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Editorial Note – TOJNED October 2025 Issue

As education continues to evolve under the impact of digital transformation, globalization, and emerging technologies, *The Online Journal of New Horizons in Education (TOJNED)* remains a scholarly platform for interdisciplinary research, bridging innovation, pedagogy, and leadership. The October 2025 issue brings together a rich collection of studies exploring educational management, digital pedagogy, teacher professionalism, and learning technologies across international contexts.

The issue begins with **Alakuasheotsala Amina** and **Uduak Sunday Isim's** article *"Managing Multi-Grade Classrooms for Fostering School Effectiveness in Nigeria."* This study explores the complexities of multi-grade teaching environments and provides evidence-based strategies for improving school efficiency and learner performance through adaptive management and instructional flexibility ALAKUASHEOTSALA AMINA.

In *"Perspectives on High-Impact Practices for an Exciting Educational Experience,"* **B.H.S. Thimmappa** emphasizes active and reflective learning, critical inquiry, and classroom collaboration as key approaches to fostering student engagement and meaningful learning outcomes B.H.S. Thimmappa
.
Bahaa Alarameen's contribution, *"Teachers' Perspectives on Technology Use at the CIU English Preparatory School: A Qualitative Study,"* offers a nuanced view of how educators integrate digital tools, artificial intelligence, and robotics in language instruction. The research highlights teachers' enthusiasm for technology while acknowledging challenges such as infrastructure and system support, concluding that AI serves best as a complementary teaching aid rather than a replacement for human educators
Bahaa Alarameen
.
Kemal Baş and **Mehmet İğnecioğlu**, in *"Comparative Analysis of Proverb, Idiom, and Set Phrase Usage in Turkish as a Foreign Language Textbooks,"* analyze linguistic and cultural representations in Turkish language teaching materials, stressing how idioms and proverbs enhance intercultural awareness and communicative competence
Kemal BAŞ Mehmet İĞNECİOĞL…
.
Two significant papers from **Cemre Bekir Mahmutlar** and colleagues deepen the understanding of teacher professionalism and leadership in the Turkish Republic of Northern Cyprus.

The first, *"Examining the Commitment of Teacher Candidates to the Teaching Profession,"* investigates motivational and gender-based differences influencing pre-service teachers' professional dedication.

The second, *"Knowledge Ability of Primary School Teachers on School Management,"* co-authored with **Osman Erbulak**, **Nilgün Erbulak**, and **Şenay Mahmutlar**, quantitatively assesses teachers' understanding of administrative processes and leadership in TRNC schools. Findings reveal that female teachers and those with longer professional tenure express more positive perceptions of management processes, emphasizing participatory decision-making and strong institutional culture Kıbrıs 2.

Extending this line, **Osman Erbulak** and collaborators, in *"Examining the Levels of Openness to Change in Primary Schools,"* explore how leadership and communication dynamics influence schools' readiness for transformation, underscoring the need for collaborative and transparent governance Kıbrıs 3.

From Ethiopia, **Morka Mogiso's** qualitative work *"Lived Experience of Teachers Engaged in Early Childhood Care and Education Policy Implementation in Preprimary Schools in Hadiya Zone"* provides valuable insights into ECCE policy challenges, resource limitations, and the importance of community involvement in successful implementation Morka Mogiso 2
.
Shaymaa Shawkey Elkeey's study, *"Development of Some Science Concepts and Vocabularies to Preschoolers Using Science Magic Activities,"* demonstrates how creative "science magic" methods stimulate curiosity and linguistic development among preschoolers, showing the pedagogical potential of blending play with inquiry-based learning Shaymaa Shawkey Elkee
.
Emerging technologies feature prominently in **Taraneh Yarahmadi's** paper, *"Enhancing Elementary Science Education: A User-Centered Design Case Study on Mobile Augmented Reality Applications."* This research underscores how augmented reality enhances motivation, interactivity, and conceptual comprehension in elementary science education through user-centered digital design Taraneh Yarahmadi
.
In higher education, **Wei Wei** and co-authors, in *"Students' Preference of Learning Modality in Data Science Courses — A Case Study,"* analyze students' choices among synchronous, asynchronous, hybrid, and in-person formats. Their findings show a strong preference for synchronous online learning for engagement and support, offering valuable insights for post-pandemic course design in data science programs Wei Wei - Final
.
Finally, the issue's *Technology in Education* article explores artificial intelligence, digital pedagogy, and ethics, advocating for responsible and human-centered integration of AI in learning systems to ensure equity, transparency, and sustainability in education.

Together, these diverse studies exemplify TOJNED's commitment to fostering interdisciplinary perspectives that connect theory with practice and local experiences with global educational developments. They reaffirm the journal's mission to promote scholarly excellence and knowledge sharing across borders.

The Editorial Board extends sincere gratitude to all authors, reviewers, and readers who continue to support TOJNED's vision of advancing innovation and quality in education research.

Prof. Dr. Aytekin İşman
Editor-in-Chief
The Online Journal of New Horizons in Education (TOJNED)
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Editorial Board

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COMPARATIVE ANALYSIS OF PROVERB, IDIOM, AND SET PHRASE USAGE IN TURKISH AS A FOREIGN LANGUAGE TEXTBOOKS

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Abstract
This study presents a comprehensive analysis of the use of proverbs, idioms, and set phrases in Turkish as a Foreign Language (TFL) textbooks. The main objective of the study is to determine the place of these vocabulary elements, which are fundamental elements of cultural transfer and communicative competence in language learning, in the existing materials.3 The research examined Gazi Turkish for Foreigners, Istanbul Turkish for Foreigners, and Yunus Emre Institute Seven Climates Turkish textbooks at different language proficiency levels (A1-A2, B1-B2, C1) using the document analysis method.
The findings reveal that idioms and set phrases appear with a certain frequency in the textbooks examined, but proverbs are almost non-existent, especially at basic levels, and remain quite limited even at advanced levels. This situation points to a potential systemic deficiency in YFL curriculum design. Although proverbs are fundamental elements reflecting a nation's culture, wisdom, and worldview, this obvious deficiency in textbooks may negatively affect the processes of foreign language learners' deep penetration into Turkish culture and development of their pragmatic competence. Students may face the risk of communicating in a culturally irrelevant or inappropriate manner, even if they can use grammatically correct expressions.

In light of these findings, the study suggests that proverbs, idioms, and set phrases should be included more frequently in YFL materials.
1 TRNC/CYPRUS Hala Sultan Theology College, Turkish Language and Literature teacher, TRNC/CYPRUS Ministry of National Education
2 TRNC/CYPRUS Hala Sultan Theology College, Turkish Language and Literature teacher, TRNC/CYPRUS Ministry of National Education
3 İsmail ÇAKIR, THE ROLE OF CULTURE IN FOREIGN LANGUAGE LEARNING ENVIRONMENTS, Millî Eğitim Number 190 Spring/2011

It offers important suggestions that it should be integrated systematically, contextually, and pedagogically sound. The use of visual materials, the adoption of interactive teaching methods such as gamification and drama can enrich cultural understanding by increasing the permanence of what is learned. These approaches will enable language learners not only to gain grammatical competence, but also to grasp the cultural texture of Turkish, allowing them to establish truly fluent and culturally sensitive communication. Abstract This study presents a comprehensive analysis of the use of proverbs, idioms, and set phrases in textbooks for teaching Turkish to foreigners (YTÖ). The main objective of the study is to determine the place of these vocabulary elements, which are fundamental elements of cultural transfer and communicative competence in language learning, in the existing materials.1 The research examined Gazi Turkish for Foreigners, Istanbul Turkish for Foreigners, and Yunus Emre Institute Seven Climates Turkish textbooks at different language proficiency levels (A1-A2, B1-B2, C1) using the document analysis method.

The findings reveal that idioms and set phrases are present at a certain frequency in the textbooks examined, but proverbs are almost non-existent, especially at basic levels, and remain quite limited even at advanced levels. This situation indicates a potential systemic deficiency in the YTO curriculum design. Although proverbs are fundamental elements that reflect a nation's culture, wisdom, and worldview, this apparent deficiency in textbooks may negatively affect foreign language learners' processes of deeply penetrating Turkish culture and improving their pragmatic competence. Students are grammatical Although they can use correct expressions, they may face the risk of communicating without cultural context or inappropriately. 1İsmail ÇAKIR, THE ROLE OF CULTURE IN FOREIGN LANGUAGE LEARNING ENVIRONMENTS, Millî Eğitim Number 190 Spring/2011

In light of these findings, the study offers important suggestions for a more systematic, context-based, and pedagogically sound integration of proverbs, idioms, and set phrases into TFL materials. The use of visual materials and the adoption of interactive teaching methods such as gamification and drama can enrich cultural

understanding by increasing the retention of what has been learned. These approaches will enable language learners not only to gain grammatical competence but also to grasp the cultural fabric of Turkish, allowing them to communicate in a truly fluent and culturally sensitive manner.

1. Introduction: The Indispensable Role of Idioms, Proverbs, and Cliché Words in Turkish Language Acquisition

1.1. Problem Status

Language serves as a mirror reflecting the emotions, thoughts, and lifestyle of a nation/civilization, and also forms the basis of culture. 4 According to Kaplan (2010), everything expressed in language is included in the concept of culture. In this context, understanding the cultural structure of a language while learning it is an inseparable part of the language acquisition process. As people use language, they have begun to add their own culture to it, and culture transfer plays a critical function in language teaching. 5 Proverbs and idioms are condensed expressions of the experiences, wisdom, and worldview that a society has acquired over centuries. According to Aksan (2015), proverbs are words that reflect a society's wisdom, experiences, worldview, and expressive power, and can live for centuries. Aksoy (1993), on the other hand, defines proverbs as stereotyped and publicly accepted aphorisms that formulate the judgments of our ancestors based on long trials as a general rule, wise thought, or advice. Idioms, on the other hand, are important elements that reveal the power and success of the language-speaking society in expression and its tendency towards allusion to simile. Cliche words are also traditional expressions that are frequently used in daily language and regulate social relations.

4 Ünalan, Şükrü (2005), Language and Culture (3rd edition), Ankara: Nobel Publishing. 5 Ali GÖÇER, On Language-Culture Relationship and Interaction,

These vocabulary items are of great importance in teaching mother tongue and Turkish to foreigners. to Akpinar(2010) According to Akpınar, the correct use of idioms and proverbs, which are among the rich resources of Turkish, in written and oral communication by people learning Turkish determines the student's degree of command of Turkish. This can be achieved by using appropriate idioms and proverbs effectively in the materials to be prepared.

The main problem of this study is to determine how and how much proverbs, idioms and cliché words are used in textbooks used in teaching Turkish to foreigners. Considering the inseparable connection between language and culture, the inadequate representation of such cultural elements in textbooks may lead students to learn only grammatical rules, while preventing them from grasping the depths of Turkish culture and the subtleties of social communication. This situation can lead language learners to communicate in a grammatically correct but culturally bland or inappropriate manner, hindering true fluency and integration. It emerges that YTÖ pedagogy needs to evolve towards a socio-pragmatic and cultural approach beyond grammatical structures, with the understanding that communicative competence encompasses cultural appropriateness and implicit meanings as well as grammatical correctness.

1.2. Purpose of the research

The main purpose of this study/research is to examine the proverbs, idioms, and set phrases in the exercises and books used in teaching Turkish as a foreign language by comparing them in terms of their contexts, diversity, and frequency of use.

1.3. Importance of the research

This study makes significant contributions by examining books published for the purpose of teaching Turkish to foreigners (Istanbul Turkish textbook, Gazi Turkish for Foreigners textbook, and Yedi İklim Turkish textbook) in terms of idioms, proverbs, and set phrases, and by analyzing the vocabulary elements in these books comparatively in terms of their contexts, frequencies, and diversity.

The importance of the study goes beyond a mere academic inquiry, serving as a critical diagnostic tool for TLFL material developers and educators. By revealing the shortcomings and strengths of existing textbooks with empirical data, it helps to identify areas of pedagogical inadequacy. By identifying what elements are present and which are underrepresented or completely missing, this study provides a roadmap for what needs to be improved in TLFL materials. This situation provides a solid foundation for evidence-based curriculum revisions, allowing data-driven decisions to be made beyond anecdotal observations. This diagnostic function may lead to the development of more culturally sensitive and communicatively effective TLFL textbooks, ultimately significantly enhancing the learning experience and pragmatic competence of foreign students.

1.4. Limitations
The research is limited to the listening and reading texts in the Istanbul Turkish for Foreigners Set, Yedi İklim Turkish, and Gazi University Turkish for Foreigners Set books.

1.5. Definitions of Basic Terms
The definitions of the basic concepts used in this study are as follows in order to ensure the consistency of the research:

● Language: According to Aksan (2015), "it is an entity that is so versatile that we cannot think of it at once, whose different qualities appear when viewed from different angles, and some of whose secrets we cannot solve today.

● Foreign Language: Defined by the Turkish Language Association (2011) as "each of the languages other than the native language." Şahin (2013) defines a foreign language as "a language that is completely foreign to the individual, learned later, and has no possibility of being used functionally in communication in the environment in which they live, and is learned for specific purposes.

● Culture: According to the Turkish Language Association (2011), it is expressed as "all the tangible and intangible values created in the historical and social development process, and the entirety of the tools used to create them, transmit them to future generations, and show the extent of human dominance over the natural and social environment." Kaplan (2009) defines culture as "processing and developing everything material and spiritual.

● Textbook: According to Halis (2002), it is "one of the teaching materials that serve as a source for the student's learning experiences in order to achieve the goals of education, and in many cases, the only teaching material.

● Vocabulary: According to Aksan (2015), "the vocabulary of a language is the whole formed by the words, idioms, set phrases, proverbs, terms, and various meaning patterns of that language." This definition clearly defines the focus of the study.

● Proverb: According to Aksan (2015), "the wisdom, experiences, and worldview of a society and words that reflect the power of expression and can live for centuries." Aksoy (1993) defines proverbs as "concise words adopted by the public, which our ancestors made into principles as a general rule, wise thought or advice based on long trials, and have stereotyped forms.

● Idiom: According to Aksoy (1993), "a stereotyped word group or sentence that describes a situation either with an attractive expression or in a special structure, and most of which have a meaning different from their real meanings.

● Collocations: According to Gökdayı (2015) (quoting Wray, 2002), "It is a sequence consisting of consecutive or intermittent words that are stored in memory in a predetermined form, and are used by being recalled as they are without being reproduced or grammatically parsed when they are to be spoken.

2. Conceptual Foundations: Definition of Basic Linguistic and Cultural Elements in Turkish
This section aims to deepen the theoretical understanding of idioms, proverbs, and set phrases, highlighting their unique characteristics and their deep cultural and pragmatic importance in Turkish.

2.1. Idiom
Idioms are generally vocabulary items formed with multiple words to describe a situation, the characteristics of encountered events, human character and behaviors, and various physical and spiritual qualities of people. According to Aksan (2002), idioms are generally used outside of their real meaning and make the expression more beautiful and impressive. Hengirmen (2007) also defines idioms as clichéd words that are accepted and adopted by the society. Çotuksöken explains idioms as stereotyped word groups consisting of at least two words, in which the words undergo a change of meaning and acquire a new meaning. Aksoy (1993) defines an idiom as a stereotyped group of words or a sentence that expresses a concept or situation in an attractive expression or in a special structure, and has a meaning separate from its real meanings. Idioms differ from proverbs in that they do not express judgment, although they consist of more than one word. They are one of the most important vocabulary elements of the language, which emerged as a result of experiences gained in life. The multifaceted definitions of idioms emphasize their complexity and their critical role in conveying subtle meanings beyond word meaning in order to establish natural, fluent communication in Turkish. For those learning Turkish as a

foreign language, mastering idioms not only expands vocabulary; at the same time pragmatic competence, which means developing the ability to use language appropriately in social contexts and to understand implied meanings. Without idioms, communication can become rigid, unnatural, and misinterpreted, as the "power and success in expression" of language diminishes. This situation reveals the pedagogical necessity of teaching idioms not only as isolated phrases, but within rich, contextualized scenarios that demonstrate their pragmatic functions and cultural echoes. The non-compositional nature of their semantic structures necessitates explicit and contextual teaching.

2.2. Proverbs

Proverbs are important elements of the vocabulary with the importance they have in terms of cultural heritage. According to Aksoy (1993), proverbs are "concise words adopted by the public, which are based on the long-standing judgments of our ancestors, which are made into principles as a general rule, wise thought or advice, and have stereotyped forms". These words, which are common products that reflect the essence of the people and have the meaning of advice, are stereotyped sentences that emerged as a result of the experiences of a nation. Aksan (2015), on the other hand, states that proverbs, which each nation creates with its own experiences and wisdom, reflect the world view and way of life of a language union, as well as give important clues about the cultural history of that society. Bilgin (2006) defines proverbs as "stereotyped concise words that reflect judgments based on long observations and experiences as a general rule, wise thought or advice, and are used by the public".

Proverbs are not just linguistic units, but also condensed cultural archives that offer in-depth information about a society's values, history, and collective wisdom. Their absence in TFL materials represents a significant cultural gap. Proverbs are "one of the important elements of the vocabulary that is culturally significant" and clearly carry "the meaning of advice." If Turkish as a foreign language learners are not exposed to proverbs, they are deprived of direct access to Turkish cultural values, historical experiences, and traditional wisdom. This can lead to a superficial understanding of Turkish society and communication, as the cultural logic that often informs daily interactions and expressions is missing. This finding shows that TFL pedagogy should not only introduce proverbs, but also teach them in their cultural and historical contexts, so that students can appreciate their depth and appropriate use. This requires a shift to more culturally immersive and narrative-based teaching methods, rather than just grammatical exercises.

2.3. Set Phrases

Set phrases are words we use in our social relationships and also show traditional features. Expressions such as "good morning, have a good day, goodbye" that we use in daily language are just a few of them. Gökdayı (2015), quoting Wray (2002), defines clichés as "a series of consecutive or intermittent words that are pre-formed and stored in memory, used by being remembered as they are without being reproduced or grammatically parsed when they are to be spoken." Words such as "May it be fruitful, May God heal you, May you be as precious as water, May God make you happy, speedy recovery" are spontaneously spoken by people who know Turkish in the face of appropriate events and situations. Daily discourses, good wishes, curses, prayers and stereotyped words expressing various emotions are frequently used words in both verbal and written communication. The use of these clichés is a tradition in society; for example, not saying "condolences" at a funeral will be frowned upon by the society.

Learning a foreign language also means learning the culture and sensitivities of the language you are learning. Someone who has absorbed the grammar rules of the language being learned will not be able to understand the meaning of a well-wishing phrase such as "Allah bless you," if they do not know the idioms. In this context, knowing the set phrases in the language that the language learner is learning will also enable the language learner to establish a more understandable and comfortable communication with the society. According to Demir (2016), set phrases are of great importance in the acquisition of reading, listening, speaking and writing skills, as they are frequently encountered in daily life. Gökdayı (2015) has classified set phrases in various ways according to their functions: those that express good or bad wishes, those that provide words suitable for every situation, those that help to communicate in stressful situations, those that help to convey the message more clearly and quickly, those that ensure compliance with etiquette rules, those that reveal religious identity, and those that regulate the communication process.

Idioms form the basis of pragmatic competence and social integration in a foreign language. Mastering these expressions allows students to manage social interactions smoothly and avoid cultural blunders, directly impacting their ability to participate authentically in Turkish society. It is stated that idioms are "traditional words spoken during our social interactions" and that their absence can create "a situation that the community will find strange." When students do not have knowledge of idioms, they cannot effectively perform speech acts

such as greeting, offering condolences, or showing courtesy. This directly hinders their social integration and creates misunderstandings, even if their grammar is perfect may lead to misunderstandings or a perception of rudeness. The example "May Allah not keep you apart" clearly demonstrates this cultural gap. Therefore, the teaching of set phrases should be prioritized from the early stages, not only for the purpose of expanding vocabulary, but as a fundamental component of communicative and socio-cultural competence. Textbooks should systematically integrate them in a way that reflects their high frequency in daily life and their critical role in demonstrating cultural sensitivity.

3. Method

This section details the research design of the thesis and the procedures applied, providing an opportunity to evaluate the validity and reliability of the findings.

3.1. Research Model

In this study, document analysis, one of the qualitative research methods, was used. Document analysis includes the analysis of written materials containing information about the phenomenon or phenomena to be investigated (Yıldırım & Şimşek, 2005). Although the semi-structured interview form and scanning method are mentioned in the introduction of the study, it is clearly stated in the data analysis section that the document analysis methodology was used. This approach provides an appropriate framework for a systematic examination of vocabulary items in textbooks.

3.2. Universe and Sample

The universe of this study is the textbooks used for teaching Turkish as a foreign language. The sample of the study consists of Gazi Turkish for Foreigners, Istanbul Turkish for Foreigners, and Yunus Emre Institute Seven Climate Turkish textbooks. Although it is stated that the sample is initially limited to A2 levels, in the findings section, A1-A2, B1-B2, and C1 levels were examined for proverbs and idioms, and A1-A2, B1-B2 levels were examined for set phrases. This situation shows that the actual analysis scope of the research is wider than the initial sample definition. Although this inconsistency indicates a lack of sensitivity in terms of methodological explanation, it increases the comprehensiveness of the findings. The fact that the analysis covers A1-C1 levels significantly increases the generalizability of the inferences about the textbook content and makes the results more robust for those who develop curricula at different proficiency levels.

3.3. Data Collection Tools

The database of our research/study/article is a total of five education/training programs, namely "Yeni Hitit, Gökkuşağı Turkish, İstanbul, İzmir, Practical Turkish and Turkish Exercise Book" used in teaching Turkish to foreigners, which are also carried out in various programs.
It is stated that it constitutes a set. However, the current study focuses on the Yedi İklim textbooks from this extensive database, which originated from the Gazi, Istanbul, and Yunus Emre Institute of the Republic of Turkey Program.

3.4. Data Collection

The data for this research study/article were obtained from the reading and listening texts/examples in textbooks for teaching Turkish as a foreign language (Gazi University/Turkish for Foreigners, Istanbul University/Turkish, and Yunus Emre Institute Yedi İklim Publications Turkish). The materials used in our research study were examined/presented both digitally/electronically and as product-based printed material to determine/identify idioms and proverbs.

3.5. Data Analysis

Data analyses were collected and analyzed through document/document review, one of the qualitative research/study methods/procedures. This method covers the analysis of written products/materials containing information specific to the phenomenon or phenomena intended/targeted to be investigated (Yıldırım & Şimşek, 2005). This qualitative model/approach has enabled in-depth examination, scrutiny, and interpretation of textual content/content.

4. Empirical Findings: Distribution and Frequency Between Proficiency Levels and Textbooks

This section presents quantitative and qualitative findings on the presence and frequency of idioms, proverbs, and collocations in the ELT textbooks examined.

4.1. Use of Idioms According to Textbooks and Proficiency Levels

The use of idioms in the textbooks examined varies across different proficiency levels and book series. Although idioms appear at a certain frequency in textbooks, their distribution is not equal across textbooks and proficiency

levels, and some idioms are observed to be repeated. This suggests a lack of systematic progression or a limited pool of selected idioms, which may hinder comprehensive acquisition. The following list provides a summary of idioms identified from reading texts in basic level (A1, A2) textbooks:

● **GAZİ:** Have a good trip (1), To cooperate (1), Enjoy yourself, To be born (4), To set off, What if! To get rid of, To reciprocate, Good for you! To emerge, To stay away (2), To be on the rise (1), To wane (1), To prepare the ground (2), To be well-read (3), To shed light on (4), To open doors (2), To pave the way (3), Once upon a time Apparently not (2), To cope (1), To make progress (2), To open the door (2), To shed light (1), To cope (1), To look for a way (2), To obtain (1), There is a point! (1), To run after (2), To like it (1), To write off (1), To take a lesson from the story (2), To make excuses (1).
● **ISTANBUL:** -To prevent, -To notice (2), -To lag behind (2), -To calculate (2), -To attract attention, -To take action, -To take care, -To eliminate, -To take time (2), -To value (2), To be offended, To gain time, To review (1), To spoil the fun (2), -To do business, -To be born (5), -To be curious, To obtain (2), -To lose one's job (2), -To pave the way, -To be hard of hearing (1), -To teach a lesson, -To obtain (3), -Contentment is an inexhaustible treasure (1).

● **SEVEN CLIMATES:** -To pass from hand to hand, -To take place (2), -To give place (2), -To give a name, -To come to an end, -To take notes, To sign, -To replace, To emerge, -To lose weight (2), To play a role, -To emerge (4), -To pave the way, To give a name, To take place (3), -To count the days, -To attract attention, -To express, -To obtain, -To take the place of, -To give place, -To gain time, To come to mind.

The idioms identified in intermediate level (B1, B2) textbooks are as follows:

● **GAZİ:** -To give life (1), -To express (2), -To handle (1), -To stay away (2), -To be incomprehensible (1), To bring around (3), To satisfy (2), To joke (1), To take place (2), -To feel good (2), -To overcome, To add color (to look at...with eyes), -To reason, To teach a lesson, -One on top of the other..., To hurt, To write down, To reveal, To cast bait (pour), To notice, Welcome.

● **İSTANBUL:** -Good thing, -To keep up, -To lag behind (2), -To come to mind, -To charge, -To give voice (not to give), -Welcome, -Glad to be here, -To reveal, Welcome, To fall into trouble (2), -To mark (1), -To influence, -To replace, -Good thing, -To keep inside, -Sunset, -To take as an example.

● **YEDİ İKLİM:** Welcome, To take place (3), To lick one's fingers (2), To migrate, To have to, To contribute, To get what one wants, To pass by, To greet, To respond (3), To find an opportunity (2), To appear, To look into one's eyes (2).

● **GAZİ:** To come first (A.P), To obtain, To put forward, To be content with, To be useful, To go well (A.P), To interpret as good (A.P), To receive news, To build a nest (2), Not to harm a hair on one's head, to sigh, To think, To inform, To hurt, To return, To be surprised (A.P), To respond (A.P), To be acquitted (3).

● **ISTANBUL:** To be bent over (2), -Not to raise one's head (2), To leave alone, To fill with tears (2), To make eye contact, To be speechless, -To manage, To notice (2), To have one's business ruined, To take a breath (A.P), To disappear from sight, To embrace with both hands, To get one's work done, To be legendary.

● **SEVEN CLIMATES:** -To give points (A.P), To miss out (A.P), -To finish a job (2), To enjoy, To have one's hair stand on end …, To have one's hands and feet tremble (A.P), -Not to be able to stay still, To make way, To gain weight, Welcome, Glad to be here, To take action.

4.2. Use of Proverbs According to Textbooks and Proficiency Levels

The representation of proverbs in textbooks is quite low compared to idioms, and is almost non-existent, especially at basic levels. This represents a critical pedagogical deficiency that severely restricts students' access to Turkish cultural wisdom and authentic discourse. The table below summarizes the proverbs identified in the textbooks and proficiency levels examined:

Table 1: Use of Proverbs by Textbook and Proficiency Level Textbook

Textbook	Proficiency Level (A1, A2)	Proficiency Level (B1, B2)	Proficiency Level (C1, C2)
GAZİ	Proverb could not be found.	Proverb could not be found.	A stone is heavy in its place.Stretch your legs according to your.
İSTANBUL	No proverb study found.	Every hero/person has a way of eating yogurt. A bad/harmful neighbor makes a person a homeowner. When God closes one door, He opens another. Buy a house/home, get a neighbor.	No proverb study found.
YEDİ İKLİM (Seven Climates)	Health is the most important thing of all. Stretch your legs according to your means.	They drive the one who speaks the truth/right out of nine villages. The guest eats what he finds, not what he wants/expects. Life comes through the throat/from the throat. A cup of coffee is remembered for forty years.	Beauty is ten, nine of which is clothes. They drive speaks/tells the truth out of nine villages. It is remembered for forty years. To go through forty streams/waters.

As seen in Table 1, no proverbs at the A1/A2 levels were found in the Gazi and Istanbul textbooks. In the Yedi İklim textbook, only two proverbs were identified at the same level: "Health is the most important thing" and "Stretch your legs according to your means". Even at the B1/B2 and C1 levels, the number of proverbs is quite low; for example, no proverbs were found at the C1 level in the Istanbul textbook.

Such inadequate representation of proverbs indicates a significant gap in YTÖ textbooks. Proverbs, "are one of the most important stages/elements of vocabulary due to their cultural and historical importance," and offer "important clues" that reflect a society's wisdom, worldview, and cultural history. Their absence causes students to be deprived of direct access to Turkish cultural values, historical experiences, and the collective wisdom embedded in the language. This situation may lead to a superficial understanding of Turkish culture and communication, as the underlying cultural logic frequently informs daily interactions and expressions

remains incomplete. This finding reveals a significant gap in YTÖ curriculum design, suggesting that textbook developers either underestimate the importance of proverbs or struggle to develop pedagogical strategies to integrate them effectively. This situation highlights the urgent need for a revision to provide a more balanced and culturally rich curriculum from the early stages, which could begin with the contextual introduction of simpler, frequently used proverbs.

4.3. Use of Idiomatic Expressions According to Textbooks and Proficiency Levels

Idioms appear with higher frequency and variety in the textbooks examined compared to proverbs. This reflects the widespread nature of idioms in daily communication. However, the ratio between usage frequency and the number of unique idioms indicates the presence of significant repetition.

The following table summarizes the statistics for the use of idioms/phrases in the T.C. Istanbul and T.C. Yunus Emre Institute/Yedi İklim textbooks:

Table 2: Idiom Usage Statistics by Textbook and Proficiency Level

Textbook	**Proficiency Levels(A1,A2,B1,B2)**	**Total Usage Frequency**	**Total Number of Unique Collocations**
İstanbul	A 1, A 2, B 1, B 2	920	192
Yedi İklim (Seven Climates)	A 1, A 2, B 1, B 2	1083	235

According to Table 2, 920 collocation usages and 192 unique collocations were identified in the Istanbul textbook at all language levels (A1, A2, B1, B2). In the Yunus Emre Institute/Seven Climates teaching book, there are a total of 1083 collocation usages and 235 unique collocation/basic words at the same language levels. These data indicate that collocations are frequently used in textbooks, but the high frequency of total usage relative to the number of unique collocations suggests that certain collocations are heavily repeated. The high frequency of collocation usage is consistent with their importance in daily communication, as they are

"frequently used vocabulary items." However, the fact that total usage is high compared to unique expressions suggests that textbooks prioritize in-depth exposure to a limited set rather than offering a wide range. This may be a deliberate pedagogical choice for early acquisition, but it may also limit students' exposure to a wider range of social expression. Although repetition is vital for the automatization of collocations, curriculum developers should consider introducing new collocations gradually across levels in order to ensure that students develop a comprehensive repertoire for various social contexts. This also means that the selection of these collocations should be based on authentic frequency and communicative benefit.

4.4. General Summary of Idiom, Proverb, and Collocation Usage

The following table summarizes the overall usage frequencies and unique numbers of idioms, proverbs, and collocations in the textbooks examined.

Table 3: General Summary of Idiom, Proverb, and Collocation Usage by Textbook Total

***Note:** The phrase data of the Gazi textbook is not quantified in detail in the provided research material, such as

Textbooks	(Total Usage of Idioms (All Levels)	Total Unique Idioms (All Levels)	Total Usage of Proverbs (All Levels)	Total Unique Proverbs (All Levels)	Total Usage of Formulaic Expressions (A1-B2)	Total Unique Formulaic Expressions (A1-B2)
GAZİ	Specified Idioms Total: 31	Specified Idioms Total: 31	3	3	No Data*	No Data*
İSTANBUL	Specified Idioms Total: 27	Specified Idioms Total: 31	5	5	920	192
YEDİ İKLİM (Seven Climates)	Specified Idioms Total: 29	Specified IdiomsTotal: 29	8	8	1083	235

Istanbul and Seven Climates. The counts of idioms and proverbs are directly counted from the lists in the text and include repetitions in these lists. Unique idiom counts have been calculated considering the repetitions mentioned within the text.

This table clearly shows how little proverbs are generally represented in the examined materials. While idioms and phrases are found at a certain frequency, the representation of proverbs is quite limited. This quantitative analysis serves as a critical diagnosis highlighting a systemic weakness regarding cultural linguistic elements in YTO pedagogy and requires urgent and strategic intervention.

5. Discussion: Implications for Teaching Turkish as a Foreign Language and Curriculum Design

Empirical findings reveal a significant imbalance in the distribution of idioms, proverbs, and set phrases in Turkish as a Foreign Language textbooks. While idioms and set phrases are relatively abundant, proverbs are almost completely absent or very limited in presence. This situation suggests a pedagogical priority shifting towards functional communication rather than deep cultural immersion; this could lead to students being technically competent but culturally disconnected.

This trend may stem from a focus on "survival" or urgent communication needs (where set phrases are extremely useful), with less emphasis placed on the deeper, often more complex cultural expressions found in proverbs. This indicates an implicit pedagogical philosophy that values operational communication over cultural fluency and nuanced understanding. The definition of cultural transmission as a "problem" is systematically undermined by such bias.

This kind of prejudice may make it difficult for students to understand humor, irony, historical references, or subtle social cues that are often conveyed through proverbs, despite their ability to manage basic interactions. This situation limits Turkish speakers' ability to interact authentically with culture, despite their grammatical proficiency, and may potentially lead to communication breakdowns or a sense of being "left out." This situation shows that YTO materials do not fully reflect the fact that the language of instruction is not just a means of communication but also a carrier of culture/accumulation.

6. Recommendations for Developing Teaching Materials and Methodologies

In light of the findings/documents obtained, the following actionable recommendations are presented to improve the integration of proverbs, idioms, and fixed expressions in teaching Turkish as a foreign language:

● Curriculum Development:
○ **Appropriateness to the Target Audience and Cultural Relevance:** Textbooks should be shaped/organized according to the target audience and the idioms, proverbs, and fixed expressions to be included in the texts/books should be selected accordingly. In particular, emphasis should be placed on the selection of culturally relevant and pragmatically useful expressions.
○ **Authenticity and Context:** Idioms or proverbs found in texts/books should be selected from expressions that the learner can also use in daily life.
The importance of teaching these elements in meaningful, real-life contexts should be emphasized.
○ **Systematic Repetition:** The variation/repetition of these idioms and proverbs in different skills (reading, listening, speaking, writing) and in different contexts/places in the book raises awareness/vigilance in the learner and reinforces what is learned. The importance of planned and diverse repetitions should be advocated.

