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TEACHERS' PRACTICES AND PERSPECTIVES ON THE USE OF ARTIFICIAL INTELLIGENCE IN ELEMENTARY SCHOOL PEDAGOGY

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Abstract: *Artificial Intelligence (AI) has arrived as an educational game changer that is completely changing the traditional teaching and learning model. AI has opened up never seen avenues for not only students' participation but also their learning outcomes. The implementation of AI technology and tools for teaching is becoming more prevalent in the whole education system as teachers want to prepare their students to be competent in the Digital Era. The project, "Teachers' Practices and Perspectives on the Use of Artificial Intelligence in Elementary School Pedagogy," is dedicated to figuring out how educators of grades 1-6 are incorporating AI tools into their teaching. The study reviews teacher perspectives over the importance and significance of AI in teaching, teacher experiences with AI technologies in the teaching-learning process as well as teachers' planning and implementation of AI technologies. The average score (3.10) suggests that teachers are making moderate use of AI technology in the classroom; meanwhile, the average score (2.70) for teachers practice, implementing methods of AI technology shows that there is still a possibility of improvement. The mean score (3.06) indicated that the teacher respondents were quite confident and agreed that AI has a significant role in teaching. The research opens up a glimpse to the present-day scenario of elementary school teaching with AI and AI technologies, thus being a useful tool for future studies. The research work indicated that elementary school teachers who incorporate AI in their instruction have to prepare an AI capability training plan.*

Keywords*: Elementary School Pedagogy, Artificial Intelligence Converging Parallel Mixed-Method Approach, Bataan, Philippines.*

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INTRODUCTION

Advancement in technology has sped up positively, and now artificial intelligence (AI) is an important element in our daily lives. One area which is radically altered is the primary education and the teachers are planning the teaching methodologies based on the existing situation. Since education is in a state of flux it is very important to analyze the teachers' opinions and the actions they take regarding the use of AI in primary schools. A new study is concerned with these issues as it will further evidence educators' experiences, barriers, and possibilities of using artificial intelligence in the elementary education classroom. This work is especially relevant with the urgency of changing educational practices for the 21st century. With the use of technology everywhere, educators need to be mindful of and capable of utilizing technology in lesson plans. If educators do not attend to this issue, we risk that children will be unprepared for the world that relies heavily on technology. As a result, the study aims to summarize educators' perspectives to engage in discussion for future pedagogy enacted by educators about the state of artificial intelligence in elementary education.

Across multiple continents, educators are experiencing common concerns and common challenges about the use of AI in classrooms. Research around the world is revealing increased interest in AI to enhance educational achievement for students. For example, educational systems in North America have begun using AI enabled educational experiences and products to improve achievement and personalize student learning. In Europe, researchers are investigating the implications of AI on inclusion and equity in education. Likewise, while educators in South America and Africa face challenges related to social and economic

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inequities and cultural contexts in AI-integrating into their learning activities; Asia has begun testing AI tutoring systems integrated into their traditional learning practices. The specific approaches cited in the research on regional contexts also highlight the need for flexibility. Educators in the Association of Southeast Asian Nations (ASEAN) are integrating AI to tackle localized challenges, for example. Each of the initiatives in countries such as Cambodia and Brunei Darussalam are focused on tailor-made learning and closing educational gaps. Initiatives in Singapore and Thailand are aimed at equity for learners and educational needs while AI is viewed as promoting a more inclusive approach and learning outcomes in Indonesia and Laos. There are a number of important gaps in the literature about the use of AI in primary/elementary schools in the ASEAN region. Some international research offers useful insights but more research is necessary to consider the socio cultural, economic and educational contexts for the region. This study intends to address these gaps in literature by discussing teachers' experiences in their views and practices of implementing AI in primary/elementary education in an ASEAN context.

