examples of Student Work



Figure 3: Teia de Mentiras (Web of Lies), António Amaro, 2024

António Amaro

The subject "On Tuesdays the cases rise!" was addressed by António with the creation of a poster inspired by comic book imagery, using typography to simulate a comic book cover and calligraphic text in speech bubbles. He resorted to vibrant colors in a strategy of simulating vintage comic books.



Figure 4: Achatar a Curva (Flatten the Curve), Guilherme Festas, 2024

Guilherme Festas

For the subject "Oscillations of the pandemic peak", Guilherme designed assertive panels with strong, contrasting colors, using symbolic iconography like Zé Povinho, an homage to the caricature created in 1875 by Portuguese artist Rafael Bordalo Pinheiro, to create empathy and engage viewers.

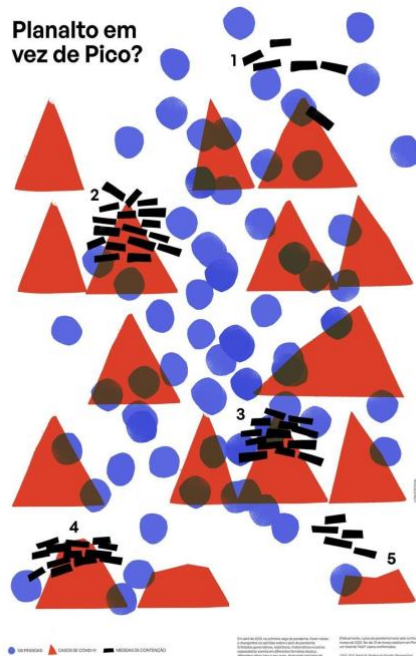


Figure 5: Planalto em vez de Pico? (Plateaux instead of Peak?), Luísa Portugal, 2024

Luísa Portugal

Opting for the subject "Oscillations of the Pandemic Peak", Luísa used a more abstract and modernist composition, anchoring the image in a caption to decode graphic forms.

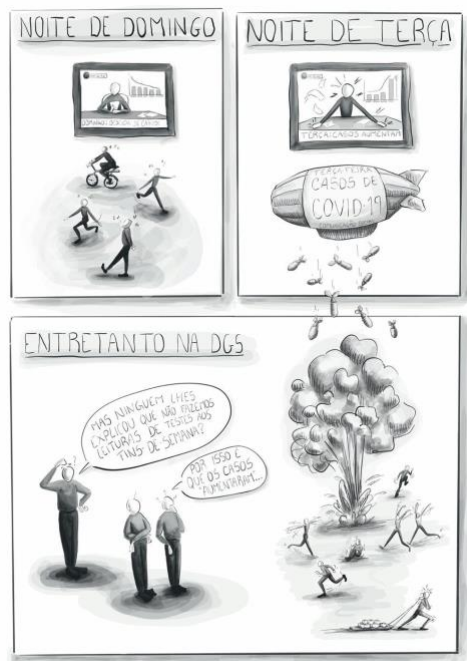


Figure 6: “On Tuesdays the cases rise!”, Luísa Silva, 2024

Luísa Silva

For “On Tuesdays the cases rise!”, Luísa used a simple narrative in three panels, effectively conveying information with minimal ambiguity.

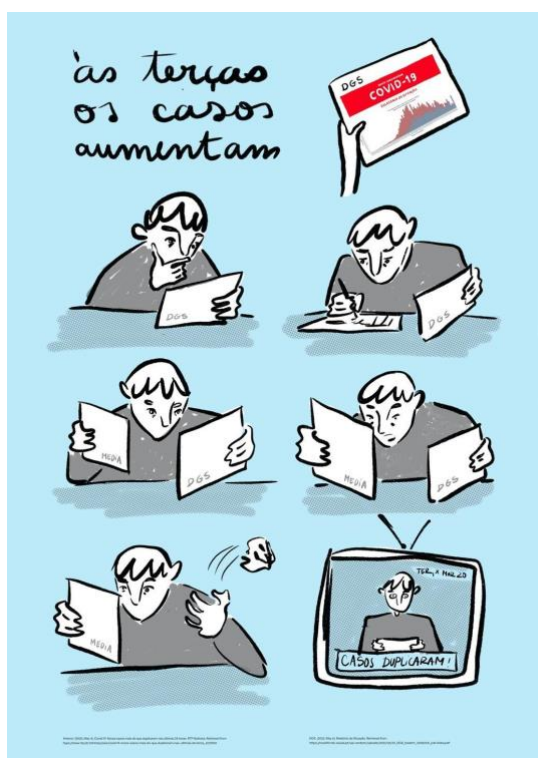


Figure 7: Às terças os casos aumentam (On Tuesdays the cases rise!), Marta Carrelhas, 2024

Marta Carrelhas

Also for "On Tuesdays the Cases Increase", Marta created a conventional sequential narrative without panel frames, emphasizing manual drawing and fluid line work.