● **Pedagogical Approaches:**
○ **Use of Visual Materials:** Visual materials can be utilized while teaching idioms and proverbs. Such teaching may enhance permanence in the learner.
○ **Interactive Methods:** Some uses and idioms, as well as many proverbs, are used in the context of an event. Proverbs and idioms can be taught in the classroom through gamification or dramatization. The benefits/positive sides of active learning in terms of contextual understanding and permanence should be emphasized.
● **Addressing the Lack of Proverbs:** Specific strategies should be suggested for increasing the incorporation of proverbs into the curriculum. This may start with introducing simpler, frequently used proverbs at early levels and progressively adding more complex ones.

This proposal emphasizes not only the inclusion of these linguistic elements but also how they should be taught: contextually, visually, interactively, and repetitively. This signifies a shift towards a more holistic and engaging pedagogical approach. These recommendations support the principles of communicative language teaching and constructivism, where language is learned meaningfully, and knowledge is actively constructed. In particular, the phrase “can be taught through gamification or drama” suggests an inclination towards experiential learning, which is particularly effective for culturally entrenched expressions. By adopting these strategies, YTÖ will not only enable students to gain grammatical fluency but also acquire deep cultural literacy, allowing them to use these expressions naturally and appropriately in real-world situations, thus bridging the previously identified cultural gap.

7. Conclusion

This study examines the idioms found in the textbooks of the Republic of Turkey, Istanbul, Gazi University, and Yedi İklim Proverbs and Mold Words Usage Rates As a result of the research. The findings clearly revealed that these linguistic elements are significant differences and deficiencies in the representation of the existing YTO textbooks. In particular, the fact that proverbs are almost at all at the basic levels and their limited are limited even at advanced levels indicate a serious gap in terms of providing cultural transmission and pragmatic competence in language learning.

This quantitative analysis serves as a critical diagnostic task that demonstrates a systemic weakness of cultural linguistic elements in YTO pedagogy. This "detection" provides a critical diagnostic diagnostic that confirms the gap between, especially for proverbs, which are (cultural integration), which should be (cultural integration) with the need to be cultural integration. This is an urgent call for textbook developers and educators to implement the proposed pedagogical strategies to enable students to gain linguistic fluency, but also to gain deep cultural literacy. The effective integration of such cultural elements/elements/elements will allow foreign language learners to use Turkish more naturally, meaningful and culturally sensitively, thus understanding the integral bond between language and culture.

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DEVELOPMENT OF SOME OF THE SCIENCE CONCEPTS AND VOCABULARIES TO PRESCHOOLERS USING SCIENCE MAGIC ACTIVITIES

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ABSTRACT
This research targeted to develop some of the science concepts and vocabularies to preschoolers using science magic activities. For achieving this purpose the researcher began this work with the study of the science concepts , science vocabularies , science magic activities and the relation between them through access to the educational literature and the previous studies and research. Six research questions and six hypotheses guided the research. The hypotheses were tested at p≤0.01and α≤ 0.05 level of significance. *One-group pretest-posttest design* was used for the search. A sample was consisting of 23 preschoolers randomly selected from smart baby kindergarten –kafer elzayat district was used for the research. The experimental group was taught the science concepts and vocabularies using the program based on science magic activities. Three validated instruments called tests of science concepts ; science vocabularies ; one note cards for science concepts . The result of the research revealed that the results indicate in general that some scientific concepts and vocabularies can be developed among pre-school children by using scientific magic activities.
Keywords: science concepts (frozen concepts), vocabularies, preschoolers, science magic activities.

INTRODUCTION

Teaching by magic is a new method for the teachers, as it provides them with ideas in all subjects designed to attract children's attention and help them understand the basics through the use of magical activities. Most children from four to six years of age, and about half of nine-year-old children, rush to magical practices and engage in magical thinking, which includes (magical pretend play, participation in the representation of magical folk characters, and imaginary accompaniment with magical powers (Evgenii Vasilievich,2010,p. 15) . It is considered the use of "magic" to name thinking that is characterized as illogical. For many preschool teachers, especially those who teach in a Piagetian view, the development of magical thinking in terms of illogical thoughts is a common feature of young children(Roseng Ran, Miller, Gutierrez & Schein, In press) quoted from (Marjorie Taylor, 2013, p. 43) . hands on activities is usually used on the assumption that hands on scientific activities will also include interaction and will provide additional educational value that will lead to thinking. (French ,2004) explains that scientific activities in pre-school classrooms emphasize collecting phenomena and language that enhance children's intellectual and linguistic development. These activities provide children with opportunities to describe and explain scientific processes and allow children to participate in scientific investigations, which increases their understanding of the nature of science (Metz, 2004). Teachers also believe that hands-on science learning is an effective teaching method, if the experiments are properly planned (Tim Caulton, 1998, p. 20). These scientific experiments should not focus only on providing information and explanations for scientific phenomena, but should be done with the intention of providing opportunities for children to expand their thinking and create new understandings from their experiences (Worth & Grollman, 2003). Children also learn advanced science through curiosity, processing, and error (Naellace, Chairman, Provost, Rice, 1988). In this context, (Lehr , 2005) states that children have an innate curiosity, but they need help in understanding their observations and how to link new information to their current knowledge. Recent studies in science learning developments indicate that the sequential development of conceptual understanding of science topics, as well as scientific thinking skills to understand basic concepts of science such as (order, order and organization - evidence, models and explanations - change, stability and measurement - evolution and balance - form and function) (U.S. Department of education ,2005) may facilitate the learning of complex and advanced scientific concepts and skills. Here, (Brenneman, Stevenson-Boyd, & Frede, 2009) emphasize the importance of the thinking processes associated with these early explorations and engagement with scientific concepts, as they help children establish a foundation for learning as they continue In developing a more advanced understanding in this field.

When children learn science through experimentation, children often find that scientific vocabulary represents an obstacle. To overcome this obstacle, the teacher must encourage knowledge of scientific vocabulary and lead children to link concepts to vocabulary (Kathleen Kopp, M.S., 2011, p. 9).There is also evidence showing that specific teacher input and guidance enhances, or at least is positively associated with, preschool children's skills

and comprehension, as one study found that preschool children's oral language skills are developed primarily through conversations (Dickinson, McCabe, Anastasopoulos, Peisner- Feinberg & Poe, 2003) and improved academic performance in later years for children who engaged in rich conversational experiences with adults during the preschool years (Scarborough & Dobrich, 1994). Exchanging conversation between adults and children, where adults respond to the child's comments and questions, is very important in terms of enhancing children's skills and acceptance of expressive language (French, 2004). The language that teachers use during their interactions with children has the potential to structure their inquiries as well as children's understanding of inquiry (French, 2004). By encouraging children to discuss their ideas, think and make observations as part of activities and play, teachers help children to grow not only in their ability to use language but Also communication skills and knowing their ideas (Worth, Moriarty, & Winokur, 2004). Teachers who ask children open-ended questions provide opportunities for children to engage in conversations that allow children to use language in meaningful ways (Bond & Wasik, 2009). While preschool children do not learn easily from lectures, the use of language by the adults around them is a vital component of not only their language acquisition but their mental development (French, 2004).

Statement of the Problem:
This research investigated the use of scientific magic activities in developing some scientific concepts and vocabulary among pre-school children. Some studies in recent years have come to view magic performance, especially the use of magic tricks in the magical science program, as not only a form of entertainment, but also a constructive activity. As a tool for teaching science (Hsu, Wang, & Hsu, 2012; Lin et al., 2014) and distinct from traditional magic tricks, scientific magic activities are designed based on scientific principles and knowledge in addition to arousing children's interest as the activities help children develop knowledge and skills. Related scientific studies through observation and processing that occur during scientific magical activities. As a result, this research was designed to design a series of learning activities based on magical sciences.

In this context, (Sarah J. Carrier ,2017) points out the importance of developing children's scientific knowledge, as they need to acquire knowledge of the content of science and practice scientific habits of mind, and this is impossible without knowledge of science vocabulary. In addition, teaching children new terms (vocabulary) expands their world by helping them access a new network of ideas related to concepts (Robert J. Marzano, Katie Rogers, Julia A. Simms, 2015, p. 1).

In addition to the lack of research that aims to use scientific magical activities to develop some scientific concepts and vocabulary among pre-school children, as far as the researcher knows.

Based on the previous background, there was a need to research the use of scientific magical activities in developing some scientific concepts and vocabulary among pre-school children.

Statement of the problem can be formulated in the following main question:
- What is the effectiveness of scientific magic activities in developing some scientific concepts and vocabularies for pre-school children?

Literature review:
The most frequently mentioned function of the magical thinking is the realization of unrealized wishes. Thus, according to Freud (1916/1976), a significant part of the individual's vital needs cannot find a legitimate gratification within the ordinary reality due to its rigid structure and multiple taboos. Since magical reality is free from these limitations, the unrealized wishes find their outlet in it. In our dreams, we can see and speak to our dear ones who passed away, fly or be young again.

Another function of magical thinking is based on the fact that magical reality allows unusual counterfactual and counterintuitive combinations of structures and events that cannot happen within ordinary reality due to its rigid constitution. Usually this function is known as the role of fantasy and is important in all sorts of creative activities, from arts to sciences (Borel, 1934; Freud, 1908/1995; Thalbourne & Delin, 1994).

Magical thinking can help us understand physical objects, animals and other people by projecting into them our own thoughts and feelings. This animistic function of magical thinking has long been appreciated in psychology, under the name of animism and anthropomorphism (Bullock, 1985; Lévy-Brühl, 1926/1984; Piaget, 1929/1971; Subbotsky, 2000). Not only our everyday language is full of animistic constructions (the sun is rising, the rain is coming), but many scientific terms (i.e., gravitational attraction) are animistic as well. Even in their reasoning about the dead, children and adults cannot avoid concepts and expressions that attribute dead people with mental states pertinent to the living ones (Bering, 2006).

One can also distinguish the meaning creating function. In those who believe in magic, god and the afterlife these beliefs affect the meaning of their lives by putting the life in the long perspective. The phenomenon of near-death experiences (Lundahl, 1993) can be related to this function. The meaning created by magical thinking and magical (religious) beliefs can help to cope with some metaphysical problems, such as lack of good fortune or fear of death, which are impossible to cope with through scientific knowledge or logical reasoning.

There is evidence that in modern industrial cultures, children's involvement in activities with magical content can facilitate their cognitive abilities, such as memory, imagination and creative thinking. Thus, Principe & Smith (2008) reported that 5- and 6-year-old American children who believed in the Tooth Fairy (some of them reported of having actually heard of seen the creature) produced more vivid and rich narratives about their first tooth loss than the children who believed in the Tooth Fairy to a lesser extent.

In another study, English children aged 4 and 6 years from the area of Greater London were divided into experimental and control conditions. In both conditions, children were shown fragments from the Harry Potter movie. In the experimental condition, the movie was full of magical effects, whereas, in the control condition, the movie showed the same characters but no magical effects. The results indicated that after the exposure (but not before), children in the experimental conditions scored significantly higher than controls on the majority of creativity tests. In Experiment 2, these results were replicated with 6- and 8-year-old children coming from Shropshire County in England (Subbotsky, Hysted & Jones, 2010).

In another study, the effect of watching magical movie on children's ability to discriminate fantastic from realistic visual displays was investigated. Distinguishing fantasy from reality is important because it mediates the effect of mass media on children and adults' subsequent behaviour. It has been shown, for instance, that children who were aware a violent film clip was real later reacted more aggressively than children who believed the film was fantasy (Atkin, 1983). When children have an increased ability to distinguish between fiction and reality, their exposure to TV violence may have less effect (Bushman & Huesmann, 2001; Comstock & Scharrer, 2006). Boyer and Walker (2000) argued that counterintuitive magical effects, which violate known physical laws, are "attention grabbing" and should, therefore, be better recalled and recognized than "ordinary" (i.e., expected) physical events, which do not violate the laws of physics. Thus, here it was assumed that watching a film with magical content would have such a priming effect, focusing the children's attention on the distinction between possible and impossible characters and events and subsequently enhancing their ability to differentiate fantastic and ordinary visual displays through priming and association. In order to examine this possibility, 6- and 9-year-old British children were divided into equal experimental and control groups. The experimental groups were shown a film with a magical theme, and the control groups were shown a film with a non- magical theme. All groups then were presented with a choice task requiring them to discriminate between ordinary and fantastic visual displays on a computer screen. The results supported the hypothesis that watching films with a magical theme enhance children's sensitivity toward the fantasy/reality distinction (Subbotsky & Slater, 2011).

Researchers from Lancaster University have discovered that youngsters who watch films like Harry Potter improve their imagination and creativity.

This is the first attempt to study whether there any educational benefits in exposing children to magical content like witches and wizards, Santa Claus, the Easter bunny and the tooth fairy.

Watching Harry Potter films could make young children more creative, say researchers at Lancaster University in the UK.

The study examined if there was a link between magical thinking and creativity in preschool children – and it found that there was.

The small-scale study involved 52 four to six-year-old children. The youngsters were split into two groups and shown two 15-minute clips from Harry Potter And The Philosopher's Stone.

The findings show that after watching the clips, the group who watched the magical scenes in general scored "significantly better" in all three areas than their peers in the other group who watches scenes without any magical content.

Finally, in the fourth study, the aim was to examine whether memorizing commercial brands framed within films with magical effects is easier than memorizing brands, framed within films with nonmagical effects (Subbotsky & Matthews, 2011). Adolescents and adults viewed two films containing television commercial advertisements and

were asked to recall and recognize the films' advertised products. In Film 1, commercial brands were framed in the context of magical effects, and in Film 2 they were framed in the context of ordinary, but equally attractive effects. On the recognition test, adolescents and adults showed significantly better recognition for the brands framed in the context of magical effects versus the brands framed in the context of ordinary effects.

"Magical thinking enables children to create fantastic imaginary worlds, and in this way enhances children's capacity to view the world and act upon it from multiple perspectives. The results suggested that books and videos about magic might serve to expand children's imagination and help them to think more creatively."

Magical thinking involves believing in supernatural events like animals speaking human languages, or a witch flying on a broomstick. This involves the ability to construct an alternative world and research has shown that most 4 to 6 year olds think magically in everyday life.

Some of the scenes includes animals talking and witches and wizards performing spells and using wands, while other scenes featured the same characters but without any magical content.

The children were then tested for creativity which included being asked to pretend they were a rabbit or driving a car. They were also asked to think of different ways of putting plastic cups in a bin and for alternative uses for the cup.

The children who had watched the magical scenes performed significantly better on the creativity tests.
The researchers concluded that rather than just being used for entertainment, "magical thinking can be viewed as an additional source of development of imagination and divergent thinking in children." (Eugene Subbotsky, Claire Hysted And Nicola Jones,2012).

In this research , the researcher shed light on the role of science magic activities in development of some of the science concepts and vocabularies to preschoolers.

Purpose of the research:
The current research aims at:
1- Identifying the effect of using scientific magical activities in developing some scientific concepts and vocabulary among pre-school children.
2- Developing some scientific investigation skills among pre-school children, such as (observation, prediction, planning, conducting investigation, interpreting data, asking more questions).

Source of science concepts
The movie Frozen is one of the best movies to choose from movies because it contains many science activities for ice science, and it contains several ideas related to ice science. All of these activities are known as Frozen activities that fall under the heading of sensory science and they provide a lot of fun and are also easy to do at home or school! These awesome activities are not only beautiful but also educational. They help children explore science concepts such as chemical reactions, melting and freezing ice, water science, non-Newtonian fluids, polymers, and crystal growth while improving fine motor skills as well! These activities are also science that enables children to feel great sensory components for hands-on learning.

Methods
Research Paradigm, approach, and design

1.Research design
A simple repeated measures research design was used in this study. This design uses a single group of participants who are generally exposed to several test occasions prior to the start of treatment and subsequently subjected to various test occasions following treatment (Jones & Kenward, 2003). The different test occasions in this example act as a control for the treatment condition. This design has recently been utilized in similar studies (Onyishi et al., 2021; Ugwuanyi, Ede, et al., 2020; Ugwuanyi, Gana, et al., 2020). On the other hand, The research used experimental design to carry out the investigations. *One-group pretest-posttest design* was used for the search.

2. **Participants**:
In addition to descriptive method. Random selection or sampling of preschool was done to obtain the sample. The research used sample consisted of (23) preschoolers 9 (boys) and 14 (girls) from smart baby kindergarten – kafer elzayat district – Egypt . The research adopted a pretest – posttest design with the experimental**. The treatment for the research involved :-** teaching the experimental group science concepts and vocabularies using the

program based science magic activities. After the treatment, which lasted for three months, the post test was conducted.

Measure :

The researcher's developed Science concept Test (ScT) was employed to collect information. The Basic Science concepts covered in the ScT are concepts of **Chemical reactions**, **Ice melting and freezing**, **water science, Non-Newtonian fluids, Polymers**, **Crystal growing** . The ScT is a 12-item multiple-choice test with options A, B, and C, with the children being expected to choose the proper answer for each question. In other words, each of the 12 questions of the ScT was awarded 2 marks when correctly answered and 0 when wrongly answered giving a total maximum mark of 24 and the lowest mark of 0. On the other hand , the science vocabularies test is (svt) a 12-item multiple-choice test with options A, B, and C, with the children being expected to choose the proper answer for each question consists from vocabularies such as **crystal, solution, snowflakes, sink, float, change in matters, mixture , frozen fractals , clouds, water cycle,** Rainbows**, a Hurricane, a Snowstorm** . The SvT is a 13-item multiple-choice test with options A, B, and C, with the children being expected to choose the proper answer for each question. In other words, each of the 13 questions of the ScT was awarded 2 marks when correctly answered and 0 when wrongly answered giving a total maximum mark of 26 and the lowest mark of 0, also one note card was used for assessing some of science concepts which connected to the magic thinking skills consists of six dimension rating from one to four , four The child performs the skill with great skill, 3 The child performs the skill brilliantly, 2 The child performs the skill fairly proficiently, 1 The child does not perform skill**.**

Results

Table (1) Averages, standard deviations, and "t" values for the scores of the children in the experimental group in the pre- and post-measurements of the scientific concepts test "scientific concepts and sub-dimensions."

Significance level	**T value**	**Degree of freedom**	**Standard deviation**	Average	**number**	**group**	Dimensions	**Series**
0.01	3.80	22	1.37 0.97	2.08 3.30	23 23	Pre - post	Chemical reactions	1
0.01	5.47	22	1.72 1.45	2.39 4.86	23 23	Pre- post	Ice melting and freezing	2
0.01	9.95	22	1.20 1.24	2.00 5.00	23 23	Pre- post	Water Sciences	3
0.01	4.77	22	0.89 1.23	1.47 2.91	23 23	Pre- post	Non-Newtonian fluids	4
0.13	1.55	22	0.99 0.96	0.78 1.26	23 23	Pre- post	Polymer	5
0.08	1.80	22	1.02 0.89	0.95 1.43	23 23	Pre- post	Crystal growth (crystals)	6
0.01	8.94	22	4.23 4.92	9.69 18.78	23 23	Pre- post	Total score	7

Table (2) Averages, standard deviations, and "t" values for the scores of the children in the experimental group in the pre- and post-measurements of the scientific vocabulary test "scientific concepts and sub-dimensions."

Significance level	**T value**	**Degree of freedom**	**Standard deviation**	Average	**number**	**group**	Dimensions	**Series**
0.13	1.55	22	1.02 0.94	0.95 1.39	23 23	Pre-post	**crystal**	1
0.01	2.85	22	0.94 0.94	0.60 1.39	23 23	Pre-post	**solution**	2
0.01	3.14	22	0.97 0.84	0.69 1.56	23 23	Pre- post	**snowflakes**	3
0.01	3.14	22	0.97 0.84	0.69 1.56	23 23	Pre-post	**Sink**	4

0.01	5.01	22	0.84 0.77	0.43 1.65	23 23	Pre-post	**Float**	5
0.01	5.46	22	0.94 0.41	0.61 1.91	23 23	Pre-post	**change in matters**	6
0.01	3.44	22	0.97 0.77	0.69 1.65	23 23	Pre-post	**mixture**	7
0.01	3.76	22	0.94 0.77	0.60 1.66	23 23	Pre-post	**frozen fractals**	8
0.01	2.57	22	1.02 0.77	0.95 1.65	23 23	Pre-post	**Clouds**	9
0.01	4.59	22	0.97 0.57	0.69 1.82	23 23	Pre-post	**hydrologic cycle or water cycle**	10
0.01	4.09	22	0.97 0.57	0.69 1.83	23 23	Pre-post	Rainbows	11
0.01	6.55	22	0.84 0.41	0.43 1.91	23 23	Pre-post	**Hurricane**	12
0.01	4.21	22	0.99 0.57	0.78 1.82	23 23	Pre-post	**Snowstorm**	13
0.01	14.98	22	2.75 3.12	8.86 23.12	23 23	Pre-post	Total vocabulary score	14

Table (3) average, standard deviations and t-values for the scores of the children in the experimental group in the post-test and follow-up measurements of the scientific concepts test (scientific concepts and sub-dimensions).

Significance level	**T value**	**Degree of freedom**	**Standard deviation**	**Average**	**number**	**group**	Dimensions	**Series**
0.49	0.69	22	0.97 0.89	3.30 3.47	23 23	Post-follow up	Chemical reactions	1
0.25	1.16	22	1.45 0.99	4.86 5.21	23 23	Post-follow up	Ice melting and freezing	2
0.05	2.07	22	1.24 0.84	5.00 5.56	23 23	Post-follow up	Water Sciences	3
0.05	2.33	22	1.23 0.89	2.91 3.47	23 23	Post-follow up	Newtonian fluids	4
0.01	3.34	22	0.96 0.41	1.26 1.91	23 23	Post-follow up	Polymer	5
0.01	3.02	22	0.89 0.00	1.43 2.00	23 23	Post-follow up	Crystal growth (crystals)	6
0.01	3.76	22	4.92 2.93	18.78 21.85	23 23	Post-follow up	Total score	7

Table (4) illustrates Average scores of the children of the experimental group in the post-test and follow-up measurements, to test the scientific vocabulary as a whole and the sub-dimensions. The researcher used the Paired-Samples T Test to detect the significance of the difference between the averages (using SPSS. V21). The following table (4) show s these results:

Significance level	**T value**	**Degree of freedom**	**Standard deviation**	**average**	**number**	**Group**	**Dimensions**	**Series**
0.06	2.01	22	0.94 0.57	1.39 1.82	23 23	Post-follow up	**crystal**	1

0.10	1.69	22	0.94 0.68	1.39 1.73	23 23	Post- follow up	**Solution**	2
0.08	1.81	22	0.84 0.57	1.56 1.82	23 23	Post- follow up	**snowflakes**	3
0.18	1.36	22	0.84 0.57	1.56 1.82	23 23	Post- follow up	**Sink**	4
0.42	0.81	22	0.77 0.57	1.65 1.82	23 23	Post- follow up	**Float**	5
0.32	1.00	22	0.41 0.68	1.91 1.73	23 23	Post- follow up	**change in matters**	6
0.42	0.81	22	0.77 0.57	1.65 1.82	23 23	Post- follow up	**Mixture**	7
0.42	0.81	22	0.77 0.57	1.65 1.82	23 23	Post- follow up	**frozen fractals**	8
0.08	1.81	22	0.77 0.41	1.65 1.91	23 23	Post- follow up	**Clouds**	9
0.57	0.56	22	0.57 0.41	1.82 1.91	23 23	Post- follow up	**hydrologic cycle or water cycle**	10
0.32	1.00	22	0.57 0.41	1.82 1.91	23 23	Post- follow up	Rainbows	11
0.32	1.00	22	0.41 0.00	1.91 2.00	23 23	Post- follow up	**Hurricane**	12
0.66	0.43	22	0.57 0.68	1.82 1.73	23 23	Post- follow up	**Snowstorm**	13
0.38	0.89	22	3.12 2.37	23.13 23.91	23 23	Post- follow up	Total vocabulary score	14

DISCUSSION :

The results of the scientific concepts variable in this research are consistent with the results of previous studies, which are as follows: -

(Van Hook, Huziak, and Nowak ,2005) conducted a study to determine whether practical lessons and inquiry-based science magic activities would help kindergarten students develop mental models of the concept of air. One of the difficulties of teaching science to kindergarten students is how abstract many concepts are. They often ask children to infer information that cannot be directly observed. To make science concepts more concrete, teachers often need to help children create mental models. The study was conducted in a Midwestern city with 39 kindergarten children in half-day programs. A scientist taught seven 30-minute lessons using science magic activities and songs. The scientist's goal was to create a mental model for children to understand the concept of air. In the first lesson, children had to come up with evidence for the existence of air. The next six lessons included investigations in which children developed the "air balls" mental model and used it to understand air in different contexts. The investigations included (a) hitting and moving objects with ping pong balls, (b) comparing how fast flat paper and crumpled paper fall, (c) learning about surface area using parachutes, (d) experimenting with a “mouse bowling game” with weight and air resistance, (e) investigating air pressure using straws, and (f) learning about Newton’s third law using propeller cars. The researchers analyzed pre- and post-interview responses and videotapes of the subjects’ body language and behavior. The results showed that in the pre-interview, most of the kindergarteners used their previous experiences to answer questions about air and justify their explanations. For example, the majority of the children said that air is wind and explained that it is real because they feel it. Twenty-five percent of the children said they did not know what air is made of. Air . Post-interview data showed that more children were able to explain what air is and what it is made of, and they used the model to explain their thinking. After the investigations, more children used deeper explanations that included new mechanisms and language. At the pre-interview, only a quarter of the children knew that air was in an empty bottle, compared to two-thirds who knew it at the post-interview. The authors noted that the inquiry-based science lessons and activities were not enough for all children to use a mental model to transform their thinking, and that some children relied heavily on science to confirm their thinking. The researchers concluded that the inquiry-based science lessons and activities

helped most preschoolers learn not only about air but also how to apply knowledge about air in different contexts. This study suggests that young children can explain and justify an idea scientifically, and that this research can help them create mental models to understand air. Further research is needed to see if young children can create mental models to help them understand abstract concepts in different science disciplines. (Van Hook & Huziak-Clark ,2008) conducted a half-day study with 49 preschoolers to determine whether inquiry-based science lessons and activities could increase children's understanding of energy. The kindergarteners received five 30-minute lessons centered around the five-step learning cycle model: engage, explore, explain, extend, and evaluate. The lessons included: (a) hands-on exploration, (b) whole-group discussions, (c) demonstrations of how toys use energy, and (d) songs and key phrases about energy. After analyzing the pre- and post-interviews for symbols and patterns, the researchers found that most children could distinguish between where energy comes from and how it is used. The kindergarteners were also able to provide examples of living and inanimate objects that use energy. In the post-interview, the children used more vocabulary from the discussions and incorporated more reflection into their thinking. One question from the interview was about how to pump energy into a plastic rabbit and an inflatable toy. In the pre-interview, very few children were able to pump energy into the plastic rabbit, but in the post-interview, all students were able to give the rabbit energy by squeezing it, causing it to jump. The authors concluded that "preschoolers are capable of developing a basic understanding of energy if they are provided with practical experiences that relate to their own lives" (Van Hook Huziak-Clark, 2008, p. 12). One limitation of this study is the limited number of participants; more replications would be needed. Another limitation was that the scientist taught the lessons to the preschoolers. The classroom teacher may not have the background knowledge or confidence to create or facilitate some of the experiments.

(Vanna's , 2013) pointed out in the study of 64 students from two first-grade and two third-grade classrooms at a private elementary school investigated the effects of inquiry-based science learning on young children's understanding of thermodynamics. First- and third-grade teachers volunteered to participate in the study. One class from each grade was randomly assigned to either an experimental or a control class. Children in the experimental group participated in guided experiments in the school assembly hall and during recess or free-choice time. In pairs, the experimental children participated in three investigations in which they made observations, collected and recorded data, made predictions, and attempted to solve problems. In the first investigation, they explored heat, equilibrium, and heat flow using a bowl of room-temperature water, a warm bottle of water, a cold bottle of water, and a laptop computer. During the last two investigations, the children learned about insulation and heat flow. In one investigation, they had to use different materials to keep juice cold, and in the other, they had to choose from the same material and keep hot chocolate hot. An experimenter was in the conference room with the children to facilitate the investigations by prompting the children to make predictions and helping collect data. The experimenter also explained thermodynamics and heat flow to the children and prompted them to make contact with it during the investigations between February and April. The children in the intervention participated in three lessons. The control classes received no instruction on this topic and never saw the experimental room. Varma used an open-ended clinical interview before and after the test to measure the children's learning. The interviews were transcribed for coding and data analysis. The results showed that over time, the guided experiences allowed the first and third graders to learn about the concept of thermal equilibrium. She also found that the children in the experimental group had more complete mental models of thermodynamics than the children in the control group. Posttest scores showed that 63 percent of the intervention group's third-graders increased their understanding of heat flow compared to 36 percent of the control group's third-graders. Similarly, 57 percent of the intervention group's first-graders increased their understanding of heat flow compared to 10 percent of the control group's first-graders. The results also showed that the children in the experimental group gave more answers than the control group that did not contain any misinformation when identifying and explaining good insulators, but they were not statistically significant. The authors concluded that the educational content was accessible to younger students because the thermodynamic and heat flow investigations built on pre-existing experiences of keeping things hot and cold and that inquiry-based learning motivates children to become active learners (Varma, 2014). Varma noted that further research is needed to determine which aspect of the intervention increased children's learning: (a) the experimentation, (b) the investigations, (c) the materials, or (d) the combination. One limitation of this study was that the control group did not receive any instruction on the topic; this may have skewed the results. It is thought that it would be important to replicate the study but with the control group receiving direct instruction on the topic for comparison and the size of the study also limits the results.

2- The results of the vocabulary variable in this research are consistent with the results of previously conducted studies, which are as follows: - (Block ,2020) states that children who are unable to learn science through pure scientific vocabulary need practical field scientific activities to help them understand concepts. These practical or inquiry-based activities are not limited to traditional scientific experiments. Children are encouraged to ask questions, solve problems, and be creative (Ed, 2015). Inquiry-based learning is accomplished through crafts, songs, dances, and stories (Donohue & Buck, 2017). When these activities are completed in meaningful ways,

children can make meaningful connections between their work and their learning (Marzano, 2010; Suárez et al., 2020). By taking advantage of a wide range of hands-on learning activities, children have a better opportunity to become familiar with science vocabulary and concepts, allowing for better understanding and transfer between contexts (Brown & Concannon, 2019; Rice & Deshler, 2018). Science vocabulary can be complex for children, and it can feel as if students are learning a whole new language before they can begin to understand the concepts (Block, 2020; Brown & Concannon, 2019; Rice & Deshler, 2018). However, when teachers recognize this barrier and address this difference during science lessons and activities, children tend to understand words and concepts better. (Nelson & Allen, 2020; Rice & Deshler, 2018). A review of the literature found that vocabulary instruction has value not only in literacy classrooms but across all subject areas. By incorporating effective vocabulary strategies into activities in science instruction, teachers can help children identify what type of vocabulary words they are trying to decode and help decode the word in a science context. Many different strategies can be used in inquiry-based and vocabulary-based activities in the classroom to help teach science vocabulary, such as adapting to children's needs and learning resources, using peer discussion, visual displays for learning such as interactive word walls, and incorporating inquiry-based, hands-on activities. These strategies will help children develop academic speaking skills, which will help them throughout their educational careers (Block, 2020; Carrier, 2011; Nelson & Allen, 2020; Suárez et al., 2020).

3- In the case of non-statistically significant results such as crystal growth (crystals), polymers, chemical reaction, melting and freezing of ice, and other concepts and vocabulary addressed in the current research: - The researcher believes that despite the prevalence of these concepts and vocabulary in modern daily life, there are few experiments on the subject in teaching science during primary or secondary education. These concepts and related vocabulary are not found in kindergarten, but primarily in biology or chemistry. Therefore, I prepared experiments related to these topics with the aim of providing children with an understanding of them and in line with science education standards and in a language appropriate for children so that each lesson can be adapted to the vocabulary of the classroom. The important thing is that each lesson contains practical activities for repetition. The concepts taught through scientific magic activities enhance the understanding of research vocabulary, and encourage future teachers to teach science actively and consciously, which has been proven to provide greater retention of lessons in the short and long term among children. This actually provides two motivations for our program: (1) to make these concepts and vocabulary relevant to young children, thus providing a foundation for them before they enter the curriculum, and (2) to teach the next generation of teachers about polymer science, chemical reactions, melting and freezing, crystals, and other concepts and vocabulary associated with the freezing unit and how to communicate effectively with their classes. The Magic Science Activities program has proven successful, and this view is consistent with a study by (Rose K. Cersonsky, Leanna L. Foster, Taeyong Ahn, Ryan J. Hall, Harry L. Van Der Laan, and Timothy F. Scott, 2017) which aimed to introduce children to polymers, crystal growth, chemical reactions, melting and freezing, and other concepts and vocabulary associated with the freezing unit. It is a potential area of study in addition to promoting positivity toward science. To achieve this, each unit is designed to employ active learning techniques that can be applied universally across all age groups. These techniques have been shown to enhance children's interest in a subject for further learning as well as improve long-term retention. Because children's classroom experiences with science have a powerful impact on their attitudes toward science, these lessons use the context of existing classrooms to present science in a new way, either by introducing new topics or by recruiting scientists and engineers as non-traditional scientists and instructors. This exposure to a diverse range of STEM professionals is critical to encouraging interest in and positive attitudes toward STEM careers.