FRAMEWORK

The study is firmly situated in multiple, interconnected theories and ideas from the constructs of educational psychology, pedagogy, and the use of technology. Bandura's Social Learning Theory, cited in 1977, states that watching others can change teachers' attitudes and action; seeing colleagues or students can also shape a teacher's decision to use AI technologies in teaching. Vygotsky's Zone of Proximal Development, communicated in 1978, suggests that scaffolding and peer social interaction have importance in learning alongside AI, can support learning, and can support modeling learning when using AI in the instructional activity. Piaget's constructivist theory as stated in 1970 conveys that it is valuable for children to be active with a learning-in-physically-exploring concept of learning.

The study attends to several factors necessary for understanding the study context. Shi (2025) provides evidence that AI is capable of assisting in learning as it relates to language skills, social-emotional skills, and self-motivation. Moreover, teachers' dispositions recognize attitudes, beliefs, and perceptions of how AI can support their instruction with students in elementary classrooms. Hamza et al. (2021) stress the need for connections between pedagogical theory and the use of AI technology. They found with pedagogically appropriate uses of AI, there was teacher as well as student engagement and improved instructional practices. The researchers noted that when educators utilize AIs in a pedagogically appropriate manner, it can influence educators' developing instructional practice and changing engaged learning processes of their learners. This supports the argument that educators' use of AI technologies depend on their understandings and experiences of technologies. To finish the discussion, the term "artificial intelligence" is meant to capture a wide range of technologies that can include machine learning algorithms, natural language processing capabilities, intelligent tutoring systems, etc., which may have different capabilities and functionalities when used in educational contexts (Blikstein & Wilensky, 2018). Moreover, the school environment has to be an essential setting for understanding how child growth, the curriculum, and the classroom atmosphere may affect the adoption and outcomes of these AI technologies (Tan et al., 2020). IKranz & Abele (2024) emphasize the need for engaging in good quality training and having the corresponding institutional support for their teaching practice, especially in fields like midwifery. Therefore, the comprehension and acknowledgment of both

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concepts, as well as their interrelationship, is a point that needs to be considered in unraveling the complexity of the AI use in education at the elementary levels, and also the larger global contexts like ASEAN and the Philippines' emerging consciousness.

OBJECTIVES OF THE STUDY

The primary aim of this collection of work is to provide the basis on which it is important to incorporate AI into teaching techniques used in primary schools. This study is aimed at confronting the challenges, opportunities, and implications of AI incorporation. The study aims at constructing data to inform evidence-based educational practices and policies in terms of teaching and learning. This will entail a query of participant experience as well as a scoping review of related literature. This research aims to release a comprehensive inquiry of existing use of AI in elementary classrooms globally. This research will also examine educators' perceived advantages and disadvantages of AI in education alongside the factors influencing their use of AI technology.

METHODOLOGY

Research Design

Research design is in two phases, quantitative and qualitative. For the first phase (the quantitative phase), an intended random sample of elementary school teachers with diverse socio-demographic backgrounds and different teaching experience levels will be approached to participate in this study through a standardized survey questionnaire. The survey instrument will collect information regarding teachers' practices, beliefs, challenges, and attitudes regarding implementation specifically about artificial intelligence in education that is grounded in good practice based on a review of existing literature and research with AI in classrooms and teacher practice. Data will be collected electronically and/or in print format to provide an adequate response rate in a timely manner. Quantitative data will be analyzed through generating descriptive statistics (weighted average means, frequencies, and percentage), through statistical software.

Research Site

The convergent parallel design is a mixed design method that is utilized mainly for studies that provide qualitative interpretations of quantitative results (Creswell & Plano Clark, 2018) and seeks to provide a richer understanding of the more profound mechanisms and contextual factors at play with respect to the phenomenon under examination. This study will develop the knowledge base for integrating AI into education by providing differences in perspectives of elementary school teachers which will inform future practice and policy developments.

Participants

The sample population consists of 100 grade school teachers from various schools in the Orani District to include as study participants. In selecting students, simple random sampling will occur to ensure each teacher in the population has an equal chance to be included into the study. The selected sample will allow for a variety of teachers according to years of experience, subjects taught, and pre-existing comfort with previously utilized technology.