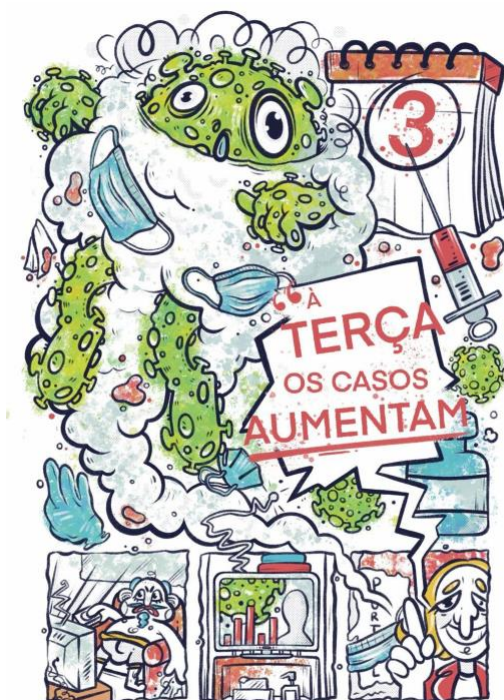


Figure 8: À terça os casos aumentam (On Tuesdays the cases rise!), Sara Duarte, 2024

Sara Duarte

Again for "On Tuesdays the cases rise!" subject, Sara designed a poster with expressive composition and character prominence, blending elements for clear linear reading.

Validation and Feedback

Once the workshop was over, a discussion was held based on the following questions:

- What were the main challenges faced while developing the Data Comic?
- What data sources were used for COVID-19 communication information?
- What was the process like for transforming quantitative data into a visual narrative?
- Does the contribution clearly communicate information about COVID-19 communication?
- What visual elements are most effective in conveying the message of your poster?
- Are Data Comics an effective tool for science communication?

In summary of student responses:

- The responses were unanimous in considering as the main challenge the creation of a clear visual narrative that accurately translated COVID-19 data while being engaging and appealing.
- The participants used mainly the official website of the Direção Geral de Saúde (Directorate-General for Health) for research.
- The process involved selecting data to be included in the narrative and defining visual elements that could symbolize the data and the reality at the time.
- Data Comics were considered effective tools for science communication, as they create empathy and help the population relate better to the information presented.

Outputs and Public Exhibition

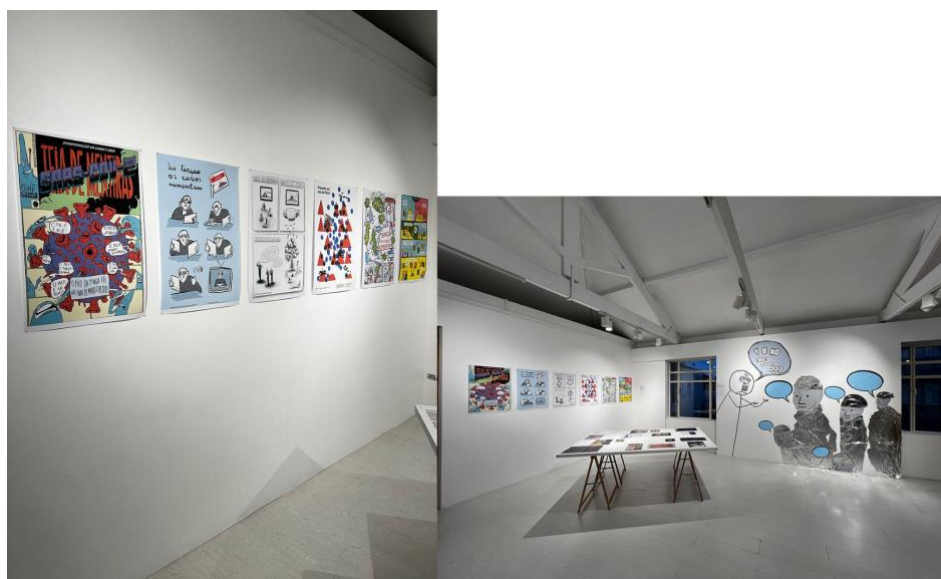


Figure 9: View from the exhibition “o_U: an exhibition of meme symptoms and side effects”, 2024