CONCLUSIONS :

There are three main conclusions to be made based on these science magic activities. First of all, the results generally indicate that some scientific concepts and vocabularies can be developed in preschool children using scientific magic activities.

Secondly, the teaching method using scientific magic activities helps to improve the conceptual understanding of preschool children in the freezing unit compared to the traditional teaching method.

Thirdly, the teaching method using scientific magic activities is more effective than the traditional teaching method in improving children's achievement in the theoretical and practical freezing science unit.

RECOMMENDATIONS :

The researcher recommended that 1-using scientific magic activities as an introduction prepared by the researcher to improve children's vocabulary skills and their academic performance in science.2-seminars and in-service training should be conducted for female teachers regarding the development and implementation of materials for magical scientific activities in the classroom.3-the researcher recommends conducting a similar study covering a

larger number of participants elsewhere.4- the researcher recommends that integrating scientific magical activities with the five-year learning cycle model for developing educational materials is effective, useful, and promising. In future studies related to inquiry-based learning, more research should be devoted to developing scientific magic activities related to other science topics, such as light, energy, and heat, which can then be integrated into inquiry learning to improve children's learning performance and attitudes toward science.5- teachers should be introduced to teaching methods and techniques that support inquiry and create an investigative atmosphere for performing inquiry-based science activities in the preschool stage. In attempting to implement inquiry-based science activities, teachers must plan learning experiences related to the children's immediate surroundings, appropriate to their level of development. These activities should be planned and implemented to use basic investigative skills.6-when learning new content vocabulary, children should have the opportunity to do so and communicate with their peers while interacting with the content vocabulary.

7-children should have multiple opportunities to use content vocabulary correctly. This could be through text cards, graphic organizers or interactive activities such as experiments or investigations. This will allow children to build their own understanding of the content vocabulary.

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ENHANCING ELEMENTARY SCIENCE EDUCATION: A USER-CENTERED DESIGN CASE STUDY ON MOBILE AUGMENTED REALITY

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ABSTRACT
This paper presents a user centered design case study focused on enhancing elementary science education through a mobile augmented reality application (mAR). The study was conducted in two phases of user research. In the first phase, teachers of elementary school students were surveyed to gather insights on the use of technology in the classroom and its impact on student engagement and learning. Key findings from this phase informed the design requirements for the AR application, prioritizing simplicity, interactivity and student engagement. The second phase involved an evaluation with elementary students, where mid-fidelity prototypes were tested to assess usability and effectiveness. A combination of qualitative and quantitative feedback was collected to refine the design further. The study began with a comprehensive literature review, exploring the role of AR in education and concluded with the final design recommendations. The results highlight the potential of mobile AR applications to improve focus and motivation in young learners, as well as the importance of a user friendly interface tailored to their needs. This case study offers insights for educators and designers seeking to integrate AR into educational environments.

INTRODUCTION

In recent years, with the popularity of mobile devices and mobile networks, digital learning can not only be applied to computers; learners now have more freedom and convenience in learning through mobile devices. Mobile technology is increasingly being used to replace analog media and technology, offering greater flexibility and accessibility to learners of all ages. According to research, children in elementary school have different learning styles than adults (Al Hunaiyyan, Al-Sharhan, & ..., 2017; Gabor & Péter, 2015; Wong, 2012). They process new information in different ways and possess distinct learning characteristics. Innovative techniques and pedagogical approaches can cater to these styles, particularly through the use of information and communication technology (ICT) and mobile technology in education (Oladele, 2014).One of the newer technologies that has been effectively integrated into education via mobile devices is augmented reality (AR). AR combines digital content with the physical world, allowing students to engage with learning material in immersive and interactive ways. According to Valk, Rashid, and Elder (2010), "mobile technology is important and necessary in today's society due to its presence, flexibility, ease of access, and wide range of capabilities." Yang and Wang (2011) similarly assert that "as mobile connectivity spreads around the world, the benefits of incorporating mobile technology into learning and teaching appear to be clear and unavoidable."If teachers do not embrace disruptive technologies such as digital games and interactive storytelling available through smartphone applications, they risk losing touch with modern cultural realities. As a result, today's primary school teachers should be aware of the usage of mobile technology, as it has the potential to dramatically enhance children's educational experiences.

AR technology has the ability to merge virtual objects with a physical, real-world environment, providing students with immersive learning experiences. This can make abstract learning content more approachable and engaging (Oladele, 2014). AR is increasingly recognized as a powerful tool for promoting interactive learning in elementary schools.

One example of AR's effectiveness is the combination of books with AR technology, which allows students to explore layered content in an engaging way. As Kim and Lee (2013) state, "AR can enhance traditional instructional materials by transforming static textbooks into interactive experiences, thereby fostering higher engagement and understanding in students."Instructional materials have evolved from physical textbooks to electronic course content, while learning strategies have shifted from traditional face-to-face methods to e-learning or mobile learning approaches. Many studies have revealed the potential of AR and computer-assisted instruction (CAI) to benefit blended learning environments, increasing instructional flexibility and enhancing student interaction (Azuma, 1997; Azuma, 2001).

The potential of AR in education is undeniable, as it allows for a richer, more engaging learning experience that aligns with the evolving technological landscape of modern classrooms. Teachers who embrace AR and mobile technologies can unlock new opportunities for student engagement, creativity, and deep learning.

Background

Augmented reality has been increasingly recognized for its potential to transform education, particularly for younger learners. Chiang, Yang, and Hwang (2014) proposed a location-based AR learning environment where students collaborated and shared knowledge using mobile devices. This study found that location-based AR learning improved student motivation and fostered greater interaction among peers. Ustun et al. (2022) further support this by suggesting that AR creates a fun and authentic learning environment that has the potential to increase students' motivation significantly. Similarly, Fan et al. (2020) demonstrated how 3D virtual visualizations via AR technology could create an interactive learning environment that promotes authentic, situated learning where students collaborate effectively.

Bower et al. (2014) also noted that AR can be applied to various learning approaches, such as constructivist learning, game-based learning, inquiry-based learning, and situated learning. This makes AR a versatile tool in modern education. In another study, Olsson and Salo (2011) explored the use of mobile AR technology with 90 participants and concluded that AR applications successfully captured attention and aroused curiosity, further affirming its value in educational settings.

AR has also been shown to enhance students' attitudes toward complex subjects. For example, in physics education, AR was found to help students develop more positive attitudes toward laboratory work and improve practical skills (Akçayır & Akçayır, 2017).

The use of mobile learning in elementary schools has shown promising results. For instance, arithmetic and storytelling applications have been shown to help children improve their cognitive abilities, offering emotional benefits through interaction with others. Math games and digital storytelling applications, specifically, have proven effective in engaging students, encouraging problem-solving rather than passive learning (Oladele, 2014). This finding aligns with constructivist learning approaches, such as discovery-based learning, which promote active engagement and independent problem-solving.

AR in Children's Learning

AR technology can be a powerful tool for engaging elementary students in their learning. It can offer remedial solutions to issues such as lack of motivation and relevance to real-world scenarios, which have been identified as significant barriers to student interest in science education (Osborne et al., 2003; Van Aalsvoort, 2004). Law and Heintz (2021) highlight how mobile AR-based learning, especially in subjects like biology, can increase motivation by visualizing complex concepts and creating immersive learning scenarios. This allows students to learn by doing, which leads to deeper engagement and understanding, rather than mere memorization.

AR also allows students to interact with learning material in innovative ways. For example, storytelling through digital animations, integrated into AR applications, can stimulate cognitive and emotional engagement in children. This approach makes learning more enjoyable and relatable, further encouraging focus and participation in the classroom.

One of the primary issues in elementary science education is maintaining student focus. A lack of motivation and real-world relevance has led to a decline in students' interest in science over the past few decades (Porter & Parvin, 2008). Mobile AR-based learning addresses these issues by offering visual, interactive, and scenario-based learning experiences, which increase both focus and engagement (Akçayır & Akçayır, 2017).For example, through AR, science concepts can be presented in a dynamic, visual format, helping students to not only grasp abstract ideas but also remain engaged for longer periods. AR content allows students to assimilate information more effectively, rather than relying on rote learning. This increased level of interaction and immersion helps sustain student interest in science subjects.

Storytelling, particularly in the form of digital animations, plays a critical role in engaging students. Narrative structures integrated into AR applications can boost cognitive involvement and make learning more relatable and enjoyable. Characters, plots, and story arcs offer a means for students to emotionally invest in their learning material, keeping their attention and facilitating better information retention.

Research Objectives

The primary objective of this study is to assess the impact of AR on student focus and engagement during elementary science lessons. The study aims to evaluate how AR applications affect students' ability to maintain attention, reduce distractions, and retain information. A secondary objective is to explore the role of storytelling within AR applications,

examining how narrative elements such as characters and plots can enhance both cognitive and emotional engagement in science education.

Related work

several studies and projects that have explored similar approaches to the use of mobile augmented reality or mAR in educational settings. These works provide valuable insights into how AR can enhance learning experiences, particularly for younger students. By analyzing the methodologies and outcomes of these projects, we aim to identify best practices and potential areas of improvement for our own AR app development. The selected studies focus on key factors such as user engagement, educational effectiveness, and usability, all of which are critical to the success of our design.

1.Latif (2012) discussed two instances of mobile Augmented Reality (mAR) applications, with one focused on using mAR to enhance clinical skills training in a lab setting. This method exposed students to necessary skills for real-world situations such as operating rooms and emergency scenarios. The AR technology helped simulate these environments during regular practice, enriching students' clinical knowledge while reducing anxiety. The Centre for Excellence in Teaching and Learning (CETL) in London, UK, supports this self-directed learning approach, which allows students to learn in labs without the need for additional instructors or technicians.

2.In 2023, Singh, Bangay, Grossek, and Sajjanhar conducted a study combining a storybook with an AR application to create a literacy primer. This approach integrated three different frameworks to enhance educational content, boost motivation and engagement, and highlight essential features of the AR application.

3.Several applications of AR in schools have yielded promising outcomes. For instance, in secondary education, an AR-based mobile system for learning chemistry was found to significantly improve students' understanding, knowledge retention, and motivation (Ustun et al., 2022). Similar results were observed in primary education, where AR applications contributed to enhanced learning, greater motivation, and a deeper grasp of various concepts (Bower et al., 2014).

4.Another study by Ternier and Vries (2011) utilized mAR for a cultural science field trip, incorporating different game designs, delivery channels, and pedagogical approaches. In one case study, "Florence," students participated in a scavenger hunt-like game set in a situated learning environment. The application used GPS navigation to allow students to explore street views, and upon discovering a new view, they were tasked with completing specific challenges.

METHODOLOGY

For the first phase of this user centered design case study, a survey was conducted from 25 elementary school teachers. They were asked 5 background questions, 7 questions related to the use of technology in their teaching and 7 about their familiarity with AR and its use in teaching to kids.

For this phase teachers were chosen as the audience(n=15), as they act as the primary gatekeepers and facilitators of classroom technology, determining which tools are useful and how they are incorporated into the curriculum. Their role is crucial in ensuring that any application is both practical and feasible for classroom use, as they guide students in the effective use of educational technology. With their deep understanding of educational content, learning objectives, and teaching strategies, teachers offer valuable insights into aligning AR applications with curriculum standards to support learning outcomes and enhancing the teaching of any complex concept. Their experience with students of diverse abilities and learning styles allows them to identify features that accommodate varied needs, ensuring that AR applications are inclusive and accessible. They also possess a keen awareness of the practical constraints within classroom environments, such as time limitations, available resources, and technological infrastructure, and can highlight potential challenges in implementation while suggesting practical solutions. Furthermore, their feedback on the necessary support and training is essential for the successful adoption and sustained use of new technologies ensuring that they have the resources and knowledge required to integrate AR effectively into their teaching practices.

The following statements guided the theme of survey questions:

- **Technology Utilization**: What types of technologies are primarily employed by teachers in their classrooms?

- **Student Motivation and Engagement**: Which technological tools are most effective in enhancing student motivation and maintaining focus?
- **Instructional Methods**: What instructional strategies or methods of explanation are perceived to best encourage student concentration and engagement?
- **Mobile Application Integration**: What has been the teachers' experience with the use of mobile applications as educational tools in the classroom?

Findings

Findings were grouped into six distinct themes using affinity mapping (Figure1), a method that organizes ideas and data based on their natural relationships, which included: Engagement through technology, Mobile apps, Student preferences, Storytelling and media engagement, the Teacher's role, and Ease of use.
The outcomes of this mapping were as follows:

- Engagement through technology: Elementary students are more encouraged to interact and remain focused on the subject matter when technology or media is integrated into the learning process.
- Ease of use and flow: Having a simple, intuitive user flow and a non-complicated interface is crucial when students are directly involved. Complexity can discourage them from continuing their study or distract them from the content.
- Preference for modern approaches: Students show a stronger interest in newer technologies and methods over traditional approaches, as they find these more interesting and interactive.
- Media preferences: Students display a preference for animations, illustrations and cartoons over real life images and videos. This preference was further validated during the A/B testing session with the students.
- Independence with mobile technology: Elementary students require minimal assistance when using mobile applications and gadgets, especially compared to other study methods, demonstrating their ability to adapt to technology with ease.

Figure1: Affinity map from survey insights, highlighting key themes from teacher responses on the AR app's usability and engagement.

Design consideration

Based on the feedback gathered from teachers, the educational app should prioritize an easy flow, a minimal and intuitive user interface, and engaging media content. These elements are crucial to keeping students focused and motivated while using the app.

Also for the AR part of the app Azuma [18] defines an AR has the following three features: (1) combining virtual objects in a real world environment, (2) providing the real-time interaction with users, and (3) interacting with users in three-dimension space

Liarokapis [19] stated that an AR system should have the following components: (1) marked cards which are graphics pattern for encoding information of objects, (2) capturing input device that could be a webcam, (3) computer device such as PC, laptop or mobile device, (4) AR software that is used to encode/decode and track the marked cards, (5) input device such as mouse and keyboard, and (6) output device such as head-mounted display, computer monitor or mobile device.

Wu, Lee, Chang, and Liang [20] classified the AR learning approached into three categories: (1) engaging students into “roles” that emphasize students' interactions with mobile-AR, multiplayer AR learning; (2) interacting with physical “locations” that emphasize students to interact in physical environment with location-based AR learning; (3) design the learning for “tasks” that can be game-based AR learning.

Methodology

The methodology used to design this application followed a structured approach that included the following key steps:

1. **User Research**: A thorough analysis of the end-users, focusing on their needs, behaviors, and preferences in a learning environment.
2. **Understanding the Learning Domain**: Gaining a deep insight into the educational field to ensure that the application aligns with effective teaching practices and learning outcomes.
3. **Identifying Educational Needs**: Clearly defining the specific educational gap or challenge the app aims to address, ensuring that it serves a purposeful role in the classroom.
4. **Designing the AR Application**:

In line with the principles recommended by Meyer, Rose, and Gordon, this application supports diverse learning styles by offering multiple modes of content delivery. For example, information is presented using icons, alternative text, images, written content, and videos with subtitles. AR’s ability to engage multiple senses, such as sight, sound, and potentially touch, makes it an ideal tool for varied forms of content presentation.

Additionally, the app provides several ways for students to express their understanding. This can include self-assessment tools, personal note-taking features, and a "Contact Your Teacher" option to maintain communication with instructors.

To promote ongoing engagement, the app challenges students with interactive elements at each step of the learning process. For example, instructional videos demonstrate expert techniques, and puzzle-like activities allow students to sequence steps in a process. This approach ensures that tasks are appropriately challenging and encourages students to actively complete them

What needs to be defined:

Based on the gathered data and user insights, several key elements were identified that need to be defined in the development of the educational app. These design considerations focus on simplicity and clarity to ensure an optimal learning experience for elementary students:

- A **simple scan page**, allowing students to interact with the AR feature easily.
- A **scanning guide integrated within books**, ensuring that students can effortlessly scan relevant materials.
- A **result page with no distractions**, ensuring the focus remains on the educational content.
- A **clear and straightforward path** for additional text guides related to the science topic, divided into manageable sections.
- **Lessons presented as storyboards** for an alternative storytelling approach, catering to different learning preferences.

After gathering and analyzing the data from the initial survey, we defined the key design requirements based on user needs and insights. The survey results highlighted specific areas for improvement in the app’s usability and learning experience. With this data, we began the design process by creating wireframes that outlined the basic structure and layout of the app, focusing on core functionalities and user flows.

Once the wireframes were validated, we developed detailed user flows to map out how students would navigate through the app, ensuring a smooth and intuitive user experience. This stage helped visualize the steps users would take to complete various tasks, such as accessing learning modules and interacting with AR elements.

Following the wireframe and flow development, we created mid-fidelity designs, adding more visual elements and interactive features. These mid-fid designs were used during the A/B testing session to evaluate the effectiveness of different design approaches. This iterative process allowed us to refine the user interface based on real-world feedback, ensuring the app was both functional and engaging for the target audience.

Evaluation

To evaluate the effectiveness and user-friendliness of the AR app designed for elementary students, we conducted an A/B testing session (Figure2) as our user testing step. The goal was to determine which design approach would best serve the needs of young users in terms of engagement, ease of navigation, and overall educational impact.

Two versions of mid-fidelity prototypes were developed and presented to a group of students. Each group of participants interacted with a different version of the app, completing a set of predetermined tasks designed to reflect typical use scenarios. Throughout the session, I observed the students' interactions, gathered qualitative feedback, and tracked key performance metrics such as time taken to complete tasks, error rates, and user satisfaction levels. The insights gained from this process were critical in guiding the final design decisions, ensuring that the app would meet the intended learning outcomes and be enjoyable for the students.

Figure 2:Two elementary school students during the A/B testing phase

RESULT

The following section presents the UI designs of the AR app, which were developed based on user feedback and testing insights. These designs aim to enhance the user experience, ensuring that the app is both engaging and easy to navigate for elementary school students. Each screen has been crafted with a focus on clarity, interactive learning, and accessibility.

The app's interface uses solid yet engaging colors and intuitive simple icons to create an inviting learning environment. The typography was selected for its readability, ensuring that young users can easily navigate the app without unnecessary complexity. The design adheres to principles of minimalism while incorporating playful elements to hold the students' attention (Figure 3).

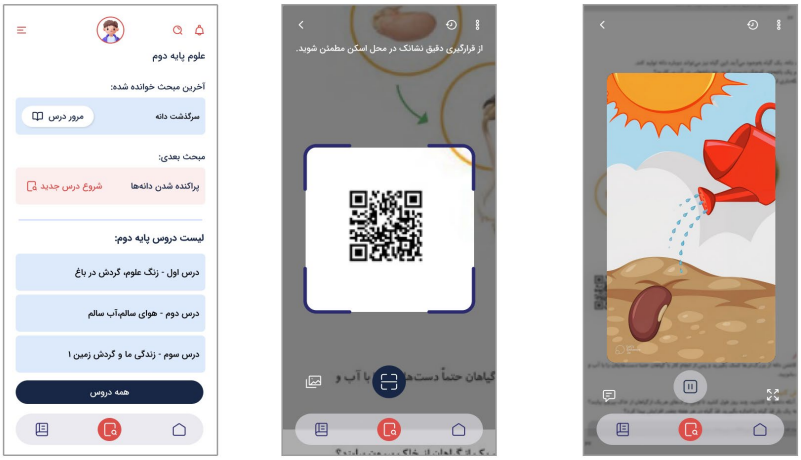

Figure 3: scan page, animation area, and lesson overview

Home Screen

The home screen welcomes students with a user-friendly, colorful interface. The key navigation elements are clearly arranged, allowing students to quickly find lessons, quizzes, or other resources. A balance between visual and text-based components ensures that young users are not overwhelmed by excessive information.

Features: Large, child-friendly icons for easy navigation. Minimal text is used to cater to the learning needs of elementary students. A direct scan button is integrated into the bottom menu for easy access to AR features. Additionally, the list of lessons presents the last lesson studied and the upcoming one, helping students maintain their learning flow.

Scan Page

The scan page provides a focused and simplified interface for students to scan QR codes effortlessly. The scanning area is highlighted clearly, while the surrounding region is blurred and grayed out to reduce distractions and guide the user's attention.

Features:

- A designated scan area prominently displayed in the center of the screen for QR code detection.
- Blurred and grayed-out surroundings to create a visually focused experience.
- A clear "Scan" button at the bottom to trigger the scanning process.
- A guiding text positioned above or below the scan area, instructing students on how to properly align the QR code for accurate scanning.

Icons for **Back**, **Settings**, **History**, and **Gallery** are placed in the top corners to offer students easy access to essential controls without cluttering the scan interface.

AR Learning Page

The AR Learning Page presents the results of the scan by displaying educational animations that correspond to the student's lesson. The main area is dedicated to the animation, ensuring a focused and immersive experience, while additional interactive options are available to enhance learning.

Features:

- **Animation Area:** A central space where the AR content (animation) is displayed. The surrounding area is grayed out to maintain focus on the animation and reduce distractions.
- **Full-Screen CTA (Call to Action):** A button allowing the user to expand the animation to full screen for a more immersive viewing experience.
- **Text Display CTA:** An option to view accompanying text from the lesson book if students need additional context or explanation.

The clean and minimal layout ensures that students remain focused on the content, while the availability of full-screen mode and text support enhances engagement and comprehension.

In addition to the home screen and AR learning page, several other key pages are incorporated into the design to enhance user experience and ensure a comprehensive learning journey (Figure 4). The Lessons List Page provides students with an overview of all available lessons, clearly distinguishing between those they have already completed and those yet to be explored, ensuring easy tracking of their progress. The Progress Page displays read and unread lessons, allowing students to visually monitor their learning achievements and motivate them to complete remaining topics. Each lesson is presented in a Storyboard/Comic Style format, making it more engaging for young learners by visually breaking down complex subjects into digestible scenes. Furthermore, a detailed list accompanies each lesson, indicating which parts are available as animations and can be scanned within the app, guiding students in utilizing the AR features for an enriched learning experience.

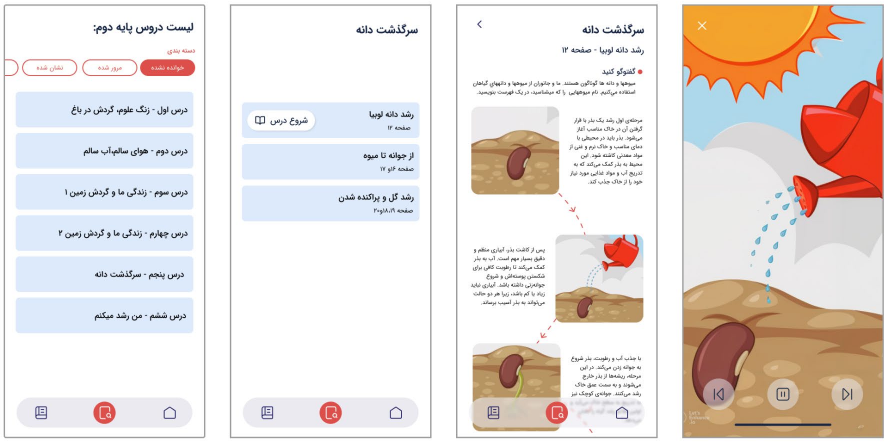

Figure 4: Additional UI designs of the AR educational app, including the lesson list, progress tracking page, and storyboard-style lesson presentations.

CONCLUSION

The final UI designs of this educational AR app are the result of an iterative process that incorporated extensive user feedback and applied best practices in both educational app design and augmented reality technology. By emphasizing usability, engagement, and visual appeal, the app delivers an effective and enjoyable learning experience for elementary school students. Through a combination of interactive storytelling, simple UI elements, and dynamic visual content, the app enhances focus and motivation for young learners while making complex scientific concepts more accessible.

The user-centered design approach led to several key insights during the A/B testing and surveys with teachers and students. A standout finding was the impact of storytelling on student engagement. Storyboarding and comic-style lessons, which visually present scientific concepts in a narrative format, were particularly effective in maintaining student interest. The narrative structure not only encouraged curiosity but also made it easier for students to relate to and retain the material. This storytelling approach, combined with illustrations and animations, created a multi-sensory learning experience that students found enjoyable and memorable.

Moreover, the simplicity of the UI played a significant role in reducing cognitive load for young users. A clean, minimal design with large icons and intuitive navigation allowed students to focus on learning without being overwhelmed by unnecessary distractions. The use of illustrations further enriched the visual experience, providing context and clarity, especially in complex topics. Teachers reported that the clear, interactive visuals helped students understand abstract concepts more easily, leading to improved participation and focus during lessons.

The A/B testing also demonstrated that children performed better with a less cluttered interface. Versions with more text or additional options were found to confuse or distract younger students, while a streamlined layout—particularly on the result and scan pages—kept them engaged with the core content. Additionally, feedback from the surveys emphasized the importance of a flexible design that accommodated different learning styles, with features like alternate text, subtitles for videos, and the ability to explore lessons at their own pace.

One limitation of the study was the challenge of conducting comprehensive testing across a wide variety of classroom settings and with students from different educational backgrounds. While the app was tested in a controlled group of students and teachers, further testing in more diverse environments would help to ensure its broader applicability. Additionally, the reliance on AR-compatible devices may pose an accessibility issue in schools with limited resources.

Several design principles from this study can be universally applied to enhance the learning experience in educational applications. Prioritizing a clear and simple user interface allows for easier navigation, which is crucial for maintaining young students' attention. Storytelling and illustrations significantly boost engagement, allowing students to learn through narratives that are more relatable and memorable than traditional methods. Integrating features such as

animations, interactive quizzes, and direct feedback mechanisms enriches the learning environment and provides multiple means for students to express their understanding of the material.

The A/B testing results confirmed that the balance between interactive content and minimal distractions is critical in supporting student focus and learning. By leveraging these design insights, the app effectively combines modern mobile technology with educational needs, paving the way for a more interactive and immersive learning experience.

This research highlights the potential of augmented reality to reshape science education by making it more engaging, relatable, and aligned with how young students naturally learn. As mobile and AR technologies continue to evolve, their role in education will likely expand, providing new opportunities for innovative, interactive learning experiences.

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EXAMINING THE COMMITMENT OF TEACHER CANDIDATES TO THE TEACHING PROFESSION

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ABSTRACT
This study is based on an experimental model that examines pre-service teachers' commitment to the teaching profession. In the study, 150 students studying at universities in the Turkish Republic of Northern Cyprus and taking the Teaching Practice course were selected as the population. In the study, a personal information form including demographic information from the participants and the Commitment to Teaching Profession Scale developed by Yıldız (2020) were used. The findings obtained as a result of statistical analysis with SPSS 28.00 program provide important information about the level of professional commitment of pre-service teachers. According to the results of the study, the overall average score of the students in the Professional Identification dimension was determined as 3.23, which shows how much the students identify with their profession. In the Professional Value dimension, the average score was recorded as 4.07, which reflects that students show a high value and respect for their profession. In the Professional Effort dimension, the average score for students' professional development was 3.69.In the Professional Commitment dimension, the average score expressing how committed students are to their profession was found to be 3.77.In the Total Commitment to the Teaching Profession (TPC) Total) dimension, the average score expressing the general level of professional commitment was determined as 3.66.In the gender-based analyses, it was found that there were significant differences in favor of female pre-service teachers in the dimensions of Professional Identification, Professional Value, Professional Effort, Professional Dedication and SCT Total.It was observed that female pre-service teachers generally had higher levels of commitment. Especially in the Professional Identification dimension, it was observed that students in Preschool Teaching and Special Education Teaching departments had higher levels of commitment compared to other departments.
Keywords: Teacher, Profession, Commitment, Commitment to profession.

1. INTRODUCTION

1.1. Problem Status

Education is an important factor that directs and shapes the development of society in every period. In this interaction, the role of educators is of vital importance. Educators shape the future of society by being in an influential position in human life (Akyüz, 1982). Therefore, it is critical that educators are well-equipped individuals who are committed to their profession with love and dedication. In order to train teachers with these qualifications, it is necessary to provide them with comprehensive vocational training and to create suitable environments where they can turn the knowledge they have acquired into experience (Erdem, 2005). Duties, responsibilities and roles of teachers may change depending on the dynamics of society, changes in parent and student profiles, education-related legislation, international developments and advances in science and technology. In this context, it is time to think and discuss the teaching profession. The definition of the teacher, the importance of the profession, its qualifications and roles should be addressed in accordance with social and technological changes (Altan & Özmusul, 2022). Educators should be seen as guides who not only convey knowledge but also contribute to the individual and social development of their students. In this context, equipping educators with constantly updated information and practicing their profession with an attitude of openness to learning will make significant contributions to the sustainable development of societies (Karataş, 2020).

Individuals look for teachers not only to convey the content of a subject or to provide them with certain skills, but also for personality traits that can be taken as an example. Students expect to see diligence, intellectuality, being educated, and what it means to be a virtuous individual through the words, attitudes, and actions of teachers. In this way, teachers are seen as guides who not only convey knowledge but also exemplify the meaning and values of life to students (Parlar, 2012). Teachers shape both their students and themselves within the framework of these

expectations and impressions of society. (Ertürk and Keçecioğlu, 2012) In addition to being a source of inspiration to students, teachers also play an effective role in their personal development. This is important not only for the transfer of academic knowledge but also for the acquisition of character and values. Therefore, teachers' efforts not only to focus on the course content but also to be good models for students contribute to the deeper and more meaningful educational process (Yürür and Keser, 2010).

The teaching profession requires teacher candidates not only to receive a qualified theoretical and practical education, but also to have a high awareness of professional responsibility and commitment to the profession (Yinal & Okur, 2022). Teachers, who have the responsibility of not only transferring knowledge but also setting an example to students, play an effective role in shaping their societies (Çelikte, 2005). At this point, it is important for teacher candidates to go beyond focusing only on course content and teaching methods in their professional education processes and to give importance to ethical values, student-centered approaches and continuous development. The development of professional responsibility awareness is based on the teacher's aim to establish a holistic relationship with students and contribute to their character development, beyond being just an information and communication tool. (Aktağ &Walter, 2005) Additionally, commitment to the profession is a critical factor in performing the teaching profession effectively. This commitment to the profession, combined with love and responsibility for students, allows the teacher to have a deep and meaningful interaction with students, beyond just being a figure giving information (Yıldız, 2020). In this context, teacher candidates' focus on improving their professional knowledge and skills and their sensitivity to ethical values and professional responsibilities form the basis for a successful teaching career.

1.2. Purpose and Importance of the Research

The main purpose of this research is to examine teacher candidates' commitment to the teaching profession. In this context, it is aimed to determine the emotional, cognitive and behavioral commitments of teacher candidates regarding their profession. This analysis will allow us to understand the complex relationships between the difficulties that teacher candidates face during the education process, the experiences they gain, and their attitudes towards the profession. The importance of the research is that the data obtained will contribute to the professional development processes of teacher candidates and the determination of strategies for the effectiveness of training programs. Additionally, this study will help us understand the potential effects of teacher candidates' commitment to the profession on the quality of social education in order to support a higher quality education system in society.

1.3. hypotheses

H0 : There is a difference between teacher candidates' level of commitment to their profession and the gender variable .
H1 : There is no difference between teacher candidates' level of commitment to their profession and the gender variable .
H0 : There is a difference between teacher candidates' level of commitment to their profession and the department variable .
H2 : There is no difference between teacher candidates' level of commitment to their profession and the department variable .

1.4. Definitions

Teaching Practice: This course in education faculties aims to provide teacher candidates with the ability to create weekly lesson plans and to provide them with the opportunity to experience the process of implementing these plans (Görgen et al., 2013).
Commitment to the Teaching Profession: It refers to a strong commitment, loyalty and passionate devotion that a teacher feels towards his profession (Özkan, 2012).

2. CONCEPTUAL FRAMEWORK

2.1. Teaching Profession

A profession is an activity of working and earning money in a specific field that requires certain education and skills. Professions generally refer to areas of work in which individuals gain expertise, have knowledge and skills in a certain field, and generally acquire them through a certain educational process (Baskan, 2001). Professions can be found in a wide range; For example, there are professions in various fields such as teaching, engineering, doctor, lawyer, carpenter, electrician. Professionals are generally obliged to comply with certain ethical rules and act in accordance with professional standards. Profession is an important tool for individuals to serve society and contribute in a particular field of expertise (Yurdakul et al., 2016).

The teaching profession represents a sacred duty that aims to provide individuals with knowledge and skills, to educate and develop them. Teaching is an important profession that shapes the future of society, guides students and equips them with knowledge. This profession is not limited to just teaching, but also aims to provide students with ethical values, social skills and life awareness (Erdem & Şimşek, 2013). Teachers try to reveal the potential of many different students in their classrooms by interacting with them. Teachers, who contribute to the personal, social and intellectual development of students during the education process, are key figures who make significant contributions to the progress of society and the transfer of knowledge. For this reason, the teaching profession is considered one of the cornerstones of society and teachers are valued as important figures who inspire, guide and equip students with knowledge (Çermik & Şahin, 2010).

The teaching profession stands out as an element that forms the basis of society. Teachers convey knowledge and values to younger generations and raise them to be responsible individuals. This makes a fundamental contribution to the sustainable development and progress of society. Additionally, teachers play a key role in individual development and unlocking potential. By providing students with the opportunity to discover and develop their unique talents, they contribute to their self-expression and increase their knowledge and skills. Therefore, the teaching profession has a fundamental importance that contributes to the development of individuals and society (Tosuntaş, 2020).

2.2. Commitment to the Profession

Commitment means the sense of devotion, loyalty and responsibility that a person or a group feels towards a goal, value, person, institution or a job. The term can refer to emotional, social, professional, or other types of commitments. Commitment is generally associated with a relationship or commitment and indicates that the individual has a strong relationship with the thing or person to whom he or she is attached (Demirel & Aslan, 2008). For example, job commitment refers to an employee's sense of loyalty and responsibility towards his job and his employer. Commitment often includes feelings of trust, respect, and responsibility. Organizational commitment is a strong sense of devotion, loyalty and commitment that an employee feels towards the organization he works for. This commitment may affect the employee's relationship and participation with the organization (Taşkın & Dilek, 2010). Organizational commitment can be examined in three basic dimensions: emotional commitment, normative commitment and continuous commitment to the employee's job and organization (Aslan & Terzi, 2023).