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Instrumentation

The content of the survey questionnaire was reviewed in a content validity sense by K-12 teachers for clarity, content coverage, and content validity purposes. The content review had the main goal of determining content validity. In addition, we carried out a pilot study with instructors to determine the useability and appropriateness of the survey items. We undertook reliability testing, the internal consistency measure through Cronbach's Alpha, in order to check for consistency in questionnaire items assessing constructs in question. The Cronbach's Alpha was 0.98, indicating high reliability. The qualitative part of the study was a guided interview in an effort to enhance the richness of teachers' perspectives. The guide seeks to capture the full gamut of teachers' experiences, concerns, and hopes for what they would wish to take away from employing AI in a school setting. The identical six-step process of expert review and pilot testing used to construct the interview guide had an intelligibility and content validity goal cutoff of 6% total upward uniqueness. The research instruments prepared for the interview guide and survey questionnaire all underwent similar processes of development, validation, and reliability testing, and were all useful research instruments in the sense of capturing teachers' practice and thinking regarding the integration of AI in elementary education.

Data Collection

Quantitative information will be collected using a well-planned survey questionnaire specifically developed to assess teachers' AI experiences, practices, and perceptions. Each survey will be tailored to the context of each individual provided school to consider possible differences in technology available and approaches to teaching within each school. Qualitative data will be gathered using an interview guide with the purpose of exploring teachers' practice, experience, and attitude towards AI implementation. The use of a convergent parallel mixed-methods design combines qualitative and quantitative approaches to provide in-depth understanding of compound AI implementation in primary schooling.

RESULTS AND DISCUSSION

The demographic characteristics of the respondents relate to Age. The investigation of ages indicates that age demographics will provide insight on comfort level of AI. Among the respondents, 26% were age 28-35. Age demographics of 36-45 and 23-27 comprised 26% and 16%, respectively. Finally, the group of respondents age 54-65 was 11%.

Table 1
Distribution of Respondents in terms of Age

Age	Frequency	Percentage
23 – 27	16	16%
28 – 35	31	31%
36 – 45	26	26%
46 – 54	16	16%
55 and 65	11	11%
Total	**100**	**100%**

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Age is a highly significant marker of attitudes about disrupting attitudes toward and proficiency with AI technology. Younger cohorts (millennials and Gen Z) that came of age amid the digital revolution exhibit a demonstrated comfort with devices and software using AI. As digital natives, these cohorts find themselves easily navigating a technology-laden environment by utilizing AI technology as part of their everyday living ranging from communication, entertainment, to even productivity.

Demographic Profile of the Respondents in terms of Years in Service. Reviewing the demographic information of the respondents regarding years of service, Table 3 shows their level of experience that could relate to any impact of real experience on the decision to implement AI in the classroom. Most respondents selected "Six years to 15 years," which was 31 percent of the population. Following this, the largest category was "One year to 5 years," and respondents gave this option a 27 percent sample size. Respondents who indicated "Twenty-six years and more" were represented at 16 percent in the sample. "Sixteen years to 25 years" accounts for 15 percent of the sample, and "Less than one year" accounts for 11 percent of the total respondents.

Table 3
Distribution of Respondents in terms of Years in Service

Years in Service	Frequency	Percentage
Less than one year	11	11%
One year to 5 years	27	27%
Six years to 15 years	31	31%
Sixteen years to 25 years	15	15%
Twenty-six years and more	16	16%
Total	**100**	**100%**

Years of service as an educator may also have varying implications for the acceptance of AI integration in the classroom of students. In the main, veteran teachers may have a better understanding of pedagogical and instructional principles, which helps shape the successful implementation practices of AI technology in teaching practices. Their experience can provide a better understanding of the potential value of AI to supplement traditional instructional practices and the students' learning opportunities.

Demographic Profile of the Respondents by Grade Level Handled. The results indicate the frequency distribution of the survey respondents by grade level and provide some important demographic characteristics of the respondents' educational background. Twenty-two percent of the respondents were in Grade 1, which was 43% of the sample size, followed by Grade 2 at 19%, Grade 3 at 17%, and both Grade 2 and Grade 3 were among the top three grade levels with the most respondents. Grades 6 and 4 make up 16% and 15% respectively, while Grade 5 accounts for 11%.