A public exhibition titled "o_U: an exhibition of meme symptoms and side effects" was held at Maus Hábitos gallery, in Porto, Portugal, between the 7th and 31st of March 2024. This exhibition tested the viability of online-offline support in the subjective approach to public health policies, particularly in the face of growing misinformation phenomena. It explored possibilities of merging formal rhetoric with expressive content circulation and included the aforementioned student work along with various other pieces of diverse provenance along the overarching project.

Following the exhibition, a second instance of validation involving external analysis and feedback was conducted on May 25, 2024. This instance, a focus group, consisted of four individuals with no prior exposure to the project: two young participants aged 11 and 13, a communication sciences undergraduate student, and a preparatory schoolteacher. The outputs were presented, and the participants were prompted with various questions, such as how they read each Data Comic, whether they considered the message to be effective, the credibility of such media and their preferences in communicating health-related information. The session lasted two hours and was led by five project researchers.

The six outcomes of the workshop were presented in printed form. Of the three issues addressed, the one with three prototypes was the most discussed: the widely disseminated, equivocal news piece that argued COVID-19 surged on Tuesdays (Figures 6, 7 8). Of the three outputs, the most formally neutral, detailed, and informative was chosen as the most effective (Figure 6): to an extent, this preference contradicts the expectation that a subjective component could initiate a process of trust; however, aesthetic components were acknowledged as potentially decisive in involving demographics whose tastes might coincide.

Overall Data comics were acknowledged as a format with clear advantages and adding a storytelling component, seemed attractive by all present.

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Some considerations emerged throughout the session that pointed towards future exploratory developments, such as:

- The need to customize content and aesthetics according to age groups and distinct demographics, contextual customization might be key as well.
- Humor and irony should be employed with caution, as they could easily be the root cause of equivocate, even opposite, interpretations - and consequently, further instances of misinformation.
- The contextual vocation of each print-out was addressed: two were acknowledged as potentially more effective in a health center waiting room (see Figures 4 and 6), whereas one was deemed as potentially more effective as an outdoor ad (see Figure 5); one prototype, whose aesthetic clearly mimics a comic book cover (see Figure 3), was regarded as a potential starting point for the actual production of a comic book - or at the very least a conversation starter in a classroom environment, employing aesthetics compatible with young students' own interests.
- The potential for articulation with online and cultural trends at a given moment was equally noted; given contemporary culture's current accelerated pace, there would be a need for a constant renovation of semantic and semiotic repertoires in content production, through consultation with specialized segments of the population.



Figure 10: Poster of the exhibition, “o_U: an exhibition of meme symptoms and side effects”, 2024



Figure 11: Image taken at the focus group, 2024. Source: Cláudia Lima

Conclusion

The results of the workshops were satisfactory, prompting the integration of Data Comics development into the curriculum for the Master's program in Illustration, Editing, and Print. This addition is seen as a valuable enhancement, providing students with the ability to visualize information, which is a critical tool for strategic research opportunities.

Data comics have revealed significant promise as a design format towards improving the communication of scientific information and supporting behavioral pedagogy. Positive feedback emerged from the creative workshops with design and illustration students, as well as from the initial validation by the focus group that included young social media users and education professionals. Despite these encouraging early outcomes, further prototypes must be developed and subjected to additional validation. The present conclusions are preliminary, as they are based on six prototypes, each addressing only a portion of the wide range of possibilities that data comics may come to offer.

Future validation should involve larger and more diverse groups of participants in order to ensure comprehensive feedback. This includes considering different age ranges and literacy levels. Additionally, the settings for presenting these prototypes should be diversified in order to assess their effectiveness in different real-world contexts. For instance, presenting data comics in health centers and train station platforms, as suggested by a participant in one of the validation sessions, could provide valuable insights into their applicability and impact.

Expanding the scope of validation will help refine the design and application of data comics, ensuring they effectively bridge the gap between complex scientific information and public understanding. This approach not only enhances the educational experience for design students: it contributes to the broader and increasingly urgent goal of improving public health communication and combating misinformation.

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- Contact email:** jdolbeth@fba.up.pt



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Sakae 1-16-26-201
Naka Ward, Nagoya, Aichi
Japan 460-0008
www.iafor.org