- Emotional Commitment: The employee feels emotionally committed to the organization. This situation is related to passionate commitment to the job, the employee's love of his job and a positive emotional state at work.
- Normative Commitment: It is the feeling of responsibility and commitment that the employee feels that it is right or ethical not to leave the job. This type of commitment refers to the tendency to stay at work within the framework of social norms and values.
- Continuance Commitment: The employee feels committed with the thought that leaving the organization would be costly. This is based on the perception that changing jobs or leaving the organization can cause personal and professional losses.

Vocational commitment is a strong sense of devotion, loyalty and commitment that an individual feels towards a profession or career. This concept refers to the state of being in an emotional, normative and continuous commitment to the profession an individual chooses (Çelik & Atmaca, 2023). Commitment to the profession means being in harmony with the individual's professional identity, values and goals. Commitment to the profession includes elements such as liking the individual's job, giving importance to professional development, commitment to professional ethical values, feeling of professional responsibility and confidence in professional success (Arslan, 2013). In this context, commitment to the profession can affect an individual's performance at work, motivation, and dedication to his career. Job commitment is generally associated with an individual's job satisfaction, career satisfaction, and job performance. A healthy career commitment can enhance an individual's professional success and contribute to long-term career satisfaction. Commitment to a good profession allows the individual to cope with the difficulties he encounters in his professional life and to constantly improve himself (Özkan, 2012).

3. METHOD

3.1. Research Model

This study, which is an experimental model among the quantitative research methods, was carried out to understand and evaluate the relationship between variables. Experimental research aims to examine the effects of one or more independent variables on one or more dependent variables. This model provides a powerful tool for determining cause-effect relationships and understanding the relationships between variables (Karasar, 2011).

3.2. Population and Sample

In this research, students who took the Teaching Practice course were selected as the population among the students studying at universities in the Turkish Republic of Northern Cyprus. For sampling, the purposeful sampling method was preferred. The purposive sampling method is a method that allows researchers to select students from a certain population in a way that the sample is representative. This method aims to obtain a representative subset from a broad population of students. The selected student group includes students who have taken the Teaching Practice course on which the research is focused. This group of students will be examined in line with the specific objectives of the study and will contribute to the overall results of the research. This group of students, selected using the purposive sampling method, allows the research to draw inferences from a generally broad population. Thus, it allows the findings to be carried to a more general perspective and to obtain information that can represent the universe . In this context, 150 people were included in the study.

3.3. Data Collection Tools

In this research, a personal information form containing demographic information from the participants was used, and a quantitative data collection tool called "Commitment to the Teaching Profession Scale" was used to obtain data regarding the two variables within the scope of the research. The Commitment to Teaching Profession Scale developed by Yıldız (2020) was used. This 5-point Likert type scale contains 33 items in total. The scale consists of four sub-dimensions: Professional Identification, Professional Value, Professional Effort and Professional Dedication. Professional Identity refers to the teacher candidate's suitability for the profession and their level of adoption of the profession; Professional Value refers to the level of internalization of the social and individual value of the teaching profession; Professional Effort refers to the level of desire and motivation to fulfill the requirements of the profession and improve oneself in the profession; Professional Commitment aims to measure the desire to do professional work and support students outside of working hours. The variance ratio explained by the entire scale was calculated as 48.14%. According to the results of the reliability analysis, Cronbach's Alpha coefficients in the sub-dimensions ranged between .80 and .92, while this value was determined as .93 for the entire scale.

3.4. Analysis of Data

SPSS 28.00 program was used to analyze the data and various statistical analyzes were performed. These analyzes include T-Test and ANOVA Test. The T-Test is used to evaluate the statistical difference in means between two groups. If the research aims to examine the difference between two groups, the T-Test can be used to determine the significance of this difference. ANOVA Test (Analysis of Variance) is used to determine statistical differences between three or more groups. If the research focuses on understanding differences between three or more groups under one categorical independent variable, ANOVA Test is a useful method of analysis.

4. FINDINGS

Table 1. Demographic Variables

		N	%
Gender	Woman	101	67.3
	Male	49	32.7
Section	School Pre Instructor.	25	16.7
	Special Education Instructor.	41	27.3
	Class Instructor.	27	18.0
	English Instructor.	14	9.3
	Science Information Instructor.	23	15.3
	Primary education Maths Instructor.	24	16.0
	Total	150	100.0

When we look at the gender distribution of the sample consisting of 150 people in total, the rate of women is 67.3% (101 people) while the rate of men is 32.7% (49 people). In the analysis of the departments in which individuals received education, the following results were obtained: 25 people from the Pre-School Teaching

department (16.7%), 41 people from the Special Education Teaching department (27.3%), 27 people from the Classroom Teaching department (18.0%), There are 14 people (9.3%) from the English Language Teaching department, 23 people (15.3%) from the Science Teaching department, and 24 people (16.0%) from the Primary Mathematics Teaching department.

Table 2. Descriptive Findings Regarding the Level of Commitment to the Teaching Profession

Dimension	min	Max.	$\bar{x}$	SS
Vocational I identify with	1.00	5.00	3.23	.93
Vocational Value	1.40	5.00	4.07	.65
Vocational Effort	1.00	5.00	3.69	.85
Vocational dedication	1.00	5.00	3.77	.78
ÖMB Total	1.42	4.80	3.66	.66

In the Professional Identification dimension, the average score was 3.23 and the standard deviation was 0.93. The average score of the students in the Professional Value dimension was recorded as 4.07 and the standard deviation was 0.65. The average score in the Professional Effort dimension was 3.69 and the standard deviation was 0.85. The average score in the Professional Dedication dimension was 3.77 and the standard deviation was 0.78. In the Total Commitment to Teaching Profession (ÖMB Total) dimension, the average score was 3.66 and the standard deviation was 0.66. While these values show the professional commitment levels of teacher candidates in different dimensions, the standard deviation values reflect how much these commitment levels vary among students. In particular, the high mean value in the Professional Value dimension indicates that students have a high value and respect for their profession, while the standard deviation value shows that this dimension is generally evaluated homogeneously.

Table 3. Comparison of the Level of Commitment to the Teaching Profession and the Gender Variable

Dimension	Gender	$\bar{x}$	SS	t	p
Vocational I identify with	Woman	3.37	.88	-3.20	**0.000**
	Male	3.03	.98		
Vocational Value	Woman	4.12	.51	-4.42	**0.000**
	Male	3.68	.77		
Vocational Effort	Woman	3.81	.75	-2.67	**0.000**
	Male	3.43	1.02		
Vocational dedication	Woman	4.03	.65	-4.28	**0.000**
	Male	3.41	.95		
ÖMB Ball-slide	Woman	3.81	.53	-4.23	**0.000**
	Male	3.37	.82		

While the average score of female teacher candidates in the Professional Identification dimension was 3.37, the average score of male teacher candidates was determined as 3.03 . While the average score of female teacher candidates in the Professional Value dimension was 4.12, the average score of male teacher candidates was 3.68. Similarly, it is seen that women have higher average scores in the Professional Effort, Professional Dedication and OMB Total dimensions. Statistical analysis reveals that there are significant differences in favor of female teacher candidates in the dimensions of Professional Identification, Professional Value, Professional Effort, Professional Dedication and OMB Total ($p < 0.05$). These findings show that the gender variable may affect the level of commitment to the teaching profession, and that female teacher candidates generally have higher levels of commitment. These results may be useful in developing strategies to support teacher candidates and strengthen

their professional development, taking into account gender-based differences in education programs. Understanding the effects of gender on commitment to the teaching profession can be considered an important step to make teacher training processes more effective and inclusive.

Table 4. Comparison of the Level of Commitment to the Teaching Profession and the Department Variable

Dimension	Section	$\bar{x}$	SS	F	p	Difference
Vocational I identify with	School Pre teach	3.17	.97	2.32	**0.03**	4-5
	Special Education Instructor.	3.28	.93			
	Class teach	3.20	.84			
	English teach	2.78	1.12			
	Science Information teach	3.63	.83			
	Primary education Maths teach	3.21	.92			
	Total	3.23	.93			
Vocational Value	School Pre teach	4.04	.78	1.32	0.29	
	Special Education Instructor.	4.08	.65			
	Class teach	4.25	.44			
	English teach	3.78	.60			
	Science Information teach	3.88	.68			
	Primary education Maths teach	4.05	.57			
	Total	4.07	.63			
Vocational Effort	School Pre Instructor.	3.75	.93	.59	0.63	
	Special Education Instructor.	3.77	.82			
	Class Instructor.	3.81	.82			
	English Instructor.	3.40	1.01			
	Science Information Instructor.	3.78	.85			
	Primary education Maths Instructor.	3.62	.73			
	Total	3.69	.85			
Vocational Adan-immaculate	School Pre teach	3.66	1.02	.96	0.43	
	Special Education Instructor.	3.78	.80			
	Class teach	4.10	.60			
	English teach	3.56	.73			
	Science Information teach	4.03	.74			
	Primary education Maths teach	3.76	.73			
	Total	3.77	.78			
Scale Total	School Pre teach	3.79	.80	1.36	0.28	
	Special Education Instructor.	3.70	.68			
	Class Instructor.	3.74	.53			
	English Instructor.	3.38	.75			
	Science Information Instructor.	3.80	.64			
	Primary education Maths Instructor.	3.61	.57			
	Total	3.66	.66			

In the Professional Identification dimension, it was observed that teacher candidates, especially in the Preschool Teaching and Special Education Teaching departments, had a higher level of commitment compared to other departments ($p < 0.05$). However, no significant differences were detected between departments in the dimensions of Professional Value, Professional Effort, Professional Dedication and Scale Total. Statistical analysis shows that the department in which students study can affect their level of commitment to the teaching profession, and this effect is especially evident in the Professional Identification dimension. The fact that students in Preschool Teaching and Special Education Teaching departments have higher levels of commitment may suggest that professional values and identities specific to students are shaped in these departments.

Conclusion and Recommendations

The research results reveal various important findings by examining the professional commitment levels of teacher candidates. In the Professional Identification dimension, the students' overall average score was recorded as 3.23 and its standard deviation was 0.93. This shows how much students identify with their profession. In the Professional Value dimension, the average score of the students was 4.07 and the standard deviation was 0.65, which reflects that the students have a high value and respect for their profession. The mean score in the Professional Effort dimension was 3.69 and the standard deviation was 0.85, which reflects how much effort students put into their professional development. In the Professional Dedication dimension, the average score was 3.77 and the standard deviation was 0.78, which indicates how committed the students are to their profession. In the Total Commitment to Teaching Profession (ÖMB Total) dimension, the average score was observed as 3.66 and the standard deviation was 0.66, which expresses the general level of professional commitment.

In gender-based analyses, it was determined that there were significant differences in favor of female teacher candidates in the students' Professional Identification, Professional Value, Professional Effort, Professional Dedication and ÖMB Total dimensions. It has been observed that female teacher candidates generally have higher levels of commitment. In particular, it has been observed that students in Preschool Teaching and Special Education Teaching departments have higher commitment levels compared to other departments in the Professional Identification dimension.

Based on the results, various suggestions can be developed to increase the professional commitment levels of teacher candidates and make training programs more effective:

- By examining the differences revealed in gender-based analyzes in more detail, teacher training programs can be evaluated in terms of gender sensitivity.
- By understanding the reasons for the high levels of commitment among female teacher candidates, it should be investigated whether these factors are adaptable to other students.
- Special support programs can be developed for students in Preschool Teaching and Special Education Teaching departments who demonstrate high commitment in the Professional Identification dimension.
- By offering similar support programs to students in other departments, various activities can be organized to strengthen students' professional identification.
- Activities such as seminars, workshops and mentoring programs can be organized for students who score high in the Professional Value dimension to increase their value towards their profession.
- In order to strengthen professional values, students can be offered opportunities to meet successful role models within the teaching profession.
- The content of training programs should be designed taking gender-based differences into consideration.
- Programs may include various modules to increase students' professional commitment and meet gender-based learning needs.
- More comprehensive research can be conducted to understand the factors affecting professional commitment levels.
- Educational programs and teacher training processes should be constantly reviewed to strengthen students' professional commitment.

These suggestions point to potential strategies to strengthen pre-service teachers' professional commitment. Each recommendation aims to make teacher training programs more effective and support the professional development of students.

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EXAMINING THE LEVELS OF OPENNESS TO CHANGE IN PRIMARY SCHOOLS

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ABSTRACT
This study aims to examine the openness to change levels of primary school teachers working in the Turkish Republic of Northern Cyprus within the framework of teacher, principal and school environment dimensions. The study, which was designed on the basis of quantitative research methods, was carried out in line with the relational survey model. The population of the study consists of primary school teachers working in the TRNC and the sample group consists of 301 teachers. 'Schools' Openness to Change Scale' developed by Smith and Hoy (2007) and adapted into Turkish by the researcher was used as a data collection tool. The data obtained through the scale were analysed through SPSS software; the relationships between variables and differences between groups were evaluated by statistical methods.
According to the descriptive findings, teachers' level of openness to change is low, principals' openness is at medium level, and the pressure for change felt from the school environment is at high level. According to the gender variable, female teachers had significantly higher perceptions than male teachers in all dimensions. No significant difference was found depending on the age variable. As the duration of professional seniority increased, it was observed that the scores of openness to change increased significantly especially in the dimensions of teacher and principal. According to the working time in the institution, a significant difference was found only in the principal dimension. Finally, in the correlation analysis between the scale dimensions, strong and significant positive relationships were found between all variables. These findings reveal that openness to change exhibits an interactive structure between school actors and environmental factors.
Keywords: Openness to Change, Primary Schools, Teacher Perception, Principal Perception, School Environment, Change in Education.

İLKÖĞRETİM OKULLARINDA DEĞİŞİME AÇIKLIK DÜZEYLERİNİN İNCELENMESİ

ÖZET
Bu araştırma, Kuzey Kıbrıs Türk Cumhuriyeti'nde görev yapan ilkokul öğretmenlerinin okullarındaki değişime açıklık düzeylerini, öğretmen, müdür ve okul çevresi boyutları çerçevesinde incelemeyi amaçlamaktadır. Nicel araştırma yöntemleri temelinde kurgulanan çalışma, ilişkisel tarama modeli doğrultusunda gerçekleştirilmiştir. Araştırmanın evrenini KKTC'de görev yapan ilkokul öğretmenleri oluşturmakta olup, örneklem grubunu ise 301 öğretmen temsil etmektedir. Veri toplama aracı olarak Smith ve Hoy (2007) tarafından geliştirilen ve araştırmacı tarafından Türkçeye uyarlanan "Okulların Değişime Açıklık Ölçeği" kullanılmıştır. Ölçek aracılığıyla elde edilen veriler, SPSS programı aracılığıyla analiz edilmiş; değişkenler arası ilişkiler ve gruplar arası farklılıklar istatistiksel yöntemlerle değerlendirilmiştir.
Tanımlayıcı bulgulara göre öğretmenlerin değişime açıklık düzeyi düşük, müdürlerin açıklığı orta düzeyde, okul çevresinden hissedilen değişim baskısı ise yüksek düzeydedir. Cinsiyet değişkenine göre kadın öğretmenler, tüm boyutlarda erkek öğretmenlere kıyasla anlamlı düzeyde daha yüksek algıya sahiptir. Yaş değişkenine bağlı olarak anlamlı bir fark saptanmamıştır. Mesleki kıdem süresi arttıkça özellikle öğretmen ve müdür boyutlarında değişime açıklık puanlarının anlamlı biçimde yükseldiği görülmüştür. Kurumdaki çalışma süresine göre yalnızca müdür boyutunda anlamlı fark bulunmuştur. Son olarak, ölçek boyutları arasında yapılan korelasyon analizinde tüm değişkenler arasında güçlü ve anlamlı pozitif ilişkiler tespit edilmiştir. Bu bulgular, değişime açıklığın okul içi aktörler ve çevresel unsurlar arasında etkileşimli bir yapı sergilediğini ortaya koymaktadır.
Anahtar Kelimeler: Değişime Açıklık, İlköğretim Okulları, Öğretmen Algısı, Müdür Algısı, Okul Çevresi, Eğitimde Değişim.

1. INTRODUCTION

1.1. Problem Status

The ability of education systems to adapt to rapidly changing social, technological and cultural dynamics is closely related to the level of openness of schools to change. Primary schools, in particular, are pioneering institutions in both meeting the developmental needs of students and transforming teaching processes. Therefore, schools becoming structures that encourage change is not only an institutional necessity; it is also directly linked to teachers' attitudes, leadership approaches and organizational climate (Demirtaş, 2012).

Openness to change is a critical concept that expresses the extent to which schools adopt innovative practices, adapt to educational policies, and enable teachers to develop. In this context, teachers' perceptions of change are an important indicator in determining the potential for transformation of school culture (Çağlar, 2013; Küçüksüleymanoğlu & Terzioğlu, 2017). Research shows that a school environment that is open to change increases teachers' organizational commitment (Çağlar, 2013), is strengthened by confidence in their leadership styles (Kılıç & Yavuz, 2021), and is associated with teachers' proactive personality traits (Bozbayındır & Alev, 2018).

On the other hand, it is emphasized that openness to change depends not only on individual attitudes but also on the structural and administrative characteristics of the school (Çalık & Er, 2014). Teachers' perceptions of the school's capacity for change are in direct interaction with the innovative leadership practices of the administrators and the institutional vision of the school. As stated in the study of Alagöz and Canlı (2024), innovative school climate and openness to change have a decisive effect on teachers' adaptation skills.

In recent years, national and international studies have examined the attitudes of primary schools towards change processes through different variables (Sywelem & Al- Mahdy , 2019; Gören & Hasan, 2024). However, most of these studies have either given limited space to teachers' opinions or focused on comparisons between school types. This study aims to evaluate the levels of openness to change in primary schools with a more holistic approach.

1.2. Purpose of the Research

The main purpose of this research is to determine the level of openness to change of schools according to the perceptions of teachers working in primary schools in the Turkish Republic of Northern Cyprus and to examine whether this level varies in terms of demographic variables (gender, age, professional seniority, length of service in the institution). In addition, revealing the relationships between teachers' openness to change, principals' openness to change and the pressure of change in the school environment is among the aims of the research.

1.3. Hypotheses

The following hypotheses were tested within the scope of the research:

- **H1:** Teachers' level of openness to change differs significantly according to the gender variable.
- **H2:** Teachers' level of openness to change differs significantly according to the age variable.
- **H3:** Teachers' level of openness to change differs significantly according to their professional seniority.
- **H4:** Teachers' level of openness to change differs significantly according to their length of service in the current institution.
- **H5:** There is a significant and positive relationship between teachers' openness to change and the principal's openness to change.
- **H6:** There is a significant and positive relationship between teachers' openness to change and the pressure for change in the school environment.
- **H7:** There is a significant and positive relationship between the principal's openness to change and the pressure for change in the school environment.

1.4. Importance of the Research

Education systems must adapt to constantly changing social, technological and pedagogical conditions. In this context, the level of openness of schools to change reflects the flexibility and adaptability of educational institutions to innovations. This research aims to shed light on policies and practices that support the transformation of school culture by revealing the approaches of teachers and school administrators to change processes. In addition, analyzing the levels of openness to change according to different demographic groups provides original contributions in the context of school development and educational leadership. This study, conducted in the context of TRNC, aims to fill the gap in the literature by providing empirical data on the dynamics of change in the local education system.

2. CONCEPTUAL FRAMEWORK

2.1. Change in Schools

Educational institutions inevitably experience change processes in order to respond to constantly changing social expectations, technological developments and pedagogical approaches. Change in schools is not only a structural transformation; it also refers to a multidimensional restructuring process from teaching methods to management approach, from institutional culture to individual attitudes (Helvacı, 2010). Change is of critical importance in terms of implementing innovations in education systems, teachers and administrators adapting to new roles and adopting student-centered approaches (Özden, 2002). In the organizational context, change is shaped by environmental pressures, internal dynamics and leadership strategies. According to İlğan (2008), organizational change is a systematic process that questions the adequacy of the current situation and aims to transition to a new order. İnce (2005) states that this process necessitates restructuring in terms of human resources management and organizational performance.

The management of change in schools is also closely related to institutional readiness . Helvacı (2015) emphasizes that the level of readiness of schools for change is directly related to organizational flexibility and leadership understanding. Kondakçı , Zayim and Çalışkan (2010) revealed that the experience of school administrators, the size of the school and the level of education are the determinants that affect attitudes towards change.

Recent research shows that teachers' self-efficacy level and individual tendencies towards change also affect the transformation potential of the school (Avşar, İnandı & Arslantaş , 2021; Beycioğlu & Kondakçı , 2021). Innovative school structures and collaborative leadership practices are among the basic elements of the organizational climate that facilitates change (Alagöz & Canlı, 2024).

2.2. Openness to Change

Openness to change refers to the positive attitudes of individuals and institutions towards new ideas, methods and practices. In the context of educational institutions, openness to change includes the willingness of teachers and administrators towards innovation, openness to experiencing different practices and the level of institutional flexibility. This attitude is a fundamental factor affecting both individual and organizational success (Bozbayındır & Alev, 2018).

Alagöz and Canlı (2024) show that teachers' adaptation performance is significantly related to the school's openness to change. Teachers' self-efficacy level and proactive personality traits are among the personal components that determine openness to change. When these individual factors are integrated with the organizational climate and leadership style, the institutional transformation process can be carried out more efficiently.

In the international literature, teachers' perceptions of openness to change have been investigated in different cultural and structural contexts. For example, in the study conducted by Sywelem and Al- Mahdy (2019), the perceptions of openness to change of teachers working in public schools in Oman and Saudi Arabia were comparatively examined. Küçüksüleymanoğlu and Terzioğlu (2017) examined the perceptions of secondary school teachers on this issue in the context of Turkey and revealed that the type of school and administrative factors play a decisive role.

3. METHOD

3.1. Research Model

This research aims to examine the relationship between the openness to change levels and change capacities of schools based on the perceptions of teachers working in primary schools. The study was structured in line with the relational screening model within the framework of quantitative research methods. Relational screening models are one of the research designs that aim to reveal whether there is a significant relationship between two or more variables and, if so, to determine the direction and strength of this relationship (Karasar , 2010). In this context, the perceptions of teachers' openness to change and change capacity in their schools were analyzed through quantitative data collected through a structured questionnaire form. The responses given by the participants were analyzed with statistical analysis techniques that allow the evaluation of possible correlations between the variables.

3.2. Universe and Sample

The universe of this research consists of primary school teachers working in the Turkish Republic of Northern Cyprus (TRNC). In the data collection process carried out to measure the perceptions of openness to change and capacity for change, the convenience sampling method was preferred. This method ensured that data were obtained from accessible and voluntary participants during the research process. Data obtained from a total of 301 teachers

were analyzed within the scope of the research. This sample size is considered sufficient for quantitative research in social sciences and allows the analyses to produce statistically significant results. The participants work in different schools and vary in terms of variables such as professional seniority, gender and school size. This situation provides an important advantage in terms of the fact that the findings of the research reflect general trends in primary schools in the TRNC.

3.3. Data Collection Tools

In the study, the "Schools' Openness to Change Scale" developed by Smith and Hoy (2007) and adapted to Turkish by the researcher was used to determine the openness levels of primary schools to change. The scale consists of three sub-dimensions and a total of 14 items:

- Teachers' Openness to Change (9 items),
- The Manager's Openness to Change (4 items),
- Pressure for Change in the School Environment (1 item).

The scale was prepared with a 5-point Likert-type rating and is scored between “1: Strongly disagree” and “5: Strongly agree”. The total score that can be obtained from the scale varies between 14 and 70; high scores indicate that the school is open to change. During the adaptation process, forward and back translation was made; the scale was applied to 120 teachers and validity and reliability analyses were performed. The KMO value was found to be .86, Bartlett test was found to be significant; three dimensions were preserved in the factor analysis, and 5 items with low loading values were removed. Cronbach Alpha coefficients ranged between .76 and .83. The scale was found to be reliable and valid. The first part of the scale includes demographic information, and the second part includes a 14-item measurement form.

3.4. Analysis of Data

The data obtained in the study were analyzed using the SPSS package program. First, normality analysis was performed to determine the distribution characteristics of the variables. Since the normality assumption was provided, parametric tests were preferred in examining the relationships between the variables. Descriptive statistics, correlation and regression analyses were used in the analysis of the data.

4. FINDINGS

Table 1. Demographic Information Form

Gender	**n**	**%**
Woman	193	64.12
Male	108	35.88
Age Range		
20–25	35	11.63
26–30	75	24.92
31–35	98	32.56
36–40	57	18.94
41 and above	36	11.96
Seniority Period		
0–5 years	62	20.60
6–10 years	97	32.23
11–15 years	74	24.58
16–20 years	43	14.29
21 years and above	25	8.31
Working Time in the Institution		
0–1 year	48	15.95
2–4 years	108	35.88
5–7 years	75	24.92
8–10 years	44	14.62
11 years and above	26	8.64
Total	301	100

When the demographic distribution was examined, 64.1% of the participants were female and 35.9% were male teachers. When the age groups were examined, the largest segment was in the 31–35 age range with 32.6%, followed by 26–30 with 24.9% and 36–40 with 18.9%; those in the 41 and over age group were 12.0%, and those aged 20–25 were 11.6%. In terms of professional seniority, 20.6% of the teachers had 0–5 years of experience, 32.2% had 6–10 years, 24.6% had 11–15 years, 14.3% had 16–20 years, and 8.3% had 21 years or more of experience. In terms of their working time in their current institutions, 15.9% of the participants have been working for 0–1 year, 35.9% for 2–4 years, 24.9% for 5–7 years, 14.6% for 8–10 years, and 8.6% for over 11 years.

Table 2. Descriptive Statistics Results (n=301)

Scale Size	Lowest	Highest	$\bar{X}$	Level	SS
Teachers' Openness to Change	40.35	67.86	55.27	Low	5.07
The Manager's Openness to Change	31.89	58.09	44.15	Middle	4.38
Pressure for Change in the School Environment	19.86	34.94	27.60	High	2.95

In line with the descriptive statistics, the minimum, maximum, average and standard deviation values for the three scale dimensions used in the study were calculated. In the “Teachers’ Openness to Change” dimension, the scores of the teachers varied between 40.35 and 67.86, and the average score was determined as 55.27. This average shows that the level is in the low category when evaluated according to the scale score range. This situation indicates that the teachers’ general openness to change levels are limited.

In the dimension of “Principal’s Openness to Change”, the participants’ scores ranged between 31.89 and 58.09, and the average score was calculated as 44.15. This value reveals that the principals’ openness to change was perceived at a moderate level. The standard deviation value (SD = 4.38) also shows that the participants had relatively similar perceptions on this issue.

In the dimension of “Pressure for Change in the School Environment”, the scores range from 19.86 to 34.94, with an average score of 27.60. According to this score level, teachers perceive the pressure for change coming from the school environment at a high level. This situation shows that external dynamics have a significant effect on perceptions within the school. When evaluated in general, it is seen that while the pressure of the school environment increases the perception of change, the individual attitudes of teachers are more limited.

Table 3. T-Test Results by Gender

Teachers' Openness to Change

Gender	n	$\bar{X}$	Hss	p	Difference
Woman	193	54.90	4.90	0.000	Female > Male
Male	108	52.41	5.43		

The Manager's Openness to Change

Gender	n	$\bar{X}$	Hss	p	Difference
Woman	193	18.29	3.04	0.008	Female > Male
Male	108	17.31	3.08		

Pressure for Change in the School Environment

Gender	n	$\bar{X}$	Hss	p	Difference
Woman	193	8.12	1.44	0.002	Female > Male
Male	108	7.50	1.82		

According to the results of the independent sample t-test conducted according to the gender variable, teachers' perceptions of "openness to change" show significant differences in all three dimensions. In the dimension of "Teachers' Openness to Change", the mean score of female teachers ($\bar{X}$ = 54.90) was higher than that of male teachers ($\bar{X}$ = 52.41) and this difference was found to be statistically significant ($p < .001$). Similarly, in the dimension of "Principal's Openness to Change", the perception of female teachers ($\bar{X}$ = 18.29) was significantly higher than that of male teachers ($\bar{X}$ = 17.31) ($p = .008$). In the dimension of "Pressure for Change in the School Environment", the mean score of females was calculated as 8.12 and the mean score of males was calculated as 7.50 and this difference was also significant ($p = .002$). The findings show that female teachers approach the factors related to change more sensitively and positively compared to male teachers.

Table 4. ANOVA Results According to Age Range

Teachers' Openness to Change

Age Range	n	X̄	Hss	p	Difference
20–25	35	52.96	5.51	0.551	–
26–30	75	53.76	5.12		
31–35	98	54.14	5.36		
36–40	57	54.83	5.20		
41 and above	36	53.90	4.87		

The Manager's Openness to Change

Age Range	n	X̄	Hss	p	Difference
20–25	35	17.94	2.93	0.455	–
26–30	75	17.79	3.02		
31–35	98	17.89	3.10		
36–40	57	18.27	3.20		
41 and above	36	18.56	2.87		

Pressure for Change in the School Environment

Age Range	n	X̄	Hss	p	Difference
20–25	35	7.70	1.61	0.231	–
26–30	75	7.68	1.48		
31–35	98	7.97	1.50		
36–40	57	8.11	1.56		
41 and above	36	8.13	1.29		

According to the results of the one-way ANOVA test conducted according to the age variable, the mean scores of the teachers in the scale dimensions of "Teachers' Openness to Change," "Principal's Openness to Change," and "School Environment's Pressure for Change" do not show any significant difference according to age groups. Although the highest mean in the dimension of "Teachers' Openness to Change" was observed in the 36–40 age group ($\bar{X}$ = 54.83), the difference between the age groups was not found to be statistically significant (p = .551). Similarly, although the scores in the dimension of "Principal's Openness to Change" increased slightly as age increased, this difference was not significant (p = .455). Although the highest mean in the dimension of "School Environment's Pressure for Change" was observed in the 41 and above age group ($\bar{X}$ = 8.13) , the difference between the groups was not found to be statistically significant (p = .231). These findings show that the perceptions of teachers towards change do not differ significantly according to the age variable.

Table 5. ANOVA Results According to Professional Seniority

Teachers' Openness to Change

Seniority Period	n	X̄	Hss	p	Difference
0–5 years	58	52.09	3.98	0.000	0–5 years < 16 –20 years, 21 years+
6–10 years	108	53.79	3.78		
11–15 years	73	54.03	4.69		
16–20 years	28	58.10	3.34		
21 years and above	34	56.94	4.11		

The Manager's Openness to Change

Seniority Period	n	X̄	Hss	p	Difference
0–5 years	58	17.69	2.48	0.004	0–5 years, 21 years+ < 11 –15 years
6–10 years	108	18.50	2.63		
11–15 years	73	19.09	2.41		
16–20 years	28	18.24	2.46		
21 years and above	34	17.86	2.63		

Pressure for Change in the School Environment

Seniority Period	n	X̄	Hss	p	Difference
0–5 years	58	8.29	1.44	0.842	None
6–10 years	108	7.89	1.43		
11–15 years	73	8.03	1.65		
16–20 years	28	7.87	1.73		
21 years and above	34	8.07	1.59		

In the ANOVA analysis conducted according to the professional seniority variable, significant differences were found in the dimensions of "Teachers' Openness to Change" and "Principal's Openness to Change". It was observed that the mean scores increased as the length of seniority in the dimension of "Teachers' Openness to Change" ($p = .000$). In particular, the means of teachers with 16–20 years ($\bar{X} = 58.10$) and 21 years and above ($\bar{X} = 56.94$) were significantly higher than those with 0–5 years ($\bar{X} = 52.09$). This finding shows that more experienced teachers developed a more open attitude towards change. A significant difference was also found between the groups in the dimension of "Principal's Openness to Change" ($p = .004$). The highest mean was observed in teachers with 11–15 years of seniority ($\bar{X} = 19.09$). The score of this group is significantly higher than both the 0–5 years ($\bar{X} = 17.69$) and 21 years and above ($\bar{X} = 17.86$) seniority groups. This suggests that middle-senior teachers perceive principals as more open to change.

On the other hand, no significant difference was found between the seniority groups in the dimension of "Pressure for Change in the School Environment" ($p = .842$). This result reveals that the pressure for change perceived from the school environment is felt at a similar level regardless of the length of service.

Table 6. ANOVA Results According to Working Time in the Institution

Teachers' Openness to Change

Working Hours	n	X̄	Hss	p	Difference
0–1 year	44	52.82	4.43	0.053	–
2–4 years	105	54.88	4.42		
5–7 years	70	54.18	4.51		
8–10 years	47	55.03	3.88		
11 years and above	35	53.48	4.45		

The Manager's Openness to Change

Working Hours	n	X̄	Hss	p	Difference
0–1 year	44	17.64	2.56	0.011	0–1 year < 8 –10 years, 11 years+
2–4 years	105	18.23	2.55		
5–7 years	70	18.52	2.40		
8–10 years	47	19.38	2.57		
11 years and above	35	19.14	2.62		

Pressure for Change in the School Environment

Working Hours	n	X̄	Hss	p	Difference
0–1 year	44	7.91	1.63	0.738	None
2–4 years	105	8.04	1.47		
5–7 years	70	7.95	1.62		
8–10 years	47	8.15	1.40		
11 years and above	35	8.10	1.61		

In the one-way ANOVA analysis conducted according to the variable of length of service in the institution, a statistically significant difference was found between the groups only in the dimension of "Principal's Openness to Change" ($p = .011$). In this dimension, the mean score of teachers who have been working in the institution for 0–1 year ($\bar{X} = 17.64$) is significantly lower than that of teachers who have been working for 8–10 years ($\bar{X} = 19.38$)

and 11 years and above ($\bar{X}$ = 19.14). This result shows that as the length of experience in the institution increases, the perception of change towards administrators becomes more positive. Although the difference obtained in the dimension of "Teachers' Openness to Change" is quite close to the level of statistical significance (p = .053), no significant difference was found depending on length of service. However, when the means are examined, it is seen that the group working for 8–10 years has the highest score ($\bar{X}$ = 55.03) and the group working for 0–1 year has the lowest score ($\bar{X}$ = 52.82). In the dimension of "Pressure for Change in the School Environment", no significant difference was found between the groups (p = .738). This shows that teachers perceive the pressure for environmental change at a similar level regardless of the time they have spent in the institution.