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Table 4
Distribution of Respondents in terms of Grade Level Handled

Grade Level Handled	Frequency	Percentage
1	22	22%
2	19	19%
3	17	17%
4	15	15%
5	11	11%
6	16	16%
Total	**100**	**100%**

When integrating artificial intelligence (AI) into teaching in primary schools, the two main targets are improving individualized learning, interactive learning, and educational games. AI-powered solutions can rapidly adapt content to the interests and preferences of specific students at different learning levels, in ways that allow educators to meet the differing needs of beginning learners. For instance, once students demonstrate proficiency in reading or other subjects like math and science, AI-powered learning and tutoring systems can adjust content to provide instant individualized feedback to support learning.

Artificial Intelligence Tools. The results show the AI tools that primary school teacher participants have implemented in their teaching so that to enhance students' learning and engagement. Canva was the most utilized tool, with a weighted mean of 3.59, indicating widespread use of the AI to create visually appealing instructional materials. After Canva, educators also put Quillbot (2.54), Quazilize (2.64), ChatGPT (2.58), Grammarly (weighted mean: 3.07), and Quazilize (2.54), to some extent. In contrast, fewer reported using Brainly (2.45), Kahoot (2.25), and Lesson Lab (1.82). Duolingo and Deep AI had the lowest weighted mean at 1.77.

Table 5
Teachers on Using Artificial Intelligence (AI) in Elementary School Pedagogy in terms of AI Tools

AI Tools	Weighted Mean	Description
Chatgpt	2.58	Sometimes (SM)
Canva	3.59	Often (O)
Quillbot	2.54	Sometimes (SM)
Grammarly	3.07	Sometimes (SM)
Brainly	2.45	Seldom (SD)
Kahoot	2.25	Seldom (SD)
Quizalize	2.64	Sometimes (SM)
Duolingo	1.77	Seldom (SD)
Lesson Lab	1.82	Seldom (SD)

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Deep AI	1.77	Seldom (SD)
Total	**2.45**	**Seldom (SD)**

The Sustainable Development Goals (SDGs) by the United Nations (UN) related to using technologies in education, and especially, SDG 4: Quality Education, are especially relevant. Recent projects emphasize the potential of a range of artificial intelligence (AI) tools such as Canva, Grammarly, and Quazilize to improve the quality of education and provide opportunities in enabling equitable learning spaces. Countries around the world, including the Philippines, are examining the extent adopt different innovative teaching approaches. The Department of Education (DepEd) may begin to incorporate artificial intelligence (AI) technologies into the curriculum to achieve better learning outcomes and transform classroom practices. That teachers are finding Canva to be of value, is indicative of their acceptance of pedagogy supported with technology.

Experiences of Teachers. The findings demonstrate the experiences of primary school teachers implementing AI technologies into their teaching practice, and across every category, the views of each participant were aligned. With an average of 3.15, one of the more surprising findings was that the primary challenge identified by teachers was difficulty in implementing AI technology due to insufficient technology or support, primarily training. Each of the teacher's utilization of AI technology was also evident in teachers ranking second (M = 3.12) in using AI to provide personalized learning for students. Teacher optimism with respect to longer-term, positive effects of AI on students' learning was also instructive (M = 3.12). The fourth ranked participant average of 3.07 was the perceived use of AI technology is related to improving a student's level of engagement in the classroom. Finally, the function of AI technology assisting teachers assess student growth and understanding ranked fifth, with an average of 3.03.