Table 7. Correlation Matrix between Scale Sub-Dimensions (Pearson , n = 301)

Dimensions	1	2	3
1. Teachers' Openness to Change	–		
2. The Manager's Openness to Change	0.886**	–	
3. Pressure for Change in the School Environment	0.875**	0.780**	–

the Pearson correlation analysis, statistically significant and strong positive relationships were found between the scale dimensions. The relationship coefficient between "Teachers' Openness to Change" and "Principal's Openness to Change" was found as r = .886 , and this value indicates a very high linear relationship. This shows that there is a strong parallelism between teachers' openness to change and school administrators' openness to change. Similarly, a strong positive relationship was found between "Teachers' Openness to Change" and "School Environment's Pressure for Change" (r = .875). This finding reveals that the extent to which teachers are open to change is closely related to the change demands they perceive from the school environment. In addition, the relationship between "Principal's Openness to Change" and "School Environment's Pressure for Change" is also high and significant (r = .780).

CONCLUSION

In the study, the openness levels of teachers working in primary schools to change were examined in a multi-dimensional manner in terms of teacher, principal and school environment dimensions. According to descriptive statistics, the scores in the "Teachers' Openness to Change" dimension remained generally low. The average score was determined as 55.27 , indicating that teachers developed a limited openness towards change processes. The "Principal's Openness to Change" dimension was evaluated at a medium level with an average score of 44.15. On the other hand, the average score in the "School Environment's Pressure for Change" dimension ($\bar{X}$ = 27.60) indicates a high level of perception. These findings reveal that teachers' individual attitudes towards change are relatively weak; however, environmental pressures are effective.

The results of the independent sample t-test conducted according to the gender variable showed that the means of female teachers were significantly higher than male teachers in all scale dimensions . It is understood that women developed more open attitudes to change and made more positive evaluations, especially regarding the principal and environmental factors.

In the analyses conducted according to the age variable, no significant difference was found between the age groups in the dimensions of "Teachers' Openness to Change", "Principal's Openness to Change" and "School Environment's Pressure for Change". This situation reveals that age is not a determining factor on the perception of change.

However, significant differences were obtained according to the professional seniority variable. In particular, the openness to change levels of teachers with 16–20 years and 21 years and above seniority were significantly higher than those with low seniority. Similarly, it was observed that teachers in the medium seniority group had higher perceptions in the "Principal's Openness to Change" dimension. On the other hand, no significant difference was found between the seniority groups in the "School Environment's Pressure for Change" dimension.

According to the variable of length of service in the institution, a significant difference was found only in the dimension of "Principal's Openness to Change". Teachers who worked in the institution for 0-1 year have lower averages compared to those who worked for 8-10 years and 11 years and above. This finding shows that the length of time spent in the institution may have an effect on the perception of the principal. Although no statistically significant difference is observed in the other two dimensions, the averages increase as the length of experience increases.

Finally, in the correlation analysis conducted between the dimensions, high level and significant positive relationships were found between all variables. Strong correlations were found between "Teachers' Openness to Change" and "Principal's Openness to Change" (r = .886), between "Teachers' Openness to Change" and "School Environment's Pressure for Change" (r = .875), and between "Principal's Openness to Change" and "School Environment's Pressure for Change" (r = .780). These findings reveal that the factors of change inside and outside the school form an integrated structure and that teachers' perceptions are shaped within this integrity.

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KNOWLEDGE ABILITY OF PRIMARY SCHOOL TEACHERS ON SCHOOL MANAGEMENT

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ABSTRACT
The aim of this study is to examine the views of primary school teachers working in TRNC on the effectiveness of school management processes. The study, which was conducted based on quantitative research approach, was designed according to the general survey model. The population of the study consists of primary school teachers in TRNC and the sample consists of 289 teachers working in different schools. 'Management Process Effectiveness Scale' developed by Gül (2017) was used as a data collection tool. The scale includes teachers' demographic information and their evaluations of school administrators' management processes. SPSS 25.0 software was used to analyse the data; in addition to descriptive statistics, analysis techniques such as t-test and ANOVA were used. According to the research findings, teachers' perceptions of school management processes differ significantly according to gender, professional seniority and length of service in school. Female teachers evaluated the administrative processes more positively than their male colleagues. Teachers with longer professional and institutional experience had more positive perceptions of administrative processes. No significant difference was found depending on the age variable. In general, teachers stated that school administrators fulfil basic administrative functions effectively; especially participation in decision-making processes was evaluated at a high level.
Keywords: School management, management processes, teacher views, primary education

İLKÖĞRETİM ÖĞRETMENLERİNİN OKUL YÖNETİMİ KONUSUNDAKİ BİLGİ YETERLİLİKLERİ

ÖZET
Bu araştırmanın amacı, KKTC'de görev yapan ilköğretim öğretmenlerinin okul yönetim süreçlerinin etkililiğine ilişkin görüşlerini incelemektir. Nicel araştırma yaklaşımına dayalı olarak yürütülen çalışma, genel tarama modeline göre tasarlanmıştır. Araştırmanın evrenini KKTC'deki ilköğretim öğretmenleri oluşturmakta, örneklemini ise farklı okullarda görev yapan 289 öğretmen temsil etmektedir. Veri toplama aracı olarak Gül (2017) tarafından geliştirilen "Yönetim Süreçleri Etkililiği Ölçeği" kullanılmıştır. Ölçek, öğretmenlerin demografik bilgileri ile okul yöneticilerinin yönetim süreçlerine ilişkin değerlendirmelerini içermektedir. Verilerin analizinde SPSS 25.0 programı kullanılmış; betimsel istatistiklerin yanı sıra t-testi ve ANOVA gibi analiz tekniklerinden yararlanılmıştır.
Araştırma bulgularına göre, öğretmenlerin okul yönetim süreçlerine ilişkin algıları cinsiyet, mesleki kıdem ve okuldaki hizmet süresi değişkenlerine göre anlamlı farklılık göstermektedir. Kadın öğretmenler, yönetim süreçlerini erkek meslektaşlarına kıyasla daha olumlu değerlendirmiştir. Mesleki ve kurumsal deneyimi daha uzun olan öğretmenlerin ise yönetsel süreçlere ilişkin daha olumlu algılara sahip olduğu görülmüştür. Yaş değişkenine bağlı olarak anlamlı bir farklılık saptanmamıştır. Genel olarak öğretmenler, okul yöneticilerinin temel yönetim işlevlerini etkili biçimde yerine getirdiğini belirtmiş; özellikle karar alma süreçlerine katılım yüksek düzeyde değerlendirilmiştir.
Anahtar Kelimeler: Okul yönetimi, yönetim süreçleri, öğretmen görüşleri, ilköğretim.

1. INTRODUCTION

1.1. Problem

Effective management of schools is a fundamental element that directly affects the quality of the education system. In this process, it is critical for teachers, as well as school administrators, to have managerial knowledge and skills

in order for the school to achieve its goals. Teachers are not only individuals who carry out in-class teaching activities; they are also actors who contribute to the functioning of the school, decision-making processes and the shaping of organizational culture (Anastasiou & Garametsi, 2020). In this context, teachers' knowledge and competence regarding school management directly affects both institutional cooperation and school climate.

Existing research shows that teachers' knowledge levels regarding school management are quite variable and this can lead to various problems in administrative processes (Ugurlu, 2013; Usta & Boğa, 2021). Lack of knowledge regarding the management process limits teachers' participation in school decisions, makes it difficult for them to communicate effectively with administrators, and may cause them to remain in a passive position in the general functioning of the school (Karataş, 2016; Bayrak, Himmetoğlu & Ayduğ, 2020). In addition, such deficiencies are seen to negatively affect teachers' professional motivation and organizational commitment (Çuhadar, 2017; Sarışık et al., 2021).

On the other hand, active participation of teachers in management processes strengthens the leadership roles of school principals, increases student success and facilitates the development of a common consciousness towards the vision of the school (Bozkurt & Aslanargun, 2015; Gülcan, Kılınç & Çepni, 2012). In this context, determining the level of knowledge of teachers about the basic principles, legislation, management models and administrative processes regarding school management will be guiding in terms of both teacher education programs and in-service training activities (Arın, Tunçer & Demir, 2016).

However, it is seen that empirical studies examining the knowledge and competence of teachers working especially at the primary school level in Türkiye regarding school management are limited. This deficiency can create significant gaps in the reflection of education policies on the field and in the interaction between administrators and teachers. Therefore, this study aims to reveal the level of knowledge and competence of primary school teachers regarding school management, to determine the areas of deficiency and to examine the impact of this situation on the school management processes.

1.2. Purpose of the Research

The purpose of this research is to examine the opinions of primary school teachers working in TRNC regarding the effectiveness of school management processes. In this context, the differences between teachers' demographic characteristics (gender, age, professional service period and service period in the school they work in) and their perceptions of school management processes were tried to be revealed. The research aims to contribute to educational management processes by evaluating the administrative competencies of school administrators in the context of teacher perceptions.

1.3. Hypotheses

The following hypotheses were tested within the scope of the research:

- H1: Teachers' opinions on the effectiveness of school management processes differ significantly according to the gender variable.
- H2: Teachers' opinions on the effectiveness of school management processes differ significantly according to the age variable.
- H3: Teachers' opinions on the effectiveness of school management processes differ significantly according to their length of professional service.
- H4: Teachers' opinions on the effectiveness of school management processes differ significantly according to their length of service at the school they work.

1.4. Importance of the Research

The effectiveness of management processes in educational institutions is of critical importance in terms of the general functioning of the school and the quality of education and training. In this context, teachers' perceptions of school administrators are a valuable data source in terms of evaluating the reflections of management practices in the field. While the research provides educational administrators with the opportunity to review and develop their practices, it also provides field-based scientific findings that can be taken into consideration when developing educational policies. In addition, this study, which was conducted specifically for the TRNC, will contribute to the school management literature in the region.

2. CONCEPTUAL FRAMEWORK

Management processes are the entirety of the basic functional structures that guide schools towards achieving goals. These processes consist of stages such as decision-making, planning, organizing, communicating, coordinating, influencing and controlling, and directly affect both the academic and administrative success of the school. Effective management processes depend not only on the individual skills of the manager, but also on the

organizational structure, cultural values and participatory leadership approach (Sertel, Karataş & Karadağ, 2021; Özdemir, 2021).

Research shows that school administrators' knowledge, attitudes and practices regarding management processes are determinants of education quality. For example, Bozkurt and Aslanargun (2015) draw attention to the role of school administrators in the implementation of curriculum, while Yıldırım and Açıl (2020) emphasize the strong relationship between the effectiveness of management processes and organizational justice. The findings of Usta and Boğa (2021) show that the administrative problems encountered by school administrators reduce the efficiency of the processes. These findings show that school management is not only a technical process but also a social and cultural process.

In the studies conducted by Çuhadar (2017) and Gülcan, Kılınç, and Çepni (2012), it is seen that teachers' opinions are an important data source in shaping administrative processes. Teachers' evaluations provide a comprehensive view of the functioning of the school and support administrators' self-evaluations of the processes (Ugurlu, 2013; Tofur & Yıldırım, 2021).

Approaches to management processes are discussed not only in Turkey but also internationally. Bandur (2012) argues that the school-based management approach creates transformation in terms of autonomy and accountability, while Agih (2015) draws attention to the role of effective control and supervision in providing quality services. Similarly, Bell (2002) emphasized that the applicability of strategic planning often remains symbolic in school management. Periotto and Wessellenns (2018) argue that knowledge management practices support the sustainability of the institutional structure.

Karataş (2016) states that school management should consider social participation as a public service; Sarışık et al. (2021) point out the problems encountered in practice based on teachers' views on the roles of school principals in the supervision processes. In this context, management processes should not be limited to administrative decision-making only; planning, implementation and evaluation stages should be addressed in a holistic manner. Similar problems and areas of development also come to the fore in studies conducted internationally. Mustoip et al. (2023) argue that school management and leadership practices should be structured in a way that supports equality and excellence in education. In this regard, school administrators need to have not only bureaucratic authority but also ethical leadership, communication skills and participatory management approach (Önder, 2025). Effective implementation of management processes in schools can be achieved not only with individual competencies but also with structural, cultural and organizational harmony. In this context, education administrators seeking teachers' opinions in decision-making and implementation processes and making the processes transparent and auditable will support the holistic development of the school.

3. METHOD

3.1. Research Model

This research was conducted based on a quantitative research approach and a general screening model was used. General screening models are studies aimed at describing specific characteristics, views or situations of individuals in a universe (Karasar, 2014). In this context, the current status of primary school teachers' knowledge and competence on school management was revealed in the study. The data used in the research was collected through a standardized measurement tool. The data obtained was analyzed with descriptive statistics and techniques that allow for the examination of relationships between variables. In this way, teachers' knowledge levels on school management were measured and it was evaluated whether they differed according to various demographic variables.

3.2. Universe and Sample

The universe of this study consists of primary school teachers working in the Turkish Republic of Northern Cyprus (TRNC). The sample of the study consists of a total of 289 teachers working in different primary schools. The sample was selected in accordance with certain criteria due to the difficulty of reaching the entire population in terms of time and cost. Simple random sampling method was used in the study. This method is used in cases where each individual in the population has an equal probability of being selected for the sample and makes it possible to obtain generalizable results (Büyüköztürk et al., 2017). In this context, the sample of the study was created to include a sufficient number and variety of participants to be able to obtain statistically significant results.

3.3. Data Collection Tools

In order to collect data in the study, the "Management Process Effectiveness Scale" developed by Gül (2017) was used. The scale consists of a section containing demographic information of teachers and a second section evaluating the management skills of school administrators. The evaluation was made with a 5-point Likert-type

scale (1: Totally Disagree – 5: Totally Agree). High scores indicate that administrators are sufficient in management processes. During the development process of the scale, scope and face validity were ensured with expert opinions; exploratory and confirmatory factor analyses confirmed that the measurement structure was one-dimensional. Cronbach Alpha reliability coefficient was determined as 0.982, and the fact that all item-total correlations were above 0.55 revealed the discriminatory power of the items. There are 35 items in the scale in total; the possible score range is between 35 and 175.

3.4. Analysis of Data

SPSS (Statistical Package for the Social Sciences) 25.0 program was used to analyze the data obtained in the study. First, missing data control, outlier analysis and normality test were performed before the analysis of the data. Then, the general distribution of teachers' opinions on their knowledge and competence on school management was revealed with descriptive statistics (frequency, percentage, arithmetic mean and standard deviation). In order to determine the differences in opinions according to demographic variables, t-test for independent samples was applied in two-group comparisons, and one-way analysis of variance (ANOVA) was applied in more than two-group comparisons. Tukey HSD analysis, one of the post-hoc tests, was used to determine which variable created this difference between the groups with a significant difference. The significance level was accepted as $p < .05$ in all statistical analyzes (Büyüköztürk, 2017).

4. FINDINGS

Table 1. Demographic Information

Variable	Category	n	%
Gender	Male	124	42.91
	Woman	165	57.09
Age	20–25	39	13.49
	26–30	41	14.19
	31–35	68	23.53
	36–40	57	19.72
	41–45	44	15.22
	46 and above	40	13.84
Professional Service Period	1–5 years	58	20.07
	6–10 years	74	25.61
	11–15 years	70	24.22
	16–20 years	45	15.57
	21 years and above	42	14.53
Length of Service at School	Less than 1 year	28	9.69
	1–3 years	84	29.07
	4–6 years	71	24.57
	7–10 years	57	19.72
	11 years and above	49	16.96

When the data regarding the demographic characteristics of the 289 teachers who participated in the study are analyzed, it is seen that 57.09% of the participants are female and 42.91% are male. This shows that the number of female teachers is higher in the study sample. When the age distribution is examined, 23.53% of the teachers are in the 31–35 age range, 19.72% in the 36–40 age range, 15.22% in the 41–45 age range, 14.19% in the 26–30 age range, 13.84% in the 46 and above age range, and 13.49% in the 20–25 age range. When the participants' length of service in the teaching profession was examined, it was determined that 25.61% had 6–10 years, 24.22% had 11–15 years, 20.07% had 1–5 years, 15.57% had 16–20 years, and 14.53% had 21 years or more. When their length of service at the school they work at was examined, it was determined that 29.07% of the teachers had 1–3 years, 24.57% had 4–6 years, 19.72% had 7–10 years, 16.96% had 11 years or more, and 9.69% had worked at the same school for less than 1 year.

Table 2. Teachers' Views on the Effectiveness of School Management Processes According to Their Gender

Gender	n	$\bar{X}$	Hss	p
Woman	165	142.08	9.52	
Male	124	139.48	11.01	0.0358

According to the independent samples t-test results, a significant difference was found in the opinions of teachers regarding the effectiveness of school management processes according to their gender ($p = 0.0358$, $p < .05$). The average score of female teachers on this issue ($\bar{X} = 142.08$, $SD = 9.52$) is higher than the average score of male teachers ($\bar{X} = 139.48$, $SD = 11.01$). This finding reveals that female teachers evaluate school management processes more positively than their male colleagues.

Table 3. Teachers' Views on the Effectiveness of School Management Processes According to Their Ages

Age	n	$\bar{X}$	Hss	p
20–25	39	140.11	11.92	0.3489
26–30	41	140.89	10.21	
31–35	68	138.87	9.06	
36–40	56	142.53	11.04	
41–45	47	141.55	9.55	

As a result of the one-way analysis of variance (ANOVA), no statistically significant difference was found between the opinions of teachers regarding the effectiveness of school management processes according to age groups ($p = 0.3489$, $p > .05$). The average scores of the age groups are close to each other; the average of the 20–25 age group was calculated as $\bar{X} = 140.11$, the 26–30 age group as $\bar{X} = 140.89$, the 31–35 age group as $\bar{X} = 138.87$, the 36–40 age group as $\bar{X} = 142.53$ and the 41–45 age group as $\bar{X} = 141.55$. This finding shows that the evaluations of teachers regarding school management processes do not differ significantly depending on the age variable.

Table 4. Teachers Opinions on the Effectiveness of School Management Processes According to Professional Service Length

Professional Service Period	n	$\bar{X}$	Hss	p	Difference
1–5 years	58	132.98	7.23		
6–10 years	74	139.66	7.87		11–15 years - 1–5 years; 11–15 years - 6–10 years; 16–20 years - 1–5 years; 21 years and above - 1–5 years
11–15 years	70	144.32	7.76	0.000	
16–20 years	45	143.56	8.29		
21 years and above	42	144.57	9.47		

As a result of the one-way analysis of variance (ANOVA), a statistically significant difference was found between the opinions of teachers regarding the effectiveness of school management processes according to their professional service period ($p = 0.000$, $p < .05$). When the mean scores are examined, the evaluation score of teachers with 1–5 years of professional experience ($\bar{X} = 132.98$) is significantly lower compared to the other groups. On the other hand, the means of teachers with 6–10 years ($\bar{X} = 139.66$), 11–15 years ($\bar{X} = 144.32$), 16–20 years ($\bar{X} = 143.56$) and 21 years and above ($\bar{X} = 144.57$) are quite close to each other and higher. As a result of the Tukey HSD test, it is seen that the significant difference occurs especially between teachers with 1–5 years of experience and the groups of 11–15 years, 16–20 years and 21 years and above. In addition, a significant difference was found between the opinions of teachers with 6–10 years of experience and those with 11–15 years of experience. This finding shows that teachers make more positive evaluations of school management processes as their professional seniority increases.

Table 4. Teachers Opinions on the Effectiveness of School Management Processes According to the Length of Service at School

Length of Service at School	n	$\bar{X}$	Hss	p	Difference
Less than 1 year	28	130.79	5.33	0.000	Less than 1 year - 11 years and above; Less than 1 year - 1–3 years; Less than 1 year - 4–6 years; Less than 1 year - 7–10 years
1–3 years	84	141.68	6.54		
4–6 years	71	141.40	6.63		
7–10 years	57	143.53	6.52		
11 years and above	49	143.82	6.68		

As a result of the one-way analysis of variance (ANOVA), a statistically significant difference was found between the opinions of teachers regarding the effectiveness of school management processes according to their length of service at school ($p = 0.000$, $p < .05$). When the mean scores were examined, the mean evaluation of management processes of teachers who had been working for less than 1 year ($\bar{X} = 130.79$) was significantly lower than all other groups. On the other hand, the mean scores of teachers with 1–3 years ($\bar{X} = 141.68$), 4–6 years ($\bar{X} = 141.40$), 7–10 years ($\bar{X} = 143.53$) and 11 years and above ($\bar{X} = 143.82$) school experience were quite close to each other and at a high level. According to the Tukey HSD test results, a significant difference emerged especially between teachers who had been working at school for less than 1 year and all other groups. This finding shows that as teachers' tenure at school increases, they develop more positive perceptions of school management processes and become more adapted to the institutional culture.

Table 5. Teachers' Views on the Effectiveness of School Management Processes

Article	Article Text	N	Min	Max	$\bar{X}$	Hss
1	Uses other management processes (planning, organizing, communication, etc.) when making decisions.	289	2	5	3.98	0.48
2	Include teachers in the decision-making process.	289	2	5	4.04	0.51
3	The decisions he makes contribute to the solution of problems in the school.	289	2	5	4.03	0.47
4	It takes into account the concept of "public interest" when making decisions.	289	2	5	3.99	0.50
5	When making decisions, he/she follows rational and logical decision-making steps.	289	2	5	3.99	0.49
6	Takes the vision and mission of the school into consideration when planning.	289	2	5	4.00	0.50
7	Takes into account human and material resources affecting the school during planning.	289	2	5	4.01	0.51
8	During planning, the school's strategic goals are taken into account.	289	2	5	3.97	0.48
9	Provides opportunities for school staff to participate in the planning process.	289	2	5	4.00	0.49
10	The planning process prepares long, medium and short-term plans in line with the school's mission.	289	2	5	4.01	0.49
11	Takes into account the abilities of individuals in the distribution of work in the school.	289	2	5	4.01	0.47
12	Divides the work to be done at school into appropriate sections and units.	289	2	5	3.99	0.48
13	It clearly informs everyone about their duties and responsibilities.	289	2	5	3.98	0.49
14	Creates an environment that ensures coordination in school.	289	2	5	4.00	0.47
15	Creates a hierarchy that will make the distribution of authority and responsibilities effective in the school.	289	2	5	3.99	0.48
16	Creates a good communication environment in school.	289	2	5	4.01	0.47
17	Makes effective use of all communication tools (e-mail, telephone).	289	2	5	4.00	0.47
18	Also uses interpersonal communication (informal) channels effectively.	289	2	5	4.02	0.50
19	Establishes effective communication between the school and its environment.	289	2	5	4.01	0.48
20	It is sufficient regarding communication barriers and effectiveness of communication.	289	2	5	4.01	0.49
21	Uses in-service training activities to change and develop employee understanding.	289	2	5	4.00	0.49
22	It takes into account the individual needs of school employees as well as their institutional needs.	289	2	5	3.99	0.49
23	It instills in school staff the feeling that “this school belongs to all of us”.	289	2	5	4.00	0.49
24	Uses influence rather than formal authority when directing employees to work.	289	2	5	3.98	0.48
25	Uses expert knowledge and skills when directing people.	289	2	5	4.00	0.47
26	Organizes material and human resources to achieve the school's objectives.	289	2	5	4.00	0.47
27	Takes measures to increase cooperation among school staff.	289	2	5	4.01	0.48
28	Implements written programs and procedures for school work.	289	2	5	4.00	0.49
29	Manages conflicts that may arise in the school without causing harm to the institution.	289	2	5	4.00	0.48

Article	Article Text	N	Min	Max	$\bar{X}$	Hss
30	It combines different areas of expertise around the aims of the school.	289	2	5	4.01	0.47
31	Uses acceptable criteria to evaluate employee success.	289	2	5	4.01	0.47
32	Conducts preliminary interviews with teachers before proceeding with the evaluation action.	289	2	5	3.99	0.50
33	Sees inspection and evaluation as a process.	289	2	5	4.00	0.50
34	Monitors whether the deficiencies identified in the evaluation have been remedied.	289	2	5	4.00	0.49
35	At the end of the inspection, it encourages teachers to do better.	289	2	5	4.01	0.48

In Table 5, teachers' opinions on the effectiveness of school management processes were evaluated on a 35-item scale. Participants scored each statement on a 5-point Likert scale (1 = I completely disagree, 5 = I completely agree). The table includes the sample size (N = 289), minimum and maximum values, arithmetic mean ($\bar{X}$) and standard deviation (SD) values for each item.

According to the findings, the statement with the highest level of participation of teachers was “Includes teachers in the decision-making process” ($\bar{X}$ = 4.04). This situation shows that teachers have a positive perception that school administrators approach decision-making processes with a participatory approach. On the other hand, the statement “Uses other management processes (planning, organization, communication, etc.) when making decisions” ($\bar{X}$ = 3.98) has the lowest mean, but still indicates a high level of participation. This situation may imply that the perception that a holistic approach is adopted among management processes is relatively weaker.

In general, it is seen that the average scores given to all items vary between 3.97 and 4.04. This narrow range shows that there is a great consistency in the opinions of teachers regarding school management processes and that the process is evaluated positively in general. The low standard deviation values also reveal that the participants share similar opinions and the data distribution is homogeneous.

These findings show that teachers' views on school administrators' effective roles in basic management processes such as decision-making, planning, organizing, communicating, coordinating, influencing and controlling are generally positive. The high averages, especially in decision-making and communication processes, emphasize the importance of democratic leadership and open communication environments.

CONCLUSION

According to the findings of this study, significant differences were found in teachers' perceptions of school management processes according to variables such as gender, professional seniority and length of service at school. Female teachers' evaluations of management processes are more positive compared to their male colleagues. This may suggest that female teachers approach managerial practices more sensitively or participatively.

When evaluated in terms of professional experience, it is understood that the most positive perceptions regarding management processes are seen in senior teachers; as the length of service increases, the evaluations regarding management processes become more positive. Especially teachers who have been on duty for a short time evaluated the effectiveness of management processes at a lower level than other groups. Similarly, the length of service in the school also had an effect on perceptions, and it was observed that teachers who have been working in the same institution for a long time expressed more positive opinions. This finding shows that institutional belonging and familiarity with the administrative functioning positively affect the perception regarding management processes.

In the analyses conducted according to the age variable, no significant difference was found in teachers' evaluations of management processes. This suggests that age is not a determining variable in such perceptions.
In general, teachers state that school administrators effectively fulfill basic management functions such as decision-making, planning, organizing, communicating, coordinating, influencing and controlling. High scores given to all scale items indicate that teachers evaluate school management processes largely positively. In particular, teacher participation in decision-making processes is seen to be prominent, indicating that democratic and participatory management approaches find a response in the field.

The following recommendations can be developed based on the research findings:

- More effective involvement of teachers in decision-making processes increases trust in administrators and supports the effectiveness of management processes. Therefore, school administrators should systematize practices that encourage teacher participation.
- Guidance programs should be prepared to help new teachers become familiar with the institutional structure and functioning so that they can evaluate management processes more positively. Such practices can improve perceptions by accelerating the adaptation process.
- Planned training activities should be included at the in-school and ministry level, especially for young and inexperienced teachers, so that they can better understand administrative processes.
- Taking into account the positive evaluations of female teachers regarding management processes, the contributions of this group to school development and management processes should be supported and disseminated.
- Although there are generally positive perceptions about management processes, a relatively low perception was found regarding the integration of decision-making processes with other management areas . Therefore, continuous professional development opportunities should be provided for school administrators in leadership, strategic planning and systematic decision-making.
- Considering that perceptions develop positively as the tenure of teachers at school increases, long-term supportive strategies that will increase teachers' institutional belonging and contribute to school culture should be adopted.

These recommendations provide a constructive roadmap for both improving the quality of management practices and improving teachers' perceptions of these processes.

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LIVED EXPERIENCE OF TEACHERS ENGAGED IN EARLY CHILDHOOD CARE AND EDUCATION POLICY IMPLEMENTATION IN PREPRIMARY SCHOOLS IN HADIYA ZONE, CENTRAL ETHIOPIA REGIONAL STATE

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ABSTRACT
The purpose of this study was to explore the lived experience of teachers who experienced the Early Childhood Care and Education (ECCE) policy implementation in preprimary schools of Hadiya Zone, Central Ethiopia Regional State. The research was employed by qualitative approach 'with phenomological design. Six preprimary teachers were involved in the study. Both participants and study area were selected by using purposefully sampling technique. Well performed and rewarded primary schools and preprimary teachers were selected from each district/town administration. The qualitative data obtained through semi-structured interview were analyzed by transcribing and then, by developing to interpretive meanings and developed in to themes. Finally, the result was compared 'with the ECCE policy guideline to ascertain whether the policy is implemented accordingly. The results revealed that there is a big disparity between what is stipulated in the policy document and what is being practiced in the ground. Findings also showed that preprimary lacks facilities, poor teaching methodologies, insignificant participation of parents and community and improper assessment techniques. Lastly, Hadiya zone department of education, health and women's and social affairs should work in collaboration to fulfill learning inputs including human, financial and materials.
Keywords: Analysis; ECCE; Implementation; Policy; Pre-primary

INTRODUCTION

Education is the process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs, and habits. It can be takes place in formal or informal settings and any experience that has a formative effect on the way one thinks, feels, or acts. Education is commonly divided formally into such stages as pre-school, primary school, secondary school, college, and university. Pre-school education is very important for the development of young children before they enter formal school which helps them in cognitive development of children at the early grades of primary education and it has strong bearing on attendance and participation of children, once they enter primary school. The lack in school readiness makes it difficult for children to adapt themselves to school and show a tendency to drop out.

The purpose of ECCE program is to provide appropriate education and care service for young children as it has a long lasting positive consequences in the later development (MoE, 2007). The same documents states that this program helps to shape children at early age to make them socially responsible citizen and promotes economic rate by reducing mortality rate, childhood illness, school repetition and dropout.

International organizations such as UNICEF and UNESCO are emphasizing the importance of providing quality pre-school education to children, not only for those from less-advantaged backgrounds but for all children. Their arguments are based on the increasing research evidence that has shown long-term benefits of offering young children quality care and education in the early years (Curtis, Maureen, & O'Hagan, 2003, as cited in Gebre Egziabher, 2014). As indicated above early childhood period is a bridge between a formal primary school and preschool which lays a base for future development of children.

Around the world, it is increasingly understood that the first 2000 days (from conception to age 6) are critical for lifelong cognitive, psychological, and emotional development. Programs that provide pre-school education and other services are viewed as important ways to improve the life chances of the poorest children and to ensure that they are ready to learn when they enter formal schooling at age 6 or 7 (Robert, 2011). As it can be mentioned above early childhood age is an ideal developmental period for providing appropriate education and care service for young children as it has long lasting positive consequences in the later growth and progress of the children.

It is widely recognized that ECCE is an integral part of basic education and represents the first and essential step in achieving the goals of Education for All in particular and the foundation for human development in general. To achieve this goal, all children have to engage in preschool at an early age and be exposed to an improved learning environment that could help them and inspire their creativity and ability. In relation to this, Africa Fit for Children May (2001) stated; "Today's investment in children is tomorrow's peace, stability, security, democracy, and sustainable development."

Additionally, with regard to the right to education, UN convention on the right of children states on article 28 and 29 that every child has the right to an education with the goal of developing its personality and abilities. On the other hand, World Conference on Education for All (EFA) that took place in Jomtien, Thailand, in March 1990, conveys the significance of early life as the base for the latter life of individuals. As pointed out by African Charter on the rights and welfare of the child (1990) on article 11, child education shall be directed to the promotion and development of its personality, mental and physical abilities. Besides this, the Government of Ethiopia in 1991 accepted that children have the right to education (MoE, MoH and MoWA, 2010). This shows that any child has the right to get quality preschool educations that strengthen its mental and physical ability. To achieve the nationally formulated policy goal; since 2010, ECCE has been receiving due attention and some changes have been observed. To mention some, ESDP IV has emphasized ECCE (Tsegai, 2015). The Ethiopian government, with the support of UNICEF, has drafted a strategic operational plan and guidelines for ECCE (MoE, MoH and MoWA, 2010a), and a national policy framework for ECCE (MoE, MoH and MoWA, 2010b) to inform the implementation of ECCE. More importantly, ECCE has become one of the priority areas in Education in ESDP V (MoE, 2016). The policy and strategy changes lead to considerable access to ECE at the national level.

In the first year of ESDP IV, Ethiopian government established a Strategic Operational Plan and Guidelines for ECCE. The strategy encourages private investors, faith-based organizations, and Non-Governmental Organizations (NGOs) into the delivery of ECCE. These efforts have allowed the gross enrolment rate for pre-primary to reach 34% in 2013/14, of which around a quarter is in three-year kindergarten and the remainder is in one-year O-Class and Child-to-Child instruction. This is above the ESDP IV preordained target for ECCE which was 20% from a baseline of 6.9% at the start of the plan (MoE, 2015).

By persistent efforts, in 2015 in Ethiopia, to attain still higher achievements and to fill the gap of implementation observed during ESDP IV regarding ECCE, the MoE had set ambitious targets for the five years beginning from 2015/16 up to 2019/20, which was elaborated in its fifth Education Sector Development Programme (MoE, 2015). ESDP V has been leading national planning and implementation in the education sector and highlights pre-primary education as a priority, with the goal: "to provide all children with access to pre-primary education for school preparedness" (MoE, 2015).

Moreover, having examined and looked at some studies about the advantage and nature of ECCE programs, there were some studies conducted in Ethiopia. For instance, Fedlu (2018) conducted research on the implementation and challenges of the policy set for ECCE in Addis Ababa; and found out that; ECCE policy emphasized only on access. In the majority of the center's facilities were not adequate and teaching process didn't centralize children with special needs, student textbook was unavailable, majority of teachers were below diploma level, how PTA organized varies from KG to KG, Health and Nutrition of children were not given attention, the annual school program terminates in two terms.The gap here is that the researcher drew the conclusion from Addis Ababa which represents only urban areas and he didn't consider the policy implementation of rural areas regarding ECCE.

Fekede (2021) conducted the study with title "The Implementation of ECCE Policy in Eastern Wellega Zone, Oromia Regional State." The finding of the study revealed that the level of pre-school education policy implementation was low or not in line with the standard set by the (MOE). The major problems identified in this study were inadequacy of indoor and outdoor materials and equipment, lack of trained teachers, inadequate facility and lack of monitoring, lack of participation from parents, community, officers and politicians.

Misahun (2020). Conducted the research with topic "Early Childhood Care Education Policy Implementation Analysis: The case of Abichu Gnea Woreda, Oromia region. The finding of the study showed that the ECCE policy was only on the document. In the majority of the pre-primary schools, basic facilities, in-and out-door learning environment, learning, and play materials were inadequate. Besides this, majority of teachers were below certificate level that highly impeded proper implementation of ECCE.

Mamo and Kenea (2014) conducted the study on the current situation of pre-primary education; found out that the implementation of pre-primary education program was weak since it was not aligned with the pre-primary education standard as intended. Because: teachers /personnel were both limited in number and not qualified for the required level; inadequate provisions and lack of financial support; too little parent-schools partnership, and insubstantial roles of administration bodies.

In general, most of the causes of the problems with regard to the implementation of ECCE have been studied. However, the reason why it needs further study on the Hadiya zone preprimary schools are the previous SNNPRS Education Bureau 2021/2021 E.C. annual abstract indicated that in the study area the performance of ECCE program was categorized under least performed zones and special districts. In addition to this, researcher was thought in primary schools of different districts of the study area. This motivated the researcher to conduct the study in title of lived experience of teachers engaged in ECCE policy implementation in preprimary schools of Hadiya Zone, Central Ethiopia Regional State. In addition to this, in the study area no same research title was conducted in preprimary attached with government primary schools. Hence, to that end, this study attempted to answer the following basic question.

BASIC RESEARCH QUESTION

To meet the purpose of this study, the following research question was raised:

What are the Lived Experiences of Teachers Engaged in Early Childhood Care and Education Policy Implementation in Preprimary Schools in Hadiya Zone, Central Ethiopia Regional State?

RESEARCH METHODOLOGY

Research Design

To capture the essence of the lived experiences of preprimary teachers a qualitative phenomenological research design was selected for this study. In this phenomenological study, the researcher will seek to describe the meaning of participant's shared lived experiences regarding the phenomenon (Creswell, 2007). This research design allows the participants to share their lived experience of teacher in regarding to the implementation of ECCE. In this regard, for this research undertaking, a qualitative approach with phenomenological design was employed. Phenomenological research requires a researcher to focus on people's experiences of a phenomenon to obtain comprehensive details that provide a basis for reflective structural analysis that ultimately reveals the essence of the experience (Linda A. Bliss, 2016).

SAMPLING TECHNIQUE

A standard sampling method within phenomenological research is purposive sampling, which is often used when the characteristics of a specific group of individuals match the characteristics of the phenomenon being researched (McMillan and Schumacher, 2006). Purposive sampling guarantees data-rich responses from a knowledgeable audience (Higginbottom, 2004). In Hadiya zone, there are sixteen government structures (12 rural districts and 4 town administrations). By using a purposive sampling technique the researcher took six preprimary teachers from each well performed and rewarded six districts/town administration and primary schools; such as Danama, Bonosha, Shone number 1, Alemu W/hana, Ansho, and Sokokta primary schools from West Badawacho, Shashogo, Shone town, Hossana town, Duna and Amaka were sampled respectively. The reason for the using of this sampling is both participants and sampled study area was got reward from Hadiya zone education department in performance of ECCE in 2012/2022 academic year.(Hadiya zone education department, 2022 annual report).

Data Collection Instrument

The most fitting data collection approach for a phenomenological research is interview with open or semi-structured questions to explore things in detailed manner. These two types of interviews allow the researcher to address the phenomenon deeply, as long as a high space of opportunity for the informants to articulate their

experiences in detail, approaching authenticity as faithfully as possible. The detailed descriptions or interpretations brought by the participants in the profound phenomenological interview should be as representative of experienced reality as possible (Padilla-Diaz, 2015, p. 104). Semi-structured interview guide was developed by the researcher after comprehensive review of related literature on ECCE policy implementation manner. The developed tools trustworthiness was checked by two preprimary teachers who are out of the study area.

DATA COLLECTION PROCEDURES

In a phenomenological study, data collections techniques have the flexibility to allow participants to provide detailed accounts of their own experiences (Smith, 2004). Phenomenological research methods use a systematic method to analyze shared experiences' and gain meaning from them (Watson, Mazur, & Vincent, 2015).

The following procedures were used while collecting data; obtained letter of permission from Haramaya University department of Special needs and Inclusive Education and was given to the head of Hadiya zone education department and then Hadiya zone education department wrote a letter of permission to sampled districts and town administration. Then, sampled districts and town administration wrote a letter of permission to sampled primary schools. The field work was conducted from 12 March of 2023 to 04 April 2023.

METHODS OF DATA ANALYSIS

Data analysis in a phenomenology attempts to analytically present the lived experiences of those who are participating in the study (Moustakas, 1994). The data analysis process heavily relies on the participant's dialogue to process and understand what is unique to the specific individual, their shared experiences, and the participant's views (Creswell, 2007).

Data collection, management and analysis were carried out concurrently. After the interview, audio recordings were transcribed verbatim into texts by researcher within 12 hours. After transcription of the audio recordings into text, the text was interpreted with field notes containing non-verbal clues of participants to assist data analysis. Inductive thematic analysis was adopted to obtain the data-driven result.

ETHICAL CONSIDERATIONS

Before the data were collected, the participants were informed and agreed to participate in the study. It was also confirmed that any data would not be disclosed without their consent and keep its confidentiality.

RESULT AND DISCUSSION

Theme-1: preprimary school facilities

Regarding this theme, the ECCE policy guideline stated that preprimary schools should be physically safe and free from garbage sites; should have adequate latrine service; should have adequate water supply; should have adequate space in the classroom; and adequate size of the school compound (MoE, MoH and MoWA, 2010). As well, SNNPRS Education Bureau (2012), states learning by playing needs to be the main medium of instruction in preprimary and suggests an adequate and safe area to enhance the development of all children.

Concerning this, experienced PPT were interviewed whether the fundamental facilities are available or not in PPS. A participant from school 2 reflected that,

> *"…As a teacher of PP, I know that the outdoor and indoor space is inadequate for the children's learning by playing, and for free movement. Initially the school was not built for the purpose of PP, and there were no enough spaces to cover with fence entirely. Besides this, no facilities like enough water, clear latrine, feeding and rest room and very narrow and non-ventilated classroom."(PPT, 2)*

On the other hand, when the experienced teachers were asked about the adequacy of out-door and indoor space environments, teachers from school 3 replied in rolling their eyes by explained that,

> *"…As you see in your eye nothing is adequate and well prepared for children's to learn. We really have a lot of problems. In our school case the learning rooms are not smart and out-door environment is full of garbage. All the design and building were deliberately accomplished for primary school. In our school the farm part is rented for farmers to fulfill stationary materials. For PPE children there is no water and adequate latrine service."(PPT, 3).*

The findings revealed the PPT's experiences about PPS facilities like school physical environments (in-door and out-door), learning materials and equipment are very poor and it needs cooperation and commitment of school stakeholders. PPT from school 2 indicated the challenges faced him during classroom teaching is narrow classroom, unsafe gateways, not suitable desks, lack of text books and teacher guides. PPT's 2 reported:

> *As I reported various times to district education office, it is clearly known that in our school case the learning rooms are not smart and out-door environment is full of garbage. All the school preparation and design and annual budget were planned to the implementation of primary*

schools activities. No any preparation and plan was designed to practice the program of PPE purposely (PPT, 2).

In addition to this, the PPT from school 6 reported:

"When I was employed as a teacher in this school, for a single day I am not happy in my work. Always I fill sad due to a problem of unsafe school internal and external physical conditions. Most of the time, I informed to school principal to modify the gateways, playing places, toilet, desk and the like. But still now I didn't see any change. " (PPT, 6)

2 out of 6 teachers also reported that their school classroom door, window, sitting desks and passage ways are not comfortable for children. In addition to this, one teacher from school 1 informed that, I teach my students in classroom as well as out of classroom without any preparation and facility only by talking orally. *Teachers 5 revealed:*

Starting from the very beginning I had been told to school management bodies my misery and unsuitable condition to adjust the classroom and out of classroom situation that to make attractive for children. But no any attempts were made to improve the work of preprimary program progress and development. (PPT,5)

As it was clearly explained by respondent above, the preprimary physical as well as classroom learning environment, teaching learning materials and equipment are not attractive and conducive for children education, health and free movement.

Besides, Tovey (2007) revealed that the outdoor and indoor space and playgrounds can provide many play possibilities for PPS. Children need space where they can play with others but also smaller, quiet spaces for their own solitary activity, providing opportunities for autonomy and independence but also a secure base to which they can return or retreat, as and when necessary. Therefore, it would be possible to generalize that the EECE policy implementation has resulted in creating spaces free from garbage sites. However, it has a very low implementation in almost all of the studied area regarding providing enough indoor and outdoor space, adequate latrine service, and enough water supplies. Besides, its safety conditions were found to be very inadequate that would limit children's possibilities for play and expose them to hazard as well as fright.

Theme-2 Teaching Methodologies

It was stated in the ECCE policy guideline that teaching-learning methods should be child-centered approach; should facilitating a group setting to help children share experience; should supporting and encouraging children effort in the process of learning; should be mainly play-based teaching approach; and utilization of different teaching aids in the classroom (MoE, MoH and MoWA, 2010). In order to check out and analyze the policy implementation regarding these matters, a researcher led interviews with experienced PPT's. Regarding the above issue, participant- from school 3 explicated,

As a teacher of this level, I know the teaching method which fits for the level in a good manner. But always I teach children in lecture method; to form a group discussion in the classroom the class is very narrow and not safe. Besides this, no appropriate playing fields and materials. Therefore, always I worried about the unsuccessfulness of the program in our school. (PPT,3)

In addition to this, the PPT from school 4 explains,

"I used a teacher centered or lecture methods in indoor and out-door teaching environment. This is because of the unmanageable class size, narrowness of classroom, lack of teaching materials and no playing area in the school. Always children asked me to play ball, sport, and cultural games. However, I didn't allow them to learn in play. But still the school compound is covered by grass and the other part is farm land." (PPT, 4).

The interview response indicated that the main challenge hindered PPT to apply the ECCE guideline in regarding to teaching methodology is lack of facilities in the school. Concerning this idea, participant from school 1 elucidated that,

I have sufficient awareness and training in PPE teaching-learning methodology. But the school nature is not encouraging me to practice the right teaching methodology. As teacher of this level I see and precede the PP program like a primary education teaching methods. Still I didn't attempt to apply child-centered teaching approach. This is because in this PPS no suitable and safe condition. (TTP 1)

Several studies, for example, Paciorek and Munro (1999) have shown that in implementing the PPS curriculum, methods underlining child-directed activities are more effective than that teacher-directed instruction. Education in PPE is not about imparting facts rather it is about listening, guiding, and helping each child to make sense of the real world.

Generally, actual information does not confirm the kind of experiences needed for young children in a world of continuous change. Children need to have a foundation on how to understand concepts, apply skills, solve problems, work cooperatively, and take responsibility for their learning. Thus, based on the information obtained, it would be imaginable to settle that the more dependence on the teacher-centered methods has an effect on the proper implementation of the curriculum as stated in the PPS that have an unnecessary effect on the overall development of the child.

Theme 3- The Relationship between Teacher and Parents

It was indicated in the ECCE policy guideline that teacher and parents should regularly share information on the child's learning in regular Parent Teacher Association (PTA) meetings should be held within the year; information about the home environment of children should be made available to the teacher; and there should be collaboration among community-school (MoE, MoH and MoWA, 2010). In order to find out the situation of the parent-teachers relationship to assist children's learning; PPS teachers were asked to respond to the existence of parent-PPT's partnerships to contribute children's learning in the studied zone. Concerning communication between teachers and parents to discuss in the progress of children, the majority of respondents were answered that, it was not appropriate and ample to understand about the learning fashion of their children.

Concerning this issue, teacher from school 4 described,

> *"As PPT, I know the learners behavior and activity only in school environment. But I didn't see the learners any activity and behavior out of school environment. So, the parents should communicate with me to introduce about home environment and to know his/her children learning manner. But in reality, when I called parents various times only few similar faces (three or four) parents are coming to school repeatedly. In my opinion parents send their children to school like to get rest from their disturbance and crying."(PPT, 4)*

Parents have an undeniable role and responsibilities in following routine activities of children, motivating children to education and correcting the children wrong actions through series follow-up and advising. Besides this, in schools the children daily academic progress and failure greatly determined by active participation of parents in school. In this concern the respondents from school 5 indicated:

> *"....continuously orally and by writing letter I am calling parents to communicate their child's learning issues. However, still except a few parents, majority of parents were didn't have a willingness to come school and they have no care about their children learning problems and who teaches their children. Because of this I didn't expect parents for any kind of learning challenges as well as decisions." (PPT 5)*

According to MoE (2010) roles and responsibilities in bringing upon children, and on improving practical nurturing skills of parents and caregivers, due to the fact that most parents are not fully aware of their crucial role in their children's development and/or lack basic parental competencies, parental education will cover all aspects of child-rearing and development as well as the role of parents in fostering the realization of children's full potential.

Parents are the first caregivers of their children. This shows that all other caregivers and teachers need to work closely with them. Therefore, parents need to be involved actively in deciding what activities and services should be delivered in the pre-school. They can support preschool centers by sending their children to the centers, assisting in the provision of learning materials, coordinating and supervising the teaching learning process in the preschool centers, raising funds for the running of the school etc. (MoE, 2016)

Therefore, based on the interview results, it could be rational to accomplish that the practice of working closely with parents and the community was founded to be very low. Accordingly, the ECCE policy had been poorly implemented in working with collaboration of parents and other community members.

Theme 4- Assessment of Children in the PPS;

It was described in the ECCE policy guideline that assessment in PPS should be continuous using appropriate methods; it should not be used as a basis for promotion and encouragement; and the result should be communicated to parents (MoE, MoH and MoWA, 2010). In order to identify and analyze the major assessment techniques used, teachers in assessment process in the classrooms and out of classroom were interviewed.

Regarding the assessment of preprimary children's learning, one of PPT from school 3, responded that,

> *"As I know in PPS the right assessment is continuously evaluating the children's every activity not only in the classroom interaction. But in case of this school the assessment manner is taken place only in classwork, homework, and in written test. However, only classroom assessment is not measures the children's innovation skill and promotes self-*

efforts to create new ideas by the means of playing cultural and academic types of games, drawing, and singing." (PPT, 3)

In PPS's the assessment manner should be continuous and more it should be measures the children's activities, innovation skills and mainly taken place in out-door environment. But in reality the assessment technique is similar with that of primary grade learners. In the other hand, for the same question item, participant from school 4 described,

"As I know in PPS the right assessment is continuously evaluating the children's every activity not only in the classroom interaction. But in case of this school the assessment manner is taken place only in classwork, homework, and in written test. However, only classroom assessment is not measures the children's innovation skill and promotes self-efforts to create new ideas by the means of playing cultural and academic types of games, drawing, and singing." (PPT, 3)

Besides this, the PPT from school 4 illustrated,

"No continuously assessing experience in this school. I assess my students only in classroom test, class work, homework and in final examination. For out-door assessment in this school there is no facilities like, no appropriate playing place and playing materials. But the appropriate assessment for the level is outdoor leaning by showing in action, in speech, in playing and by counting and writing things."(PPT 4)

According to Mooney (2000) assessment is about recording how participants move through understanding rather than simply mapping the end product or outcome. Further, a multi-source and a multi-measure assessment will provide a more valid and comprehensive picture of the child. It also provides continuous feedback between teachers, children, and parents. Hence, based on the above result, it could be said that appropriate assessment techniques that provide a complete picture of children both in the in-out door environments were not used in most of the studied PPSs. Therefore, based on the results it could be rational to determine that the policy implementation regarding the assessment of children in PPS were very poor and it needs a further improvement by considering the local context of the preprimary school.

DISCUSSION

The results of this study was not converging with MoE ECCE policy framework and strategic operational plan for ECCE and various studies conducted Ethiopian researchers like Gebre Egziabher, 2014, Fekede 2021, Misahun 2020, Mamo and kenea 2014 all studies almost all indicated that early childhood period is a bridge between a formal primary school and preschool which lays a base for future development of children, it helps to provide appropriate education and care service for young children as it has a long lasting positive consequences in the later development and this program helps to shape children at early age to make them socially responsible citizen and promotes economic rate by reducing mortality rate, childhood illness, school repetition and dropout. Besides this, the above mentioned studies indicated that the major problems identified in all study were inadequacy of indoor and outdoor materials and equipment, lack of trained teachers, inadequate facility and lack of monitoring, lack of participation from parents, community, officers and politicians. Besides this, the implementation of pre-primary education program was weak since it was not aligned with the pre-primary education standard as intended. Because: teachers /personnel were both limited in number and not qualified for the required level; inadequate provisions and lack of financial support; too little parent-schools partnership, and insubstantial roles of administration bodies. Therefore, as it was described in previous various studies preschool teachers were suffered due to lack of relevant educational materials, unsuitable school facilities, teachers training problem, school budgetary problem, lack of independent school management, poor parental and community involvement system, very poor preschool teachers and parents relation, narrow classroom nature, poor assessment system are the major problem that hinders the preschool teachers performance in early grade level. Hence, to realize the implementation of early childhood care and education the concerned government and non-government structures should facilitate the school environment with safe conditions, should fulfill educational materials, trained sufficient number teachers for the level, adjust the appropriate assessment technique for the level, encourage the parents to participate in their children's education system, facilitate water supply service and latrine service system, and teaching methodologies to implement the early childhood education system in the studied area.

MAJOR FINDINGS

The finding show that government preschools lacks attention from government, parents, community representatives, school principals, school management bodies, and non-governmental organizations. As various studies confirmed that today's preschools faced huge hindering factors in the implementation process. The major once are: inappropriate school facilities (the nature of classrooms, outdoor school environment, water supply service, latrine service and school pedagogical centers), preschool shortage of school budget for the program, lack of educational materials for the students and classroom teacher's irrelevant assessment techniques and system. Besides this, learning materials were other necessary item in implementing policy set. Concerning learning

materials were developmental play equipment, text book and teaching learning materials were inadequate in all studied area.

Another necessary thing to implement policy was participation of the active parents and preschool teacher's relation. From this point of views in the analysis the participation and teachers parents' relationship not sufficient and did not share information regularly on child progress.

CONCLUSION

The current study provided a comprehensive understanding of experienced PPTs in the policy implementation of ECCE in preprimary of Hadiya zone through in-depth interview using a phenomenological design. The researcher found that the experienced PPTs are still in continuous problems that hinder the appropriate implementation of the program. Though the policy contained the useful approaches to make service available to all children, but there is high gap among rural and urban areas regarding access to the program and it fails to address the quality part. Regarding the school facilities, in all studied area PPS are not administered exclusively (independently); all of them encountered a high shortage of educational inputs, (teaching materials and equipment) inadequate curriculum materials, unsafe indoor and out-door environment, irrelevant teaching methodology and assessment, inactive parent-teacher relationship in all studied PPSs hindered the implementation of ECCE policy.

RECOMMENDATIONS

Since the problem for PPE program is lack of facilities such as improper in-door and out-door learning environment, inappropriate curriculum materials, and irrelevant teaching methodology, problem of assessment technique, insignificant parent participation. Therefore, to solve the problems and the achieve the nationally intended goal in regarding to ECCE policy implementation, Hadiya zone education department by working in cooperation with upper and lower government and non-government responsible stakeholders. In addition to this, parents and community representatives should give a special emphasis to implement the ECCE policy in the studied area.

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MANAGING MULTI-GRADE CLASSROOMS FOR FOSTERING SCHOOL EFFECTIVENESS IN NIGERIA

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ABSTRACT
The article Examined the issues in the multi-grade classroom management for fostering school effectiveness in Nigeria. Since multi-grade classroom is regarded as a classroom that accommodate more than one classes in a class during the teaching-learning process. The persistence of such situation therefore called for management concern in the interest of ensuring school effectiveness. It is therefore inevitable for the educational managers to make investigation into the situation in Nigeria. The paper therefore examined the concepts and strategies for managing multi-grade classroom, the indicators of school effectiveness required by effective multi-grade classroom management, the problems militating against multi-grade classroom management and the ways forward. It was however, concluded that the integration of multi-grade classrooms with the school situations need to be discouraged in Nigeria in the interest of fostering effectiveness in the school system.
Keywords: Classroom management, Multi-grade classroom and school effectiveness.

Introduction

In the recent time, the universalization of education had improved access to equal opportunities to quality education in Nigeria. It should be noted that the universalization of education had increase in the perception and create awareness to quality education in Nigeria. (Adepoju (2009). However, the increase in the population of the students at the school system constituted problem to the overcrowded classroom, schools population explosion, the problems also lead to the storage of teachers inadequate classroom, for the school population in Nigeria. The problem also lead to poor school effectiveness and poor students academic performance.

According to Ogundele (2019), the Federal Government of Nigeria stated that the government alone cannot shoulder all the responsibilities of providing education for her citizens. Manga (2020) also noted that most of schools have set back due to the inadequacy in the education facilities like buildings, lawns and Landscaping furniture, instructional facilities and inadequate finance. The effectiveness in the school management also had been in problem.

However, according to Moore (2016), the Educational administrators adopted management strategies like improvisation instructional supervisors, the use of shifting system, employment of part time teachers, the use of senior students for teaching. However, the problems of school population and overcrowded classroom skill persisted. For instance, Ijaiya (2007) stated that, over the years the classroom in secondary education have population of 150-200 students in a classroom. The population according to the author affect the quality delivery service during the teaching-learning process. The National Teachers' institute (2021) stated that the federal Republic of Nigeria suggested multi-grade school system in order to cope with the over population of the various schools in Nigeria.

Wolff and Gracia (2000) described multi-grade classroom as a class where two or more different grade levels learn in one classroom with one teachers. The multi-grade classroom does occur where the students enrolment is low, different age group inadequate classroom. According to Cohen (2012) also described multi-grade class is a natural learning environment with a variety of age group where by the learn together in a single classroom. The rationale for the article is to examine the concepts, causes, problems, the management strategies for improving multi-grade classroom teaching learning process in Nigerian secondary education and secondary education administrators intervention in multi-grade classroom situation.

Concept of multi-grade classroom

According to Orlich (2010) multi-grade classroom is defined as a class in which pupils of two or more adjacent grade levels are taught in one classroom by one teacher for most of the day. The multi-grade classroom is a situation where many grades are taught by a teacher in a classroom. The multi-grade teacher therefore is a situation where by a teacher has to teach many grades in a classroom all at the same time (Birch & Mike (2014).

According to Vithana and Pathirana (2005). Multi-grade classroom is a teaching situation where a single teacher has to take responsibility of teaching pupils across more than one grade levels within a time table period. To the author, schools with multi-grade classroom refers to multi-grade schools. It should be noted multi-grade classroom take place in area of low population density and school are inaccessible to low enrolment and few teachers. Little

(2001) noted that multi-grade take place when a parental patronage focus on the popular schools leading to a decline in the enrolment and high teacher turn over.
Song (2009) defined multi-grade classroom management as a process and skills which play vital role for effective teaching learning process of a classroom that poses more than one grade students. It is practice in a school where a teacher is absent for one reason and substitution is not available. It should be noted that this type of school system, the teaching effectiveness is difficult to achieved due to the following challenges.
Pollard (2001). Identified the following challenges affecting multi-grade schools like inadequate infrastructural facilities, poor time management skills. Non-availability of instructional packages for effective teaching-learning process, inadequate support from the stakeholders in school administration and time table is not flexible towards admitting school effectiveness. However, this paper is interested investigating the classroom management strategies that the multi-grade schools administrative an adopt towards enhancing school effectiveness of secondary schools

Indicators of school effectiveness of multi-grade classrooms.
It should be noted that for the multi-grade classrooms to be effective the following indices should be in the school. According to Kajang (2004) effective multi-grade classroom process the following indices like effective teaching students academic performance teachers' commitment to duties, record keeping, classroom discipline, effective sitting, arrangement and 'community services. For the multi-grade classroom to achieve the indices according to the author, there must be well organized classroom devoid of distraction, more flexible and creative activities need to be initiated and self-directed effective school-community relations and effective delegation of authority.

Multi-grade classroom management and school effectiveness of secondary schools
Multi-grade classroom system include the type of classroom situation where by there are two or more class being managed by teacher. Multi-grade classroom occur when there are few classrooms to accommodate the existing population or a situation where by there is low ration of the teachers to the students enrolment. When there is the available facilities are also inadequate for enhancing teaching effectiveness, multi-grade classroom can set in.However, the existence of multi-grade classroom can be managed towards enhancing teaching effectiveness in Nigeria secondary education in the following ways

Adaption of group method: Teachers in a multi-grade classroom can make use of group teaching method. The students can be groups and each of the group would be given different activities to be involved. The teacher will try to monitor and direct the students in what to do. Active involvement will aid teaching effectiveness in schools (Adeoye, 2011).

Stakeholders involvement in Nigerian education: The secondary school management can make use of educational stakeholders to intervene on the areas of funding, infrastructural development, maintenance of school plants, donations volunteers as teachers. The stakeholder involvement will go in a long way in reducing the over stressing the facility usage and the problem of multi-grade classroom will be adequately reduce (Ogundele (2016).

Monitoring of Nearest neighbour analysis:The nearest neighbour analysis of the schools should be adequately monitored so as to manage the strategic location of the schools. The distance from the one school to the others. That the school need to be equally spread according to the needs and interest. The strategic distribution of the schools will aid equity, access and quality, the situation will reduce the problems emanated from the multi-grade schools.

Adoption of Activity oriented methods: The multi-grade teacher can always adopt activity oriented teaching that will encourage cooperative learning and team work in the classroom (Oparande, 2013).

The teacher need to adopt effective classroom management strategies: The teachers used to encourage student discipline making the classroom to be flexible and the classroom should be well organized, for effective teaching-learning process in the multi-grade classroom situation. Hess (2009), also suggested that the teachers can make use of the space outside the classroom. The author noted that such approach will complement the crowded multi-grade classroom environment. The space outside can aid accessibility to the local resources which can be benefited for effective teaching learning process in the school system.

Integration of Information and communication Technology to Teaching-learning process of multigrade classroom:For effective management of the multi-grade classrooms, the teacher can integrate information and communication Technology and other forms of internet connectivity to multi-grade classrooms. The integration will aid effectiveness efficiency and high commitment towards administration of the multi-grade classroom.

(Akinnubi (2012). Finally; the school system can adopt shifting school methods for morning and in the afternoon in order to reduce the stress of multi-grade schools in Nigeria.

Teachers' Qualities for managing multi-grade classrooms in secondary schools
For effective management of multi-grade classrooms in Nigeria, the teachers to be able to manage multi-grade classroom effectively in secondary,

Resourcefulness:the teachers need to be resourceful. The teacher should be able to provide and improvise the necessary instructional facilities such as teaching materials, building managing the available sitting arrangement in order to provide conclusive environment for teaching-learning process in multi-grade classroom. Mothofela (2019) noted that when education resources are effectively the class teachers will be able to present the teaching-learning process in a more understood manner Jordan (2006) stated that in order to manage multi-grade classrooms, the teachers should have good classroom management skills and strategies for arranging and organizing instructional resources and physical setting.

Pedagogical efficiency: The teachers in the multi-grade classroom must be able to adopt learner-centeredness participatory, collaborative and interactive learning and be able to adopt constructive and reflective approach. The teachers in the multi-grade classroom need to be methodical capable of varying the methodologies that will aid quality delivery services. The teachers should be able to use dramatization, distraction, simulation game role, play and other activity oriented method. According to Beukes (2006). The multi-grade classroom teachers should possess basic skills of questioning, organizing and managing the time for effectiveness of the multi-grade classroom situations.

Qualification: Multi-grade classroom teachers should possess management qualifications such as B.Ed, M.Ed, OR Ph.D. In Educational management, the possession of management qualification will aid effective administration of any multi grade classrooms (Mathot 2011).

Improved personality traits : Personality traits of teachers are essential for the effective management of multi grade classroom, Butter Piji and Bijstra (2015). Stated that for effective and efficiency in the administration of the teachers should possess the personality trait of extraversion, Agreeableness consciousness, neuroticism openness to experience. The authors noted that teachers' ability to teach effectively in a multi grade classroom. The personality traits like humbleness, perseverance, hardworking, commitment, knowledgeable and ability to cater for individual differences in the multi grade classroom situations. (Bwoi, 2019).

Teachers Responsibilities or Readiness: Teachers in a multi grade classrooms must be ready to take additional responsibilities in the classrooms. The additional responsibilities like giving and marking of assignment, tests, having cordial friendly relationship with the students and parents seeking effective welfare for the students and provision of adequate training capable of achieving quality education for the students at the multi-grade classrooms. (Naparan & Alirisug, 2021).

Principals managerial skills required: Possession of managerial skills that is capable of managing the multi grade classrooms in Nigeria. According to Ogundele, Osaigwe and Azi (2020). The following principles management skills are essential for enhancing trust and productivity of the teachers in the school system. According to the authors, the require skills include motivational skills, time management skills, supervisory skills, change and motivation skills.
The possession of the skills will enable the teachers to achieve the basic educational goals. Aksoy, (2008).

Collaborative learning: The multi grade classroom teachers should always encourage students working together to solve specific problems. The teachers therefore should encourage peer tutoring, tutoring participants grouping according to the interest abilities and capabilities. This effort will aid effectiveness and efficiency in the school administration of the multi-grade classes. (Moore, 2016).

Suggestions
The following strategies can be adopted towards effective management of multi grade classroom in Nigeria. The following suggestion are made.
Multi-grade teachers should always relate their teaching-learning processes to a real life situation. The real life situation should be connected with the teaching learning processes in the school system. This can be done through integrative strategy.

Also, technology can be integrated into the teaching-learning process in multi-grade classroom. The teacher should always adjust digital tools in the classroom. The tools will encourage enquiry task learning easy connectivity convey the lesson items to the students.

Teachers should be flexible during provide appropriate teaching materials capable of effective goals achievement of the multi-grade classrooms in Nigerian school. Multi-grade classroom teachers need to encourage effective reading culture so as to faster students' emotional wellbeing.

The teachers in the multi-grade classrooms should always encourage child-centeredness approach during the teaching learning process. This can be done by connecting the teaching-learning processed to a real life situation, teaching from known to unknown, adopting activity oriented pedagogical approach. The method will aid effective teaching-learning process in a multi-grade classroom in Nigeria.

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PERSPECTIVES ON HIGH-IMPACT PRACTICES FOR AN EXCITING EDUCATIONAL EXPERIENCE

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ABSTRACT
The collective future of humanity depends on focusing on the meaningful pursuit of new knowledge created from higher-order thinking skills learned from high-impact teaching strategies (HITS) adapted by the best teachers. Engaging the learners in the learning process through innovative teaching-learning methodologies, reinforcing the core concepts via active learning, and adapting tools, techniques, and ideas to comprehend domain-specific knowledge makes the classes more interesting and productive, and makes a paradigm shift in the teaching-learning process. This paper emphasizes the importance of implementing alternate HITS in higher education across multiple disciplines while conducting interactive sessions to have a substantially higher effect on student results. It will boil down to a direct interaction of the learner with the subject to a large extent to improve upon the student's performance.
Keywords: Teaching-learning Interactions, High-Impact Teaching Strategies, Excellence in Education, Teaching art, Topic Understanding

Introductory Input

Engaging the learners on the learning curve and reinforcing the core concepts/principles/ideas/applications in various disciplines would enable them to grasp the topics. Learning and developing a set of instructional practices and a ladder of processes using advanced technology-driven teaching, dynamic academic edge, and vigorous assessment systems to pursue different career goals require nurturing and channeling talent as the first step under expert guidance and mentorship. The framework for 21st-century learning skills involves 4 Cs, critical thinker (solving problems), communicator (understanding and communicating ideas), collaborator (working with others), and creator (producing high-quality work). The real challenges ahead to shape a better future for humankind involve preparing individuals who are academically accomplished, professionally dedicated, emotionally balanced, morally upright, socially responsible, and ecologically sensitive. Transformative higher education involves experiencing a deep, structural shift in the basic premises of thought, feelings, and actions in human resources with intellectual potential (Author, 2017, 2016, 2015, 2014, 2014, 2013, 2013). We have to recognize the switch in the learning styles from formalistic lecturing style (pedagogy) to learner-centered flexible style (heutagogy) (Halupa, 2015, Patel, 2018). Learner maturity and autonomy are considered in a learning-based model over instructor control and course structuring in an instruction-based model. The mismanagement of important learning elements in classroom practices and the failure to monitor deliverables impact the entire knowledge transfer chain. The use of active learning techniques, exposure to diverse ideas, and high-impact practices inspire the learners and help in unique value creation in higher education ecosystem, fostering student achievement and well-being. This paper reviews best practices in higher education system with illustrative examples and explains the tools, techniques, and ideas to make classes more interesting and productive. These active learning examples demonstrate learner knowledge construction, relevance of a topic in daily life, a balance between theory and practice, and a paradigm shift from a passive to an active education system.