Table 6
Teachers on Using Artificial Intelligence (AI) in Elementary School Pedagogy in Terms of Teachers' Experiences

Teachers' Experiences	Weighted Mean	Description
1. I found AI technologies to be practical tools for enhancing student engagement in the classroom.	3.07	Agree
2. I utilize AI technologies to personalize learning experiences for individual students.	3.12	Agree
3. AI technologies have helped me better assess my student progress and understanding.	3.03	Agree
4. I encountered challenges integrating AI Technologies into their pedagogy due to technical limitations or lack of training.	3.15	Agree

5. I am optimistic about AI technologies' potential to impact student learning outcomes in the long term positively.	3.12	Agree
Total	**3.10**	**Agree**

The findings align with other conversations surrounding the use of technology in educational settings and projects related to the UN Sustainable Development Goals (SDG 4) in that meaningful training is necessary to support the productive integration of AI technologies in teaching. Participants applied the training comments to the need to improve their abilities to integrate AI technology and indicated technical skill concerns, cost implications of AI technology, and lack of knowledge of integrating AI technology into pedagogy as training gaps.

Teachers' Practices. The results provide insight into how elementary educators utilize AI technology in their instructional plans and that there was consensus among respondents. The most commonplace practice, which ranked first, is the widespread use of AI technology to enhance individualized learning experiences for students as indicated by a weighted mean of 2.88. Coming in second place was the regular use of AI-enhanced learning materials and resources in their lesson plans at a weighted mean of 2.81. Additionally, third and fourth place for teachers in ranking utilization shows they collaborate with technical staff to employ AI tools in instructional strategies and secondly reported regularly using AI technology to streamline administrative tasks and grading. Noteworthy was that the teachers identified a need for more training initiatives, placing receiving training and support to successfully use AI technologies in the lowest rank.

Table 7

Teachers on Using Artificial Intelligence (AI) in Elementary School Pedagogy in Terms of Teachers' Practices

Teachers' Practices	Weighted Mean	Description
1. I commonly use AI technologies to facilitate personalized student learning experiences.	2.88	Agree
2. I frequently integrate AI-driven educational tools and resources into their lesson plans.	2.81	Agree
3. I regularly attend training and seminars to utilize AI technologies effectively.	2.54	Agree
4. I employed AI technologies regularly to streamline administrative tasks and grading.	2.64	Agree
5. I collaborate with technology specialists to integrate AI tools effectively into their teaching methods.	2.65	Agree
Total	**2.70**	**Agree**

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As modern research suggests a focus on personalized learning and flexibility within training, instructors have more frequently implemented the use of AI technologies to personalize student learning experiences. These opportunities cater to the needs of each learner, elicit engagement, and serve as a basis for success in school. In addition to catering to individual learning needs with AI, Participant 2 said that AI was useful for teachers in course design and planning classroom routines efficiently (Bulger et al., 2016). Even Participant 3 alluded to the benefits of AI within her teaching practice, she also raised concerns around AI in unsourced upland spaces and reflected on the struggles that Educators might face in particular situations (Blikstein, 2018).

The Findings of Teachers' Attitudes. The outcomes looked at elementary school research participants' opinions about using AI in their teaching, with all participants reflecting the same viewpoint. Popenici & Kerr from 2017 examined what AI means for the context of higher education and that AI tools are understood best as enhancing the process of teaching and learning, but are not direct substitutes for teaching. They argue that an intelligent use of AI does not simply change practice, but creates new functions for teaching while reshaping the role of the teacher. They highlight there numerous opportunities to augment rather than entirely replace human agency and the practice of teaching. This finding also fits within the greater discussion about the use of technology in education, focusing on augmentation and not replacements of human knowledge. Part of achieving the goals set by SDG 4's challenge is to achieve inclusive and equitable education (Wang et al., 2019).