Teaching strategies like explicit teaching, goal setting, collaborative learning, questioning spirit, constructive feedback, meta-cognitive strategies, and internships are some high-impact practices to enhance learner engagement and are useful in subject realization in higher education institutions. Other important interactive teaching strategies include intellectual debate, peer tutoring, brainstorming, classroom discussion, seminars/symposia/tutorials/assignments, laboratory sessions, concept mapping/worked examples, role play, games, puzzle technique, case study discussion, impersonation, mnemonic technique, workshop/panel discussion/academic debate, demonstration, real-world applications, and innovative introductions/conclusions as they make the learning even more exciting (Baepler et al., 2016; McLaughlin, 1996; Fink, 2016; Knight, 2012; Orlich et al., 2010; Raba, 2017, Bomia, et al., 1997; Killen & O' Toole, 2023). We describe the active learning techniques below with illustrative examples to develop a learner-centric culture that helps break the monotony of the session. The examples of a few activities can be replicated and conducted to have an interactive educational experience, taking teaching innovation to the next level and making a strong academic representation of a topic. These special teaching techniques and tones provide a markedly different learning experience than the conventional methods in a journey beyond analyzing in the revised Bloom's taxonomy (Anderson & Krathwohl, 2001). Interestingly, exciting new educational experiences with creative and useful perspectives empower the faculty in their journey toward excellence in higher education.

1. Brainstorming Technique

It is a creative thinking technique for generating new ideas and solutions (Al-Samarraie & Hurmuzan, 2018; Hender et al., 2001; Rickards, 1999; Ritter & Mostert, 2018; Paulus & Kenworthy, 2019). It encourages new ways of thinking in problem-solving individually or collectively in response to a prompt. Individual or group brainstorming in the classroom can contribute and develop many ideas. After introducing the various types of binary relationships (one-to-one, one-to-many, many-to-one, and many-to-many) in a computer science class, the facilitator can test the learners' conceptual understanding by asking them to spell out a few real-time relationship sets. A car company selling a car product to a customer, a teacher taking a class for students, learners submitting assignments to the faculty, and students joining different courses are some of the relationships the students may identify. One can list on the board and discuss the correct responses on the merits of electric heating by forming two groups of learners. The consolidated list of points could include the absence of flue gases, cleanliness, ease of temperature control, automatic protection against overheating, high-efficiency utilization, and low cost. The facilitator can then explain the advantages of electric heating using the list generated by brainstorming.

2. Case Study Discussion

It is an in-depth study of exploring and analyzing a particular person, group, institution, or event over a period in a real-world context (Dart & Clarke, 1991; Welty, 1989; Gilbert & Dabbagh, 2005; Wu, 2016; Parker, 2001). It is an empirical inquiry using a rigorous research design and single or joint application of research methods to collect and analyze data. Case study analysis is an active, problem-based, learner-centered, faculty-facilitated strategy that helps develop critical thinking skills. Real or constructed problem-based case studies are useful in introducing a concept/theory, resolving conflicts, analyzing problems, evaluating proposals, understanding the gravity of an issue, and developing curiosity. In explaining the everyday applications of Ohm's law, learners can be divided into 3 groups, and ask each group to select a wire of suitable size that can withstand the ratings of a domestic geyser, an air conditioner, and a refrigerator. This activity makes the learners appreciate the relevance of the law in daily life and its significance in designing any electrical circuit. A global warming case study can be used to introduce beginners to scientific reasoning and data analysis. The chemistry of life case study can help understand health conditions like diabetes and the importance of diet, nutrition, and exercise. A case study to implement the 12 green chemistry principles as a part of the corporate social responsibility initiative of a multinational company can reveal the challenges in communicating the technicalities of the green principles like atom economy or design for energy efficiency to consumers. The case study could involve the design and development of a cancer drug from initial research to its use in humans. These sample case studies in different disciplines help learners to understand topics in real-world situations.

3. Demonstration Method

It is a practical exhibition and explanation of how a product/process/system works (Behnke, 1975; Giridharan & Ramasamy, 2016; Sever, 2013; Umara, 2022). Learning by observation provides an opportunity for learners to understand the topics most naturally. A demonstration would be well-suited for explaining the working principle of a battery, and it can be made interactive by asking relevant questions, ensuring learner participation. The active functional components of a lead acid battery can be demonstrated by taking a working lead acid battery from an automobile workshop in the classroom. The learner group or the facilitator can open and identify the different components of the battery system and write their names on the board. It is better to explain the function of each part of the system to reinforce learning. The demonstration can be made more interactive by asking relevant designing/logical questions on the topic at the right time holding the particular component in hand. We could encourage the learners to draw a schematic diagram of the battery and write the details of major components in the form of a table. At the end of the session, the participants should be able to identify the different parts of a battery system and explain their functions. Similarly, different materials such as chalk/glass pieces, and plastic/copper wires taken to the classroom can be used to demonstrate the two types of fractures viz. brittle and ductile types. The group of students can be asked to break the materials and write their observations on the board. The teacher can explain the ductile fracture in plastic/copper wire as the one that involves extreme plastic deformation while the brittle fracture occurs in chalk/glass by cleavage due to the tensile stress acting normal to the crystallographic planes with weak bonding. Hands-on activities using the necessary materials allow the participants to learn by doing in a more interactive way, and direct practical experience helps learners understand concepts or practice skills.

4. Game-based Activities

Games can be effective teaching tools because of more learner involvement, improved problem-solving, development of critical thinking, and enhanced team spirit (Pivec, 2009; Tham & Tham, 2014; Holmes & Gee, 2016; Hartt, et al., 2020; Cadiz, et al., 2023). Digital/board/word/card/video/hybrid game-based (individual/team) learning is altering education as it makes learning more engaging and interactive. It is designed to balance content area learning with gameplay and is an immersive activity promoting a state of flow. Learners can explore scientific

phenomena through interactive simulations like virtual chemistry experiments on titrations, weather-spreading patterns, flash-fire in explosive-reaction scenarios, challenge-response games on digital systems, or 3D models of the human body systems. A word game can introduce learners to commonly used building materials like cement, wood, brick, steel, sand, paint, and glass to help recall their properties and uses. The faculty can display a few words using a laptop that contains the name of one building material hidden in it (comprehensibility, wondrous, bicker, stalemate, polyandrous, flippant, glossary). The learners are tasked to identify the material and give the meaning of the word displayed. A snake and ladder game can be played using a board and a die to revise a topic. We have to associate each square with a question on a topic such as catalysis or network security. The entire class can be divided into two groups. Each group will have to answer the question associated with the square which is reached after moving the die. It can be passed on to the other group, if not answered. The facilitator can discuss the questions unanswered or skipped in the end.

5. Group Discussion

This is a structured group conversation to exchange ideas/opinions on a specific topical topic or a problem (Garside, 1996; Johnson & Mighten, 2005; Rahmat, 2017; Tsang, 2011). A moderator facilitates a panel discussion on an issue/current event. This learner-centric approach promotes a deeper understanding of a topic and increases long-term retention. Group discussion is an effective teaching technique as it helps develop critical thinking, improve focus and communication, increase retention, and share ideas/experiences/perspectives/opinions. It is a cooperative problem-solving activity that seeks consensus on the solution to a problem and enhances the ability to articulate and defend a position thoughtfully. It could be factual/opinion-based/case studies-based/abstract with clearly defined objectives, and a question outline. The group members should have basic knowledge about the topic to be discussed to become effective as a teaching methodology. The group discussions can help learners learn from each other, improve critical thinking, be more involved, and feel more confident.

6. Mnemonic Technique

This teaching strategy helps learners remember information by using keywords/acronyms/phrases/visual or auditory clues to connect new information to existing knowledge (Farrokh, et al., 2021; Jurowski, et al., 2015; Scruggs, et al., 2010). The acronym VIBGYOR represents the colors of the rainbow in order violet, indigo, blue, yellow, orange, red, and ABR in chemistry classes represents the fact that the acid turns blue litmus red. The use of songs, stories, or rhymes that relate to the information can be fun and easy to learn and help students retrieve information using this memory technique. My very educated mother just served us nine pizzas representing the nine planets in order Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto. The initial letters of the sentence “faculty training in electronics communication engineering and technology” could represent the names of six basic concepts of total quality management (TQM), i.e. focus on the customer, treating suppliers as customers, effective involvement and use of the entire workforce, continuous improvement, establishing performance measures, and top management commitment. Learners can easily memorize the above sentence, recall the initial letters of the six basic concepts of TQM, and explain the listed concepts. Similarly, RAMP is a mnemonic device for recognizing hazards, assessing the risks, minimizing the risks, and preparing for emergencies in the management of chemical safety in academic laboratories.

7. Academic Analogies

This requires the learner to analyze a thing and transfer that analysis to another thing to understand a concept (Glynn, et al., 2012; Taber, 2013; Holyoak & Richland, 2013; Gray & Holyoak, 2021; Clement, 1998). The target analogy is used to teach the difference between accuracy and precision. Measurement accuracy is the closeness to the actual value while precision is the reproducibility of each measurement. In the target analogy, accuracy is measured by the average position of the arrows closer to the bull’s eye and precision is measured by closely spaced arrows though far from the bull’s eye. The closer the arrow is in the bull’s eye, the more accurate the measurement is, and if the arrows are closely spaced though they are away from the bull’s eye, the shooting is considered precise. Analog concepts help learners understand new target concepts by comparing them to known things. They are useful in explaining complex ecosystems/photosynthesis that is hard to visualize. The atomic system is analogous to the solar system in many ways; the central body (nucleus/sun), orbiting bodies (electrons/planets), mutual force, orbits, and distance are common to both systems.

8. Puzzle/Jigsaw Techniques

This methodology uses a puzzle analogy in a cooperative learning strategy for subfields of science (Bagheri, et al., 2018; Hussin, et al., 2019; Aggarwal, et al., 2023; Egiluz, 2019). After forming the students’ groups, assign smaller pieces (puzzle pieces) of the topic, and the students of one group can explain their piece using examples, analogies, or details to the other group. At the end of the given time, students in one group can exchange their solutions with the other group, followed by a discussion with a complete understanding of the topic. Three groups

of students can describe the characteristic features of three types of rocks and compare them for similarities and differences. Similarly, two groups of students can share their knowledge with others, wild animals' habitats, or predators to complete a common task of tabulating and discussing their role in ecosystems. Mind map puzzles can be used to learn the classification of polymers. This exercise consists of identifying each type of polymer based on the keywords/phrases/characteristic features provided on the board. Alternatively, group the types of polymers, provided in the form of stickers, by pasting them under the correct headings. Here, six criteria for the classification of polymers are listed in the puzzle, and important points specific to each class can be written on the board.

9. Match the Columns

The matching type test provides a way for learners to connect a word/phrase/sentence in one column (premises) to a corresponding item in the second column (responses) in several sub-discipline categories (Iriyani & Silitonga, 2013; Setiawan, 2023; Pagliaro, 2011; Sulla, 2023). We can display the table and ask the learners to match the terms in column I with the appropriate descriptions in column II. Column I-Silicon, Silicone, Silica, Silicates; Column II-a chemical compound of formula SiO_2, minerals containing silicon and oxygen in tetrahedral SiO_4^{4-} units, a polymer with repeating units of siloxane $(-O-R-R_2Si-O-SiR_2-)_n$ where R = organic group, a chemical element with symbol Si and atomic number 14. Similarly, different types of stains (coffee, lipstick, ink, rust, grease/oil, perspiration) and methods of removal (ammonia, hydrocarbons, ethylene dichloride, citric acid, sodium hypochlorite, oxalic acid) can be listed in two columns, and ask the randomly selected learners to match the correct entry in the other column. This is a very efficient approach to assessment, covers more content in one question, allow testing of higher-order thinking skills, and provides an excellent objective measurement. The constructive role of subject experts in sharing knowledge about the topics to spark the learner's interest enhances each learner's experience and brings in the much-desired level in academic discussions and debates plays a pivotal role in promoting quality in higher education spaces like universities/institutions.

10. Innovative Introductions/Conclusions

The innovative introduction provides a general understanding of the overall topic, the relevance of the topic, and the specific purpose (Afdal & Spernes, 2018; Creedon, 2004; Afdal & Spernes, 2018; Sumathi, 2022; Sivarajah, et al., 2019). Water is a fundamental substance and an integral part of life. Faculty can display different apparent types of water such as raw water, turbid water, potable water, fresh water, salt water, hard water, soft water, distilled water, tap water, mineral water, alkaline water, infused water, and so on. The session on real kinds of water can be introduced by mentioning many different water types commonly found including the solid, liquid, and gaseous forms. Then select six learners to stand in other places and they can be named according to the isotopes of hydrogen and oxygen-protium (^1H), deuterium (^2H), tritium(^3H), ^{16}O, ^{17}O, and^{18}O. Then we can ask other learners in the class to count the total number of isotope kinds of water using different permutations and combinations of the three isotopes of hydrogen and oxygen by taking the water formula as A_2B. The teacher can discuss the properties of regular water, heavy water, and super-heavy water. This activity results in the engagement of students, fostering active participation in the teaching-learning interactions. The session on fire classes can be concluded by recalling the six classes of fires and their source materials. Class A-Ordinary combustibles (wood, paper, cloth), B- Flammable liquids (oils, paints, gasoline), C- Electrical equipment (wire, fuse box, phone chargers), D-Combustible metals (magnesium, sodium, lithium) and K-Combustible cooking (vegetable oils, fats, grease). We can ask five learners to represent five classes of fires. One of the learners says one source of any class of fire and the other learners have to identify whether the stated source belongs to the class of fire they represent. This exercise can continue till all the sources and classes discussed during the session have been covered. The creative ways of introducing/concluding a topic to make the students understand also make them enjoy learning and find this intense experience interesting.

11. Knowledge Test Quizzes

A quiz is a time-tested technique to revise the main concepts related to any topic and/or test learners' knowledge interestingly and engagingly (Shafiq & Siddiquah, 2011; Romero, et al., 2021; Cook & Babon, 2017; Rothe et al., 2021). Effective questioning is a powerful tool that engages students and stimulates interest and curiosity in learning. It opens up opportunities for learners to discuss, argue, express opinions, and present alternative points of view. We get immediate feedback on student understanding, support formative assessment, and capture feedback on the effectiveness of teaching strategies. The questions can be prepared by the teacher on PPT slides which can be projected in the class using a projector system. At the end of a session, a convergent/divergent, factual/rapid-fire quiz can be planned to make the revision more effective and beneficial to every learner in the class. We can conduct innovative quizzes by forming two groups of students. One group member can ask a question on the 'chemical bonding' topic to the other group and the students in the other group shall answer the questions. The correct question and answer shall get one mark and the wrong questions/answers shall lose one mark. If one group fails to answer any question, then the other group would get the opportunity to answer and get bonus points. The groups can switch their roles after the first round. The winning group will get the chance to

distribute chocolates. Sample questions: i) what is the difference between primary and secondary bonds? What is meant by London Force? iii) What are the consequences of hydrogen bonding? Name the different types of secondary bonds. A quiz can be conducted on various topics using multiple choice questions (MCQs) or a rapid-fire picture quiz that can be displayed using a PPT. Conducting a clue-based quiz/lucky-draw quiz/cyclic quiz to conclude a session or a discussion followed by a picture quiz on the properties of liquid crystals/supercritical fluids would make an efficient teaching experience.

12. Role-play/Simulation Strategies

It is a powerful creative instructional strategy and experiential learning where learners (individual/group) take on assigned roles and act out those roles through a scripted play that enhances communication skills and develops insights (Erturk, 2015; Alabsi, 2016; Rashid & Qaisar, 2017; Stevens, 2015). Role-play allows learners to explore realistic situations by interacting with other people in a managed way to develop a participative learning experience. Students can role-play interview scenarios (interviewer/interviewee) restaurant situations (waiters/guests), and company management (administrator/worker). Students can act out the life cycle of a plant or animal and discuss what they learned. Learners can enact predator-prey relationships or dramatize their real reactions to certain problematic situations. It is better to follow up by brainstorming for solutions to the problem. The facilitator can present a problem that can be approached from differing perspectives and the group members discuss the problem by simulating the perspective of the assigned role. Symbolic role-play can be used to teach chemical reactions that are invisible and rapid where the students act as atoms/molecules holding a placard. They can hold hands indicating bond-making, move their bodies to represent the course of a chemical reaction involving rearrangement, and detach the hands suggesting the breaking of the bond. The reaction between the dioxygen molecule containing the oxygen-oxygen double bond and the carbon on heating to give carbon dioxide can be understood by role-play.

13. Seminar Techniques

A brief presentation by a learner on a specific topic, discussion, and question-answer session is a student-centric practice-oriented activity that helps improve reading, writing, and talking skills (Rave & Botero, 2008; Liu, et al., 2024; Gomathi, et al., 2014; Waring, 2000). Presenters can use the 'chalk and talk' method or PPT presentation technique. In student seminars, the teacher should monitor discussion, keep it within limits, and evaluate/grade based on different criteria. This method helps develop higher cognitive abilities, the ability to respond, develop a keen sense of observation, and the ability to seek clarification in the cooperative environment of the participants. It should be an integral part of student training where the exchange of ideas/facts, stimulation of thinking, and learning of specific techniques in a particular topic takes place. This high-impact practice must be cultivated, refined, and perfected in an academic setting. Important steps to ensure a confident and effective delivery include speaking practice, eye contact, images/videos, interesting points, voice modulation, slide design, and interactive presentation. In this experiential learning technique, the students will understand and remember the key concepts/principles, technical terms, relationships, and applications.

14. Problem-based Learning (PBL) Method

The real-world problems are used to promote the learning of concepts/principles (Peterson, 2010; Hung, et al., 2008; Kwan, 2009; Schwartz, 2013; Duch, et al., 2001). The students are assigned a problem. The PBL process is based on several steps including problem scenarios, identifying the key facts, brainstorming missing information, self-directed learning, assimilating the new knowledge, applying the information, and analyzing the results. It helps in students' motivation to understand concepts, incorporate objectives, connect them to previous knowledge, and defend decisions with logical reasoning. Student-centric activities like project/research work and case studies are typical PBL problems where they identify what we know and learn and apply to solve the assigned real-life problem through a collaborative approach and critical reasoning. All-terrain wheel-chair design challenges can be taken up by a group of students to create ways to make such a product. This approach promotes critical thinking skills, problem-solving skills, interpersonal communication skills, and teamwork spirit. A PBL framework requires examining the real-world problem from every perspective and exploring solutions from a variety of angles.

15. Multi-media Presentations

Multimedia presentations used in education settings include texts, images, audio, videos, and animations that are often more engaging than traditional presentations (Bochina, et al., 2014; Artal-Sevil, et al., 2018; Syafii, et al., 2019; Rusli, et al., 2014). Anecdotes, examples, statistics, personal experiences, interactive quizzes, virtual experimentations, and computer simulations make it easier for the audience to understand the dynamic content. Proper content development on various scientific topics using graphics, sound, transitions, documents, and video requires skill, effort, time, and energy to be more effective and user-friendly. This interactive presentation can hold attention, stimulate discussion, and create clarity in the subject matter to enhance learning and development.

It can lead to better retention via the usage of multiple senses to experience information. The key points can be highlighted using sound effects, creative visualizations, or animations increasing learning effectiveness. Multimedia presentations can simplify complex functions of the different organ systems (skeletal, muscular, nervous, endocrine, cardiovascular, lymphatic, respiratory, digestive, urinary, reproductive, and integumentary) in the human body and help visual learners to understand the content better. It would help understand abstract concepts difficult for learners to comprehend and visualize.

16. Experimentation and Modeling Practice

This instructional strategy emphasizes the importance of learning from mistakes and taking corrective actions during experimentation/modeling (Schauble, et al., 1991; Montoya, 2017; Besson, et al., 2010; Huang, et al., 2019). They help learners develop problem-solving, time management, and teamwork skills and engage them in the learning process. It is essential to share their ideas and goal setting, collect the items required, engage with actual experimentation, and reflect on the overall process. This technique involves a cycle of four elements concrete experience, reflective observation, abstract conceptualization, and active experimentation. It is better to focus on a single concept around the topic discussed in the class in this inquiry-based learning exercise. Here, the students explore and investigate the topics actively and understand the challenges involved in putting the concerned theory into practice. Asking relevant questions and encouraging research to construct their understanding of a topic promotes critical thinking and fosters curiosity in learners.

17. Blended Learning Methods

Finally, match tuning of two or more methodologies fosters a remarkable learning journey in the higher education landscape (Khalil, et al., 2018; Pereira, et al., 2007; Kaur, M. (2013; Cleveland-Innes & Wilton, 2018). A blend of demonstration and discussion, using a set of questions and a demonstration, analogy followed by a set of convergent questions, a word game followed by a set of questions, a few questions based on an analogy, role play based on the analogy, problem/project-based case studies, discussion followed by picture quiz, insightful infographics followed by academic debate, and crossword puzzle designed to revise the main concepts-all are useful in topic understanding in the learning and development (L&D) sector. These innovative teaching strategies involving blended learning methods are suitable for effective teaching of certain scientific topics to support student growth. The advantages of blended learning include i) allowing experimentation with learning methods ii) using interactive media to enhance learning iii) online modules/electronic resources supplement lectures iv) active participation of students, and v) unaffected by time or geography. It is essential to promote academic content development in intensifying the impact of academic innovation involving innovative strategies to integrate traditional teaching practices with modern high-impact methods for holistic student welfare and growth.

18. Microteaching Technique

It involves recording a short teaching segment on a single topic/concept and then analyzing the video using a structured protocol (Göçer, A. 2016; Higgins & Nicholl, 2003; Mahmud, et al., 2013; Ralph, 2014; Otsupius, 2014; Mergler, et al., 2010). It helps teachers identify areas of growth, experiment with new strategies, prepare systematic lesson plans, develop self-confidence in class management, eliminate subject errors, and improve overall teaching practice. The microteaching cycle can help students to present short lessons in the classroom. The process of microteaching involves the following steps; planning, lesson selection, preparing teaching materials, feedback, revision and practice, and repeating the process to gain mastery. Microteaching can be practiced to build stronger teaching skills to improve classroom teaching performance. It helps in the development of new skills in learners and emerging teacher trainees to gain confidence and enables them to master high-impact teaching practices under controlled conditions. High-impact educational practices discussed above are highlighted in **Figure 1**. [Figure 1 Near Here]

20. Concluding Remarks

The art of awakening the natural curiosity of young minds by providing the conditions in which they can learn in the form of stories/quizzes/ innovation activities fosters excellence. Thinking and analyzing abilities developed from the teaching-learning process flow in young minds which connects daily life with career goals stretching the limits of one's imagination. We have to implement active learning techniques in classrooms that are more effective in embedding concepts into their long-term memory and create capabilities of analyzing problems by linking learning across disciplines, sharing ideas and solutions, working together to reach a common goal, and new specific approaches to innovation and invention as a part of long-term higher education reforms using the nuts and bolts of teaching practice, advancements in pedagogy, educational psychology, and cognitive research outcomes. Technology-enhanced learning innovations help capture the attention of learners, and learner involvement in the teaching-learning process, ensure deeper student learning, keep the spark of motivation ignited, achieve a paradigm shift in the teaching-learning process, and provide a global outlook. Those who step outside their comfort teaching zone and explore new ideas often achieve the most important milestones in their career.

Innovative teaching learning assets empower faculty in their journey toward excellence and enhance the quality of higher education.

The most powerful tool to change the world is higher education where the learners are actively encouraged to venture beyond their safe space to reach greater heights. High-impact teaching-learning interactions are a major factor in transforming the nature of higher education and shaping the new generation via a continuous learning process involving high-tech student-centered strategies and improvement in learning outcomes that will enhance the quality of higher education. These modern teaching methods involve changes in educational approach making learning more interesting than traditional methods. Using the 5E framework of engagement, exploration, explanation, elaboration, and evaluation helps implement several HITS. Despite the challenges of today's teaching style, one can remain capable of being productive, relevant, impactful, and fruitful by adapting HITS in academic settings and allowing the younger generation to learn from past experiences and knowledge. A multipronged approach including content development and implementation committee to develop comprehensive strategies in inspiring teaching-learning excellence for the sector is suggested to enhance the quality of the higher education. These instructional strategies, when applied effectively can help students gain a deeper understanding of the topics and encourage critical thinking. The perspectives presented above provide opportunities for personal practice, a unique approach, teaching philosophy, and culturally responsive teaching to develop high-impact teaching culture.

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STUDENTS' PREFERENCE OF LEARNING MODALITY IN DATA SCIENCE COURSES—A CASE STUDY

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ABSTRACT
Since the pandemic, students have experienced different learning modalities—in-person, online synchronous, online asynchronous, and hybrid. This paper studies students' attitude and preferences towards these learning modes. We collected data over four semesters on students' preferences toward the learning modalities of their previously taken and future courses.
We found that students preferred online synchronous offerings more than the other learning modes throughout the four semesters, based on both their previously taken and future courses. Overall, the order of preferences from the most to the least favorable are online synchronous, online asynchronous, in-person, and hybrid. In addition, we found that the preference towards synchronous courses over asynchronous courses was greater for upper-division than lower-division courses.
Keywords: online, in-person, synchronous, asynchronous, hybrid, learning modes

Introduction

Distance and online learning have been introduced since 2000 and have been growing since then (Clark, 2024; Prinsloo, 2016; Zawacki-Richter & Naidu, 2016). Studies have found that students prefer online classes over other learning options due to their flexibility and ability to accommodate work schedules (Shlomo & Rosenberg-Kima, 2024; Johnson, 2022). During the pandemic, most institutions shifted to online learning mode. Post-pandemic, many institutions switched their course offerings back to in-person for the benefits of direct interaction and hands-on learning experiences, while some retained online section options for their courses. That being said, there are a noticeable number of students who still prefer the online learning mode after the pandemic (Bentrim et al., 2022, Shlomo & Rosenberg-Kima, 2024), illuminating student perceptions of learning modality changes.

Student perceptions of learning modes provide invaluable insights into their experiences and expectations of classes (Dawson et al., 2019). Student perspectives are important to motivating their learning and attendance in a class (Larson et al., 2023). Studies have mentioned that student attitudes toward learning modalities are influenced by non-teaching factors, and understanding student preferences of delivery or learning modes are important fostering their learning experiences. (Artino, 2010; Van Wart et al. 2020; Kartika et al., 2021; Zhang et al., 2022).

Metro State University is a four-year university in Saint Paul, Minnesota, U.S., with diverse student population. Metro State University serves both traditional students and adult learners. Previous studies, mentioned above, investigated student perceptions and preferences in traditional institutions. Yet, few studies have identified student attitudes toward online learnings in non-traditional schools, such as universities and colleges focusing on adult learners and non-traditional students. In this study, we investigated student preferences of online and in-person learning modes at a non-traditional university.

While our research focused on student perceptions about learning modes, this is not suggesting that the effect of learning modality on student performance is unimportant. Preferences may not always align with the methods that yield the best academic outcomes; however, previous studies comparing students' performance between online and in-person offerings for introductory programming courses (Smith and Rixner, 2020; Marriott, 2021; Alzahrani et al., 2023) have shown that there were few or no statistically significant differences in exam scores between the students who completed a course online and those who completed the same course in person. Gulati et al. (2023) found that the learning modality was not statistically significant, as the online and in-person sections had a comparable performance on formative assessments, with a slight advantage for in-person students in exams. In addition, there was a positive correlation between attendance and exam scores, regardless of remote or in-person offering (Smith and Rixner, 2020). Offering students their preferred learning mode can enhance class attendance and participation.

In online learning, two modalities were often offered to the students: synchronous and asynchronous. Most courses in online programs tend to be asynchronous, as this format offers greater flexibility for students who may be balancing education with work, family, or other commitments. However, some online programs also offer synchronous courses. Both synchronous and asynchronous learning modes offer unique benefits that cater to diverse student populations (Hung et al., 2024; Zeng & Luo, 2023). Synchronous learning facilitates real-time interaction, fostering collaboration and immediate feedback from the instructor (Katai & Iclanzan, 2023; Belt & Lowenthal, 2022). Conversely, asynchronous learning provides unparalleled flexibility. This modality especially fits to students' work schedules. Studies have reported that students in synchronous settings received more peer-centered activities and greater support of their psychological needs, as well as overall satisfaction (Fabriz et al., 2021; Presley et al., 2023). Yet, not much research has been done to address student attitudes toward these two learning modes for online programs or institutions serving non-traditional students.

Computer science and data science often requires a blend of theoretical learning and practical applications. Studying student perceptions about synchronous and asynchronous learning can help educators design courses that balance student needs while accommodating diverse learning preferences. For instance, students may prefer asynchronous learning for activities like coding which require uninterrupted focus and flexible pacing (Dela Rosa 2022). On the other hand, synchronous sessions might be effective for peer programming and real-time debugging (Sun & Xu, 2024; Tan et al., 2024). In this study, we explored student perceptions toward synchronous and asynchronous online classes in a non-traditional institution.

At Metro State University, we continued offering courses in various learning modes: in-person, online synchronous, online asynchronous, hybrid, and Hy-flex. The in-person learning mode is in the traditional physical classroom setting, providing face-to-face interactions between the instructor and students. The online synchronous mode is very similar to the in-person learning except that learning occurs in a Zoom environment. The online asynchronous courses do not require scheduled sessions. The hybrid learning mode combines elements of online and in-person instruction. There are two to eight in-person sessions scheduled or more than four proctored exams on assigned days and times for a hybrid course. The Hy-flex learning is offered in-person to the students who choose to be in-person and is broadcast via Zoom to the students who choose to be online. There is no course offered in Hy-flex mode in our Data Science program at Metro State University.

Research Questions

Students have diverse needs and education background that influence their attitudes toward different learning environments. For instance, adult learners balancing work and family may benefit more from asynchronous options, while younger students seeking human-human interactions in in-person settings. In this paper, we study two research questions.

The first research question is: What is student preference toward different learning modalities: in-person, online synchronous, online asynchronous, and hybrid, in a non-traditional institution?

The second research question is: If students prefer online learning, or for the students in online degree programs, do they prefer synchronous delivery or rather asynchronous format?

By identifying student preferences of course modality, especially for institutions with similar student population as Metro State University, schools can make informed decisions about course design, ensuring that students are not only more engaged but also more likely to succeed. This research can be generalized to institutions offering online programs and online classes, or with students who prefer online learning modes.

Methods

We created a survey of eight questions to investigate students' attitude toward learning modalities. The first question targeted students' satisfaction of previous courses in regard to the four learning modes: online synchronous, online asynchronous, hybrid, and in-person learning. Questions two, three, and four asked students to elaborate on the challenges and appealing aspects of remote learning. Question five investigated student preferences of learning modalities for their future courses. Question six and seven were extensions of question five, asking the likelihood of students choosing online synchronous versus asynchronous at different course levels (freshmen, sophomore, junior and senior levels). The last question collected students' comments. The eight survey questions are included in the Appendix of this paper. The survey also included students' demographic information. This survey instrument was approved by the Human Subjects Review Board (HSRB) at Metro State University.

Survey invitations were sent out to all Data Science majors each semester as Google Forms and student responses were recorded anonymously. Each academic year, there are about 40 newly enrolled Data Science majors. Students completed the survey voluntarily. Sixty-seven responses were received from four semesters: Fall 2021, Spring 2022, Spring 2023, and Fall 2023. If a student did not take a course in a certain modality, they rated N/A for the corresponding question on the survey. In Fall 2021 and Spring 2022, most of the courses offered at Metro State University are online synchronous or online asynchronous. Starting from Fall 2022, most of the lower division courses in Data Science were offered with both online sections and in-person sections, and most of the upper division courses were offered online. At Metro State University, the class size was capped at 32 students, with some of the upper division classes capped at 24.

Student responses to the first question, asking their satisfaction with the four learning modes from previous courses, were analyzed using the ordinal logistic mixed effect model. The response variable was the satisfaction type (dissatisfied, neither satisfied nor dissatisfied, and satisfied). The explanatory variables were semester, learning mode (online synchronous, online asynchronous, hybrid, and in-person), students' age, gender, Hispanic status, and racial group, alongside random effects for students to account for the non-independence of observations within the same student.

Student responses to question five, investigating students' preferences of learning modes for their future courses, were analyzed using the one-way Chi-square homogeneity test. We tested if the proportions of preference of the four learning modes were significantly different. The response variable was the proportion of students preferring each type of learning mode. The explanatory variable was the learning modality.

Student responses to question six and seven, asking the likelihood of their choosing the online synchronous or asynchronous modes for their future courses, were analyzed using the ordinal logistic mixed effect model. The responses were indicated by a Likert scale labeled with extremely likely, somewhat likely, somewhat unlikely and extremely unlikely, and were considered as the dependent variable. Course modality (online synchronous and asynchronous), course level (100, 200, 300 and 400 levels), number of years in the Data Science program, racial

identities, gender identities, and age group were considered as predictors. The resulting models were compared using likelihood ratio test (LRT) and Akaike Information Criterion (AIC).

All analysis was done using R with the significance level of 0.05.

Results

The descriptive statistics of the responses from the first question (satisfaction with the four learning modes of their previous courses) showed that more than 70% of the students were satisfied with the online synchronous mode (Figure 1). The percentage of students who were satisfied with the online synchronous courses was the highest, and the online asynchronous satisfaction rate was the second highest. Hybrid classes had the least satisfaction rate and the highest "not applicable" rate, due to the limited availability of such courses.

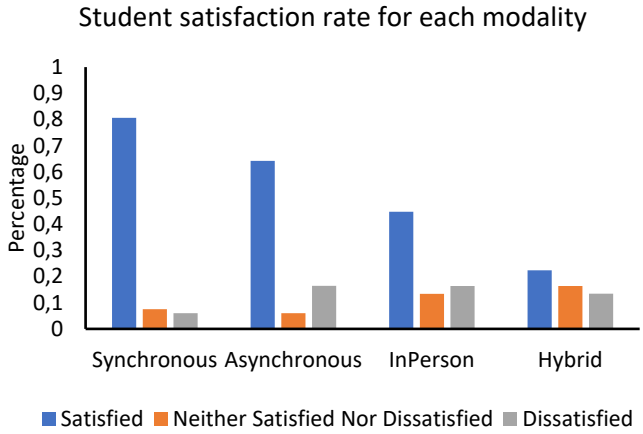

Figure 1. Students' satisfaction of the four learning modes based on their previously taken courses. The heights of the bars represent the percentage of a satisfaction level.

Figure 2 displayed the satisfaction levels of different learning modes by semester. It showed the consistency that the online synchronous classes were the highest preferred and the online asynchronous was the second highest preferred in Fall 2021, Spring 2022, and Fall 2023. At Metro State University, at the beginning of the pandemic, most classes moved online during the 2020-21 academic years and some in-person classes resumed in Fall 2022, and thus we saw a peak of interest toward in-person learning in Spring 2023, but then the interest went back to be much lower than that of synchronous courses in Fall 2023.

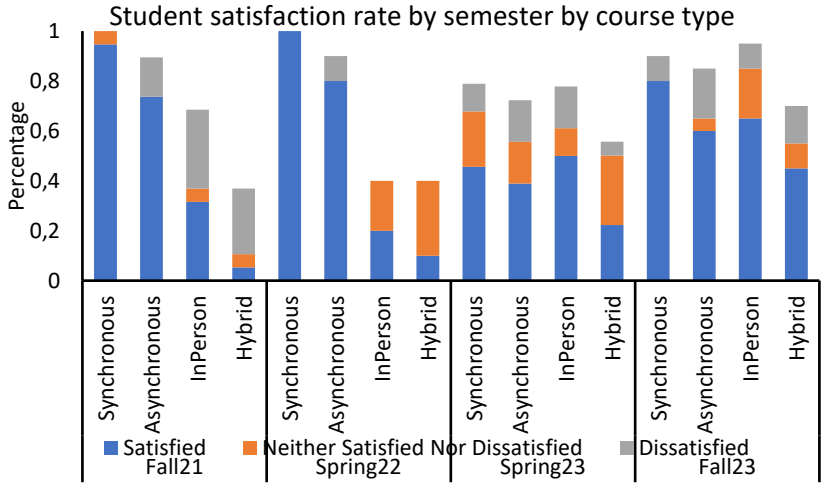

Figure 2. Students' satisfaction of the four learning modes in each semester. The height of the bars is relative frequency of the satisfaction level in each semester.

The ordinal logistic regression model reveals that the learning mode (online synchronous, online asynchronous, in-person, and hybrid) significantly impacts students' satisfaction. The online synchronous classes show the most significantly positive correlation with satisfaction (Z=4.26, p-value<0.001), followed by online asynchronous classes (Z=2.79, p-value=0.005). Traditional in-person classes also show a positive relationship but not statistically significant (Z=1.38, p-value=0.168) with satisfaction. In addition, the ordinal logistic regression model suggests that the factors of semester, age, Hispanic status, gender, and racial group were not significant. The random effects of students show a very small variance (<0.001), indicating minimal variability in satisfaction levels attributable to individual differences between students.

Based on the Chi-square homogeneity analysis of question five responses, we observed that there was significant difference between the proportions of preferences toward the four learning modes ($\chi^2(3)$ =22.02, p-value<0.001). Most of the students preferred the online synchronous mode, followed by the online asynchronous mode (Figure 3).

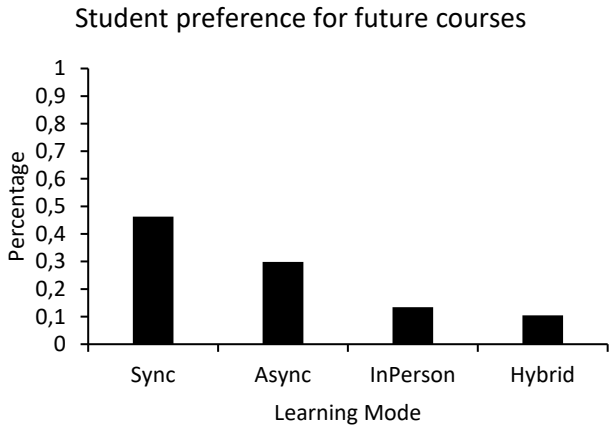

Figure 3. Student's learning mode preference for future classes. The height of the bars represents the percentage of students choosing that learning mode.

Student responses to question six and seven, relating to the likelihood of choosing the synchronous versus asynchronous modes for the four levels of their future courses, showed that 81% of the students were likely (both extremely likely and somewhat likely) to take online courses regardless of synchronous or asynchronous. Looking into the percentage of students who would likely (both extremely likely and somewhat likely) take online courses, synchronous courses were preferred (89.4%) more than asynchronous courses (71.9%) (Figure 4).

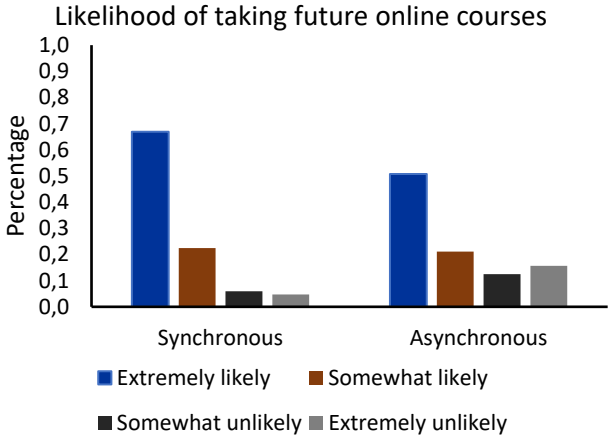

Figure 4. Students' preferences toward online synchronous vs. asynchronous courses. The height of the bars represents the percentages of students indicated the likelihood of choosing that modality for their future classes.

When comparing students' preferences for the online courses for upper versus lower division courses, we found that students were more willing (both extremely likely and somewhat likely) to take online courses for lower (freshman and sophomore) level courses (83.9%), than for higher level courses (77.6%) (Figure 5).

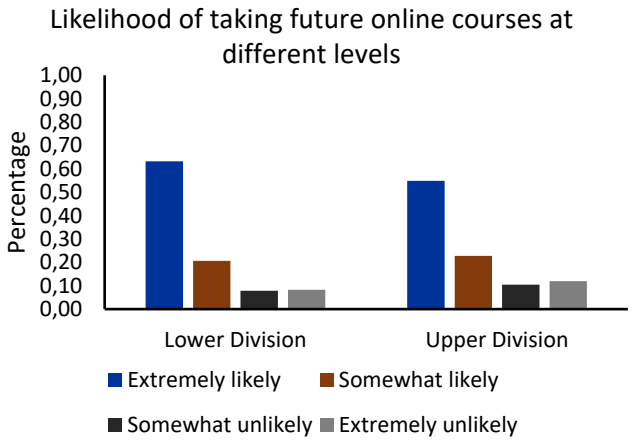

Figure 5. Students' preferences toward online courses by course levels. The height of the bars represents the percentages of students.

The ordinal logistic regression model of the responses from the sixth and seventh questions revealed that the course mode (synchronous vs. asynchronous) is significantly related to the likelihood of choosing the course ($\chi^2(1)=52.25$, p-value<0.001), as well as the course level ($\chi^2(1)=7.08$, p-value=0.0078). There is a significant interaction between the course modality and course level from our model ($\chi^2(1)=4.78$, p-value=0.029).

To further investigate the significant interaction, when it was an upper-division course, the odds ratio of likely taking a synchronous versus asynchronous course was 7.87 (95% CI: 4.23-14.62, p<0.0001, Z=6.53). When it was a lower-division course, the odds ratio of likely taking a synchronous versus asynchronous course was 3.03 (95% CI: 1.56-5.78, p=0.0008, Z=3.36). Students were significantly more likely to take a synchronous course than an asynchronous course for an upper division course.

Looking at the difference between course levels, when it was an asynchronous course, the odds ratio of likely taking it at lower-division versus upper-division was 2.73 (95% CI: 1.53-4.89, p=0.0007, Z=3.39). When it was synchronous, the odds ratio of likely taking it at lower-division versus upper-division is 1.05 (95% CI: 0.55-2.00, p=0.88, Z=0.15). Overall, if the course was offered asynchronously, students preferred it to be a lower-division offering, but when it was synchronous, students were likely to take it at either upper or lower-level.

Discussion

Overall, we found that students showed a consistent interest in taking online courses, and the online synchronous mode was the most preferred delivery mode. Even though this study is only one case study for Data Science students, the results in this study about student perceptions of course modalities can be extended to institutions with similar student populations and institutions with online programs.

In the survey, question two asked students to choose the challenges of taking an online course. Out of the total of sixty-seven students surveyed, thirty-three stated that they did not experience any challenges. The top challenge was that students felt that they could understand the material better in in-person classes (Table 1).

Challenges of online courses	Total number of students who voted this challenge
Did not experience any challenges	33
Understanding materials better in in-person classes	17

The availability of help with the course content	13
Understanding the course expectation	12
Distractions in my surrounding environment	11
Lack of my time management skills	10
Other challenges	9
Frequency of software/hardware issues interfering the course	8
Access to reliable internet connection	6
Concerns about prolonged screen time	6
Access to technology	4
Distractions in the instructor's surrounding environment	2

Table 1. Summary of student choices of challenges when taking online courses. The numbers in the right-hand side column indicate the counts of students who chose that challenge. Note that a student could choose multiple challenges.

Students also indicated the appealing aspects of online courses as well (Table 2). The top appealing aspect was the ability to refer to course recordings.

Appealing aspects of online courses	Total number of students who voted for this aspect
Ability to refer to recorded class materials	57
Time saving (no commute)	57
Convenience	51
Flexibility of learning	46
Others	6

Table 2. Summary of student choice of the appealing aspects of taking online courses. The numbers in the right-hand side column indicate the counts of students who chose that aspect. Note that a student could choose multiple appealing aspects.

Even though we found that age group was not a significant factor, different age groups did show very different preferences. Metro State University has a unique student population where more than half of the students are adult learners. We found that students under 25 preferred the in-person classes more than the online synchronous or asynchronous classes (Figure 6). The age group of 45 or older demonstrated a keen interest in both in-person and online classes. Conversely, the 25-44 age demographic exhibited a pronounced preference for online courses, a choice that may be driven by their needs to juggle other commitments such as work and family obligations.

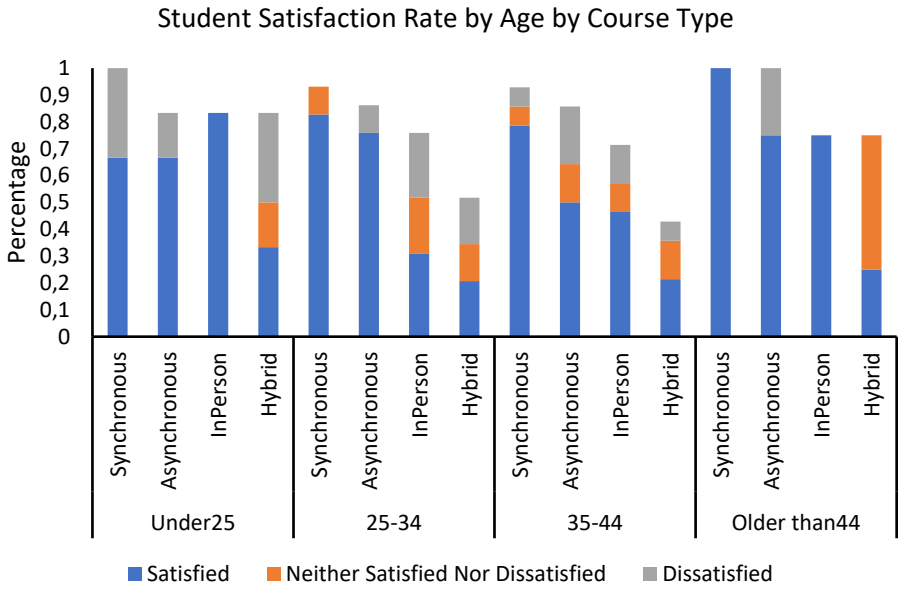

Figure 6. Students' preference of learning modes by age groups. The height of the bars represents the percentage of students.

Students' responses to question six and seven, relating to the online synchronous and online asynchronous preference for the four levels of their future courses, showed a similar pattern; the age group of under 25 indicated that they were more unlikely to choose an online course than the other age groups (Figure 7).

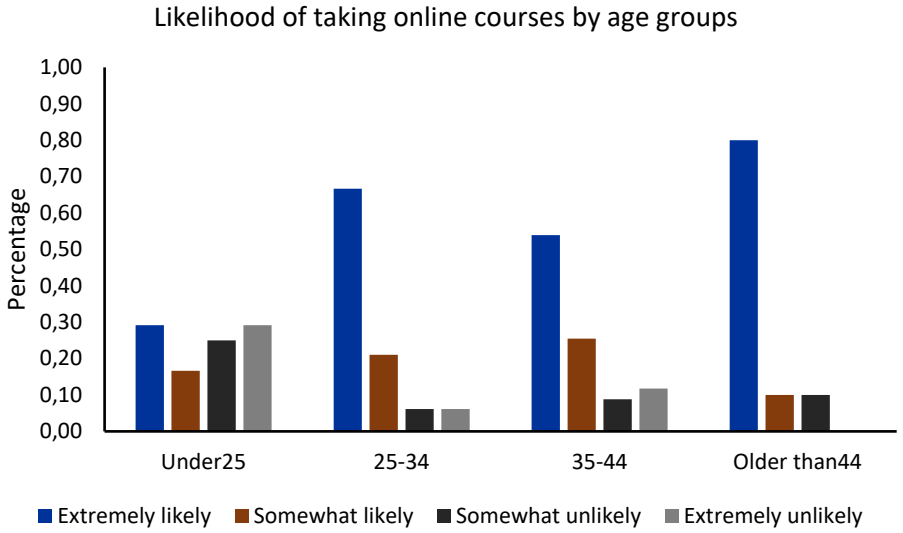

Figure 7. Students' preference toward future courses by age group. The height of the bars represents the percentages of students.

Our research findings suggested that students preferred online synchronous mode over asynchronous. Younger student populations preferred in-person classes more than online classes, while adult learners preferred online learning much more than in-person.

Those recommendations can benefit schools on their course design and course offering and determining the appropriate learning modality for their student populations.

Future work

This paper focuses on students' attitude toward the four online learning modalities: online synchronous, online asynchronous, in-person, and hybrid. However, this study did not investigate student performance with the four modalities. In our future work, we would like to include student performance data to study student learning outcomes with the four learning modalities.

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TEACHERS' PERSPECTIVES ON TECHNOLOGY USE AT THE CIU ENGLISH PREPARATORY SCHOOL: A QUALITATIVE STUDY

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ABSTRACT

This study aims to examine the perspectives of teachers on the use of technology at the English Preparatory School at Cyprus International University (CIU). Six teachers from CIU's English Preparatory School were interviewed. The data were obtained through qualitative research, and thematic analysis method was used to analyze the teachers' perspectives. The findings revealed that the participants generally hold a positive perspective towards integrating technology tools in their classrooms. The teachers mentioned some challenges and technical issues they face, such as the slowness of some tech devices and problems with the speed of the internet. They also mentioned things that could be improved. Regarding AI tools, the teachers said that it is possible to integrate AI tools into the teaching and learning process, with some limitations that do not give direct answers to the students. Additionally, this study discussed the role of robots in education, and the findings showed that the majority of the English Preparatory School teachers believe that robots will not take over their jobs in the future.
Keywords: Technology Integration, Teacher Perspectives, AI Tools in Education, Robotics in Education, Future of Education.

Introduction

Technology is becoming a critical element of teaching and learning in today's quickly changing educational environment. In spite of the fact that there is a general agreement about the advantages of technology in education, more research is still needed to explore how teachers perceive it and employ it in the classroom. This qualitative study explores the perspectives of teachers at the English Preparatory School at Cyprus International University (CIU) regarding their experiences with integrating technology in their classrooms.

When it comes to technology integration in the classroom, there are advantages and disadvantages that need to be carefully examined. Technology can improve student engagement and learning outcomes, but it's also important to take into account the risks of screen time, distraction, and the possible effects of integrating technology on students' attitudes and motivation for learning (Azad,2023). Thus, varied learning styles exist among students, making it important to recognize that what works well for one student may not be suitable for another. While highly technological methods may prove advantageous for certain students, they may not be as effective for others (Khodabandelou et al., 2016).

Technology encourages students to participate more effectively and reduces student shyness. In this light, when compared to printed text, digital technologies have the ability to decrease differences in student participation both at home and in the classroom (Rizk & Davies, 2021). However, the excessive use of technology tools in the classroom may lead to prolonged sitting and a lack of physical activity. Moreover, prolonged exposure to screens can lead to health issues such as eye strain, difficulty in sleep, and headaches, which can impact students' mental and physical health (Raave et al., 2022). Thus, it is important to have a balance between education and technology so that they do not harm each other (Contreras et al., 2022).

In general, it can be said that the benefits of technology appear to exceed the drawbacks. The COVID-19 pandemic forced a change in the style of teaching from face-to-face to online. The development of modern technology clearly affects education and teaching methods. Today, in the era of robots and artificial intelligence technologies such as the Generative Pre-trained Transformer (GPT) and the vast services they provide, it has become necessary for teachers to integrate these modern technology tools into their teaching methods for students. As a result of the wide range of applications that large language models such as the Generative Pre-trained Transformer (GPT) offer, their implementation in education has been suggested as an area of potential interest. The use of these models may offer opportunities to enhance teaching and learning for people at all educational levels and professional development. These models offer a unique opportunity to provide successful and customized learning experiences because each individual has unique requirements, abilities, and preferences for learning. (Kasneci et al., 2023).

In today's classrooms, teachers use various new tools of technology to make English learning more effective and exciting. One of the most used tools are the smart boards. These smart boards allow teachers to use electronic books, project slides, play videos and audio records, browse webpages, and many more things. Other tools, such as computers, tablets, and Video calls, which enable to see and communicate with teachers and students. Today, the use of robots and Artificial Intelligence (AI) tools has become popular. Robots and AI tools integration have

revolutionized the education process. Moreover, some believe that in the near future, there will be no need for teachers at all, as robots and AI tools may replace the role of teachers.

CIU English Preparatory School Background

The English Preparatory School has existed since the founding of Cyprus International University (CIU) in 1997. The English Preparatory School is part of The School of Foreign Languages (SFL) at CIU. This school has students from different regions and nationalities, such as Turkey, Iran, Tajikistan, Afghanistan, Pakistan, Arab countries, some African countries, and other regions around the world. Approximately 500 students enroll in The English Preparatory School each year, suggesting a multicultural and international environment within CIU. The English Preparatory School has over 40 teachers, both males and females, holding diverse qualifications ranging from Bachelor's (BA), Master's (MA), and Doctorate (PhD) degrees. The English Preparatory School building has more than 20 classrooms, each with a smart board connected to the internet. The teachers use these boards to teach from the virtual textbooks, browse the internet, play records and videos, and create presentations.

The main goal of the English Preparatory School is to prepare students for the various English departments at CIU. At the beginning of each semester, students take the proficiency exam and are placed in the appropriate level based on their scores. The English Preparatory School has a range of different levels, from beginners to advanced. These courses are designed to help students improve the skills and knowledge necessary to use the English language effectively in academic and other environments. At the English Preparatory School, target language instruction is carefully planned, and the course levels are aligned with the Common European Framework of Reference (CEFR). The English Preparatory School has been accredited by Pearson Assured since January 2015.

Research Questions

This study aims to provide an answer to the question "What are the perspectives of English teachers at Cyprus International University's English preparatory school regarding the use of technology in the classroom?" In order to answer the research's main question, the following questions were developed:

- To what extent do CIU English preparatory school teachers embrace using technology tools in classroom?

-What challenges do the teachers at CIU English preparatory school face when using technology tools in the teaching process?

- What are the opinions of CIU English preparatory school teachers regarding the potential role of robots and artificial intelligence (AI) in the teaching process?

Methodology

This research uses qualitative analysis methodology to examine the perspectives of CIU English preparatory School teachers regarding the use of technology in the classroom, the challenges they face, and their views regarding the use of AI tools and robots in education. The study involved in-depth interviews with six teachers at CIU English preparatory school. The sample includes male and female teachers. The teachers' qualifications range from bachelors, masters, and PhDs. The study focused on the available technology resources that teachers use in the classroom.

Data Collection

The data were collected by answering the research questions. The interviews were semi- structured, and the participants were able to openly discuss their opinions and experiences. The interviews with CIU English preparatory school teachers were conducted at CIU English preparatory school during the working hours. Each teacher was interviewed individually, and the interviews lasted approximately 40 minutes. The researcher asked the teachers specific questions and wrote their down responds immediately.

Data Analysis

Qualitative data analysis was used in this study. According to Kaiser and Presmeg (2019), the qualitative data analysis can include written records, Twitter (X) tweets, YouTube comments, videos of teacher-student interactions in the classroom, transcripts of focus groups, or face-to-face interviews. In this study, the data were specifically derived from face-to-face interviews, and were then analyzed using the thematic analysis technique. Braun and Clarke (2006) point out that thematic analysis is a method of qualitative study for analyzing data that involves looking across a data collection to analyze, identify and report frequent patterns. The thematic analysis identified recurring themes and subthemes pertaining to the views of teachers on the use of technology. Each teacher was given a distinctive identifier to use in presenting the participant perspectives; the names were kept hidden to maintain their anonymity.

Validity and Reliability

For the internal validity of the questions used in this paper, the opinions of two academicians at Cyprus International University (CIU) were sought. The academicians examined the data of the study at each phase to

ensure the reliability and validity of the study. To increase the quality of the research and the trustworthiness of the research findings, the given answers were not only reviewed by the researcher but also discussed with the two experts.

Findings

Based on the study questions listed in the introduction of the research, research findings were given. The opinions of the teachers of the English preparatory school at Cyprus International University were individually presented. Based on the data collected from the interview questions, three themes emerged from the participants' views. These themes are discussed in this section.

Theme One: A positive perspective for the use of technology and many advantages

The views of all the teachers show a general positive perspective on the use of technology. All the teachers agree on the important role of technology in teaching in their classrooms at CIU. Moreover, the views emphasize that technology tools are something that cannot be irreplaceable. Two subthemes were emerged from this theme: “a general positive view for the use of technology” and “many outcomes of using technology.”. Two teachers said,

I am so used to it that I cannot imagine going into a class without the use of a smart board or a projector. (T-1)

I do not know how we used to teach without the use of technology tools. I used to carry hard books and write hundreds of words on the regular boards, and wait for the students to write. But now, thanks to smart boards, I do not have to worry about all of this (T-6).

Under the second sub-theme, 'many positive outcomes of using technology', teachers highlighted various benefits of incorporating technology into the teaching process. Here are some of their views:

I do not carry books or materials around when I go to my classes. Some of the tasks that took me hours to complete can now be done in less than 10 minutes. I also feel more relaxed because using technology can help me go back to my previous courses and use the activities that I used in my previous classes for other students in other schools, too! (T-1).

The students pay more attention when there is a smart board because they clearly see what I am talking about. For example, when we have matching or T/F activities everyone participates and wants to give the answer. With the smart board, my students feel like they are working as a class (T-3).

Technology tools are so great in the teaching process. I use the smart board in my class, and when the students do not understand something, it is easy for me to use the internet to help them or show them some pictures. For example, when I used the word "bear,” some students did not know the meaning of it, so with one click, I showed them the picture of a “bear” on Google (T-4).

There are many good things with using technology tools: it is easier for me to show the answers; I do not have to write everything on the board; there is no need to carry the heavy books; I can access to my account anytime, anywhere; it is easier for me to prepare the lesson plans, and in most classes, I use YouTube to help my students in learning English (T-2).

Theme Two: Some challenges and things to be improved

Based on the findings, it can be observed that all the teachers faced some challenges with the smart board's performance. The teachers agree that the smart boards are a little slow, especially when they turn them on. Two teachers mentioned,

In the morning, when I start the smart board, we have to wait for ages. It takes at least 15 minutes to boot up. One class we had a listening activity, but the board was dead! It is really frustrating (T-2).

The smart board gets slow sometimes, and its sound is not balanced and comfortable for all the students (T-4).

In discussing internet speed, the teachers observed that the internet speed is slow. Two teachers mentioned,

In my opinion, there is a need to improve the speed of the internet; everything else is good. (T-3).

The speed of the internet must be improved, and I wish our institute could limit the access to Wi-Fi just to the educational platforms we use in the classroom because students want to use their phones to browse social media platforms (T-2).

Regarding the system being outdated, one teacher mentioned,

At CIU, it is usually the wear and tear since most of the equipment is either old, outdated, or in need of repairs (T-1).

The system used in all the smart boards is Windows7! We are in 2024, and we still use this old operating system! The operating system has to be updated urgently (T-6).

One teacher mentioned other challenges. The teacher said,

Using technology can be challenging at times. Some of the main inconveniences that usually happen include the inability to access the internet in the classroom, the smart board freezing, lights going out, and the challenge of assigning homework using technology, which can be confusing and less engaging for students unfamiliar with the platform we use (T-5).

Theme Three: The Future of Artificial Intelligence (AI) and Robotics in Education

Based on the findings, two sub-themes emerged: the role of artificial intelligence (AI) platforms in the teaching process and the question of whether robots will replace teachers. Regarding the first sub-theme, all teachers agree that artificial intelligence (AI) platforms play an important role in teaching and learning and that there is a need to integrate AI tools into their classes. Teachers said,

These AI tools are helpful and we cannot avoid these advances in teaching. I think we can integrate AI tools into our classes by using specific methods that help students solve tasks but do not give them direct answers (T-4).

The alarm has probably already gone off, so I guess instead of take-home or assignment-based learning, we should shift to more cognitively demanding group activities where students must complete more oral or speaking-related tasks. (T-1).

With AI tools, students will be their own teachers. AI will take over the course books and other platforms we use nowadays, since it brings everything together in one place. AI will also be beneficial to students with specific needs. They will feel more included, and teachers will be able to meet their needs as well (T-5).

I see students these days depend on AI tools for their projects and assignments, and we cannot do anything about it. I think in the next five years, it will be the same but with more advanced improvements (T-2).

When discussing the role of robots in the teaching process and whether the robots will replace the teachers in the future or not, the majority of the teachers said that robots will not replace the teachers in the future. Teachers said,

Not at all, because robots cannot be teachers; they don't have feelings. It is easy for me to know when my students do not understand something; I can see this on their faces. Robots never understand this (T-3).

No, I will not be replaced by robots. Robots are too limited to teach languages or to provide a perfect teaching experience. Face-to-face teaching is more efficient. Besides, robots do not have feelings or emotions (T-4).

I do not think that robots will ever be able to replace teachers or any other human being. Robots are the result of human creation and can never be more powerful than their creator. Teachers are not only language or knowledge providers but they are also problem solvers, creators, therapists, organizers, mediators, and sometimes even parents. A robot could never be all these things at the same time (T-5).

Two teachers, who answered this question, said that the robots will replace the teachers. Teachers said,

Yes, but robots still need people to function and those who do not update themselves on these tools are most likely become redundant! (T-1)

Of course, I think so, since everything is working with technology. In the future, we will not have any teachers, or there will be a need to hire teachers. They have robots, so they do not have to pay for people. With robots, we do not have to pay salaries and insurance (T-2).

Discussion

Based on the responses of six participants currently teaching English at CIU in Northern Cyprus, three themes have been identified to offer effective perspectives on integrating technology tools into the teaching process. This study has revealed that the overall perspectives of CIU teachers on using technology at CIU are positive. The reason for this conclusion could be due to the many benefits and opportunities that technology tools provide in the teaching process. Taking everything into account, the research presents strong evidence that using technology in the classroom can be beneficial. Similarly, to the findings of Mong and Ruggiero (2015), technology can save teachers time, engage students, and differentiate education to meet the needs of all learners when used correctly. Teachers value the use of technology in their classrooms and how technology tools enhance education and make it more authentic for students. As it has been emphasized in a study by Costley (2014), technology enhances learning outcomes, student engagement, and motivation. Also, teachers who integrate technology into their classrooms are generally more positive towards using it.

Moreover, Andoh (2012) found that when teachers have a positive perspective regarding the use of educational technology, they are more likely to embrace it and employ it in the teaching and learning process. Looking at the benefits that technology tools provide in the teaching process, it is evident that these tools facilitate the teaching process and make it easier for teachers at CIU to do their jobs effectively. This is consistent with the findings of Rahmati et al. (2021), which propose that using technology for English language teaching is more effective than using conventional teaching methods without technology.

These findings are supported by research by Nurmala et al. (2023), which highlights the integration of modern technology, which has been shown to improve learners' language skills and provide new opportunities for language learning. Moreover, technology tools and mobile learning are valuable resources that facilitate English language learning and provide easy learning environments.

While discussing the challenges of using technology and some of the improvements that should be made, the teachers mentioned many challenges and obstacles with technology tools. In this study, all the participants talked about the slowness of the smart boards they use in their classrooms and the slowness of the speed of the internet inside the Preparatory School. Other teachers talked about the technical issues they face while teaching. Recent

studies have mentioned some similar challenges and obstacles relating to technology integration in the teaching process. For instance, Akram et al. (2022) as well as Alswilem (2019) and Singh (2019) found that limited resources and inadequate infrastructure are reported to be challenges that hinder teachers from effective technology integration in the teaching process. Similarly, in a study about teachers' perceptions of barriers to technology integration in education, Emre (2019) mentioned four external and internal barriers to integrating technology in education: lack of equipment, lack of funding, lack of ability, and time. This can be explained because there are indeed problems with smart boards at the English Preparatory School at CIU, as many of these devices are old and slow. In addition to the fact that the internet speed is slow and does not cover all the classrooms in the building. Thus, upgrading smart boards, enhancing internet infrastructure, and addressing technical issues are necessary steps to create a more supportive learning environment for both teachers and students.

Lastly, this study discussed the future of artificial intelligence (AI) and robotics in education. The researcher queried teachers on two key aspects: the role of artificial intelligence (AI) platforms in the teaching process and whether robots will replace teachers. Regarding the first point, the majority of CIU teachers believe that AI tools play a crucial role in education, and there is a need to integrate AI tools into their classes. This aligns with the views of Baidoo-Anu & Ansah (2023), who said that there is no doubt that AI tools have pushed the boundaries of learning and created a significant paradigm shift in the way we learn today.

According to the teachers, it is possible to integrate AI tools into the teaching and learning process by using specific methods that do not provide direct answers. Also, some teachers emphasized the necessity of giving students more oral or speaking tasks because of the influence of AI tools. This is in line with Zhai (2022), who states that artificial intelligence is unable to substitute the need for new tests and forms of assessment that encourage critical thinking and creativity. Furthermore, teachers mentioned that AI tools help students learn on their own, and they put all learning materials together, which helps teachers support students with different needs. This is consistent with Clare's (2023) view that students, after graduating, will probably find themselves in a world that is increasingly reliant on AI tools. The reason for this could be that the vast services provided by AI tools are easy to use, and most importantly, they are free. It is 2024, so we cannot deny the important role of AI tools in the teaching and learning process.

However, despite the fantastic benefits that AI tools provide, there is a need to control them. At the end of the day, students must learn by themselves, and we cannot let these tools do everything for them. As Qadir (2022) mentioned, it is important for learners to understand the effects of AI technology to ensure that the future generation of learners takes use of the benefits afforded by AI tools and minimizing any undesirable outcomes.

Also, the researcher discussed whether robots will replace teachers. The results showed that the majority of the teachers at CIU English Preparatory School believe that robots will not replace them. They emphasized that robots do not have feelings or emotions and are incapable of doing things that humans do. The findings of this study overlap with those of Orhani (2023), who suggests that robots can be useful teaching tools in the classroom, and there are certain types of assistance that are best served by robots, yet it is doubtful that they will ever fully replace teachers. This can be attributed to the fundamental difference between robots and humans: robots will not understand how students feel or the difficulties they face, simply because robots lack feelings and emotions. As one of the teachers said, "I can see the problems on the faces of my students; a robot cannot see this.". Standing in front of a robot to teach you is not the same as with a human teacher; of course, with humans, the teaching process is more comfortable. However, maybe in the future, things will change. As Orhani (2023) also mentioned, human teachers are still essential for improving student development. No app or robot can replace the teacher's understanding and emotional connection with students. Even with advanced technology, robots cannot reason, learn, and teach like humans. In this context, Edwards and Cheok (2018) mentioned some limitations and challenges of using robots as teachers, including the difficulty of designing robotic personalities that are flexible and empathetic, as well as the difficulty of robots understanding the individual needs of students and addressing their social and emotional needs. On the other hand, some teachers say that robots will replace them. They argue that robots will be more available in the future, and with robots we will not have to pay salaries and insurance. This notion does make sense, as robots do not require payments or medical insurance. However, there is still a need to utilize, check, and maintain these robots from time to time, which, of course, will cost money. Thus, to fully realize the potential of automation, collaboration between people and technology is necessary. This is particularly relevant, according to the McKinsey Global Institute (2017), about 50% of the jobs in the United Kingdom and the United States might be automated in the near future.

Conclusion

This qualitative study explored the perspectives of teachers on technology use at the English Preparatory School at CIU. The findings revealed that the teachers at the English Preparatory School show a generally positive perspective towards integrating technology tools in their classrooms. Nevertheless, the teachers mentioned some challenges and technical issues they face, such as the slowness of some tech devices and problems with the speed of the internet. They also mentioned things that could be improved. Regarding AI tools, the teachers said that it is

probable to integrate AI tools into the teaching and learning process, with some limitations that do not give direct answers to the students. Additionally, this study discussed the role of robots in education, and the findings showed that the majority of the English Preparatory School teachers believe that robots will not take over their jobs in the future. Ultimately, these findings present a foundation for future discussions on improving technology integration into the teaching and learning process. It is important to address the mentioned challenges and take advantage of opportunities in order to enhance the educational environment at the English Preparatory School at CIU.

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