Table 8

Teachers on Using Artificial Intelligence (AI) in Elementary School Pedagogy in Terms of Teachers' Perspectives

Teachers' Perspectives	Weighted Mean	Description
1. AI can enhance student engagement and participation in the classroom.	3.09	Agree
2. I am concerned about the potential of AI to replace human interaction and personalization instruction.	3.04	Agree
3.AI is a valuable tool for providing personalized learning experiences to students.	3.02	Agree
4. I am optimistic about the potential of AI to support diverse learning needs in their classrooms.	3.05	Agree

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5. AI is a means to supplement their teaching practices rather than replacing them entirely.	2.65	Agree
Total	**3.06**	**Agree**

Their studies echo that AI can provide significant and fun lessons taking into account the needs and aptitude of every learner (Blikstein & Wilensky, 2018). Through the potential of AI platforms, instructors can develop lesson plans, activities, and evaluations that are stimulating and interesting to every learner. AI is also capable of offering personalized interventions and adaptive learning that accommodate diverse learning needs in the classroom (Tan et al., 2020). There is excitement about what AI can do, and yet the worry remains that AI may be capable of replacing personalized instruction and human connection. Murphy et al. (2020) performed a study aimed at emphasizing the importance of creating an educational model that is ready for AI as well as preserving humane values in education through the complementarity of situations of technology.

Proposed Capability Training Plan. These results give us an insight into the attitudes, of primary school teachers, towards how they view AI within their classes, and their sense of the advantage, disadvantage, and complexity of implementation. Full comprehension of the potential of AI, boundaries, and effect on teaching and learning will be achieved when the attitudes are dealt with by AI capability training.

Table 9

Summary of the Experiences, Practices, and Perspectives of Respondents on Using Artificial Intelligence in Elementary School Pedagogy

Teachers' Perspectives	Weighted Mean	Description
Experience in the Utilization of AI Technologies.	3.10	Agree
Practices Employed by Teachers in AI Technology Integration	2.70	Agree
Teachers' Perspectives on the Role of AI in Pedagogy.	3.06	Agree
Total	**2.95**	**Agree**

The research has concluded that teachers might need extra training and assistance in some essential areas so that they can implement AI more effectively in their own classroom practice. These are to assist students from technological problems caused by AI tools, successfully incorporating AI technologies into teaching strategies, cooperating effectively with technology specialists, and enhancing personalized learning options for students. Addressing these areas will help to empower educators to work with and make more effective use of AI in the classroom, resulting in improvements both in the quality of education, and in student learning.

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CONCLUSION

The research was of worth since it elaborated on elementary school teachers' perceptions about adopting an artificial intelligence (AI) hive experience and whether they would use AI in classrooms. Apart from suggesting a systematic approach of integrating AI into pedagogy that respects teachers as individuals with their expertise in consideration of their pupils, the study, as an enterprise, also speaks of respecting and recognizing teachers' experiences and backgrounds while developing effective AI considerations. Seeing also the limitations of this regional initiative and self-reported data, the research invites us to consider the adoption of AI in schools, being in line with the objective of this study. In-depth in the study were also formative recommendations for future research that included longitudinal studies rigorous enough to establish meaningful incorporation of AI into pedagogical practices, and positive change resulting in student learning over time; these referred to any]) and putting future research on the path with another inspiration regarding dealing with knowledge barriers and the morals of using and developing technology AI through the lens of bias and discrimination. Suggestion of a research design for comparison of learning practices between a number of regions will make the discussion and findings useful to support understanding including adoption of AI as an influence rather than in classrooms but education. The overall counsel of such thoughts, as previously stated, can help in planting the seeds of a true realization of the threshold to negotiate for a multifaceted, simple, and legitimate mode of integrating educational technology AI into the classroom scenario.

TRANSLATIONAL RESEARCH

Educational administrators can make informed decisions through having multifaceted findings summarized into policy briefs with recommendations and implications. We can channel children's interest and enthusiasm regarding the role technology has in their education, through the introduction of picture books and text regarding the possible advantages of computers and technology. Dramatizations and video vignettes will give the audience an idea of what AI might be like in the classroom, and how AI might improve curricular design. Teachers, on the other hand, will be drawn by the prospect of experimenting with new ways of teaching. Research implications will also be disseminated as brief summaries in brochure and poster form. The brief abstracts can be helpful for busy educators who are continuously looking for evidence-based practices that will allow them to integrate AI into middle school instruction. This translational research study employs media of different types to make knowledge of scholarly research explicit and actionable to others. This way, it involves stakeholders with the fast-evolving pedagogical environment induced by AI.

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