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AI-Assisted Instruction: Teachers' Practices and Parents' Perspectives

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Abstract: This study investigated Filipino elementary school teachers in Maryland who implemented AI-assisted instructional practices and examined parental perceptions of this technological approach in education. The research used a multi-case qualitative research design to study three Filipino teachers and three parents who explained how AI tools deliver personalized learning, improve student engagement, and streamline teacher workload. Teachers reported benefits such as individualized instruction, gamified learning features, and adaptive assessments offered by platforms like DreamBox and Lexia Core5. However, challenges such as insufficient professional training, ethical concerns regarding data privacy, and maintaining a balance between AI and traditional teaching methods were identified. Parents presented a variety of opinions: some praised AI's ability to customize learning and increase motivation, while others were concerned about over-reliance on technology, its suitability for special education, and its impact on foundational skill development. The research results confirmed that professional development for educators and parent-teacher collaboration are essential to fully utilize AI in education. Bronfenbrenner's Ecological Systems Theory (EST) and the Technology Acceptance Model (TAM) were employed to frame the research, emphasizing the interconnected roles of stakeholders in integrating AI. The study revealed that AI brings potential benefits yet demands careful deployment alongside moral protections for human-focused education. The study delivered practical suggestions, which included teacher and parent training sessions, transparent information sharing, and the creation of AI tools that accommodate different learning needs. These insights guide future practices, policies, and tools for culturally sensitive AI adoption in education.

Keywords: *Artificial Intelligence (AI); AI-assisted Instruction; Personalized Learning; Parental Perspectives; Student Engagement.*

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I. INTRODUCTION

Artificial intelligence (AI) has recently become an essential factor in transforming education and revolutionizing traditional teaching methodologies and approaches to learning. Growing numbers of adaptive learning tools, intelligent tutoring systems, and data analytics are now being applied to improve student engagement, enhance the effectiveness of teaching and learning, and relieve pressure on teachers [1][2]. The personalized learning pathways that AI offers have been identified as one of the most valuable applications of AI in education [3]. This benefit is significant in the current classrooms where students with special needs or different abilities require special education strategies to address their needs [4].

Using AI in education is critical in enhancing teacher work quality, testing equity, and providing instant feedback to students and teachers [5]. Implementing AI tools has enhanced personalized learning by providing students with individualized learning paths, additional practice, or challenging tasks based on their performance [6]. These tools also increase teaching efficiency by performing time-consuming operations such as grading and progress reporting [7]. Moreover, incorporating AI into classroom instruction offers opportunities to help the teacher differentiate the content, which means the students can demonstrate their knowledge according to their learning preferences [8].

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Nevertheless, integrating AI in education is not without critical issues, such as equity in access to technology, data security risks, and professional training to effectively incorporate AI in teaching and learning [9]. These challenges reminded everyone that there is a need to know how AI is applied in different educational institutions and to address the concerns of the various stakeholders in the educational system, such as teachers and parents.

Much research has been done on the general use of AI in education, like how it affects learning, teaching, and personalized learning [1]. However, little is known about how teachers from specific cultural and demographic groups, like Filipino teachers in K–5 education, use AI in their lessons. Cultural factors have been seen to play an essential role in influencing the adoption and use of AI tools among educators. However, studies on the experiences of Filipino teachers in the US education system are scarce [6].

In addition to the limited studies on educators, research on parental perceptions of AI in education is also lacking. Parents are an essential component of the educational process, and their understanding, questions, and hopes regarding AI can significantly affect the use and adoption of AI in schools [1]. Recent studies indicate that parents are generally optimistic about using AI in education and think it can improve student performance and offer them valuable learning assistance [10][11]. For instance, Feser (2024) established that parents approved the integration of AI chatbots like ChatGPT in high school STEM education because they deemed it a valuable tool for improving learning. However, along with the optimism, parents also raised concerns regarding the possible spread of false information, overreliance on technology, and the possibility of reducing the role of personal communication in the learning process [12][13].

Most parents are unaware of school policies pertaining to AI tools, which makes it difficult for them to evaluate how their children's education is being affected [12]. The study's conclusions showed how important it is to comprehend parents' opinions regarding AI in education while developing measures to alleviate their worries about the appropriate use of AI technology. The absence of studies on Filipino educators' and parents' perceptions of AI leaves a big gap that must be addressed to foster the development of culturally sensitive and inclusive AI tools.

This study addressed these gaps by documenting the AI-assisted instructional practices of selected Filipino teachers in Maryland and exploring parents' perceptions regarding these practices. The study examined how Filipino teachers incorporate artificial intelligence (AI) tools into their classrooms and the risks and rewards of integrating these technologies. It also explored parents' awareness, concerns, and expectations toward AI-assisted instructional practices. To this end, the study sought to expand knowledge of the practical uses and implications of AI in elementary education from educators' and parents' points of view. Through these perspectives, the study sought to explore the role of AI in education and how it can continue to evolve to support learning, engagement, and collaboration between home and school environments.

Therefore, this study has practical implications for integrating AI in various educational settings through the accounts of Filipino teachers and parents. The results of the study may be used to improve professional training programs, policy-making, and the creation of new AI-focused tools that are more inclusive and culturally sensitive.

II. CONCEPTUAL FRAMEWORK

The conceptual framework for this study integrates the Technology Acceptance Model (TAM) with Bronfenbrenner's ecological systems theory to investigate the multifaceted influences on the implementation of AI-assisted instructional practices in elementary education. This approach highlights how individual cognitive factors, such as Behavioral Intention to Use AI (BI), Perceived Ease of Use (PEOU), and Perceived Usefulness (PU), interact with ecological environmental influences at the microsystem, mesosystem, and chronosystem levels. The actual implementation of AI tools depends on these interactions because they highlight the need for immediate interactions and collaboration and temporal changes in technology adoption behaviors [14][15].

Central to this framework are the core variables and their relationships. Independent variables, such as Behavioral Intention to Use AI (BI), Perceived Ease of Use (PEOU), and Perceived Usefulness (PU), drive engagement with AI tools, where BI reflects the willingness of teachers and parents to adopt AI based on perceived benefits and ease of use [16]. PEOU and PU influence BI and directly affect Actual System Use, the dependent variable, capturing the real-world implementation of AI in educational settings [14]. The ecological context further enriches this model; the microsystem involves direct interactions influencing AI perceptions, while the mesosystem includes collaborations like parent-teacher partnerships that strengthen or weaken these perceptions [17].

The framework shows that AI adoption is a dynamic process that is influenced by social, environmental, and temporal factors as captured in the chronosystem [18]. It requires understanding how these multilayered influences, such as immediate interactions, collaborative relationships, and evolving contexts, affect individual attitudes and actual engagement with AI. This comprehensive perspective guides educational stakeholders to foster collaboration, improve perceptions, and support sustained AI integration by considering both psychological factors and broader ecological contexts.

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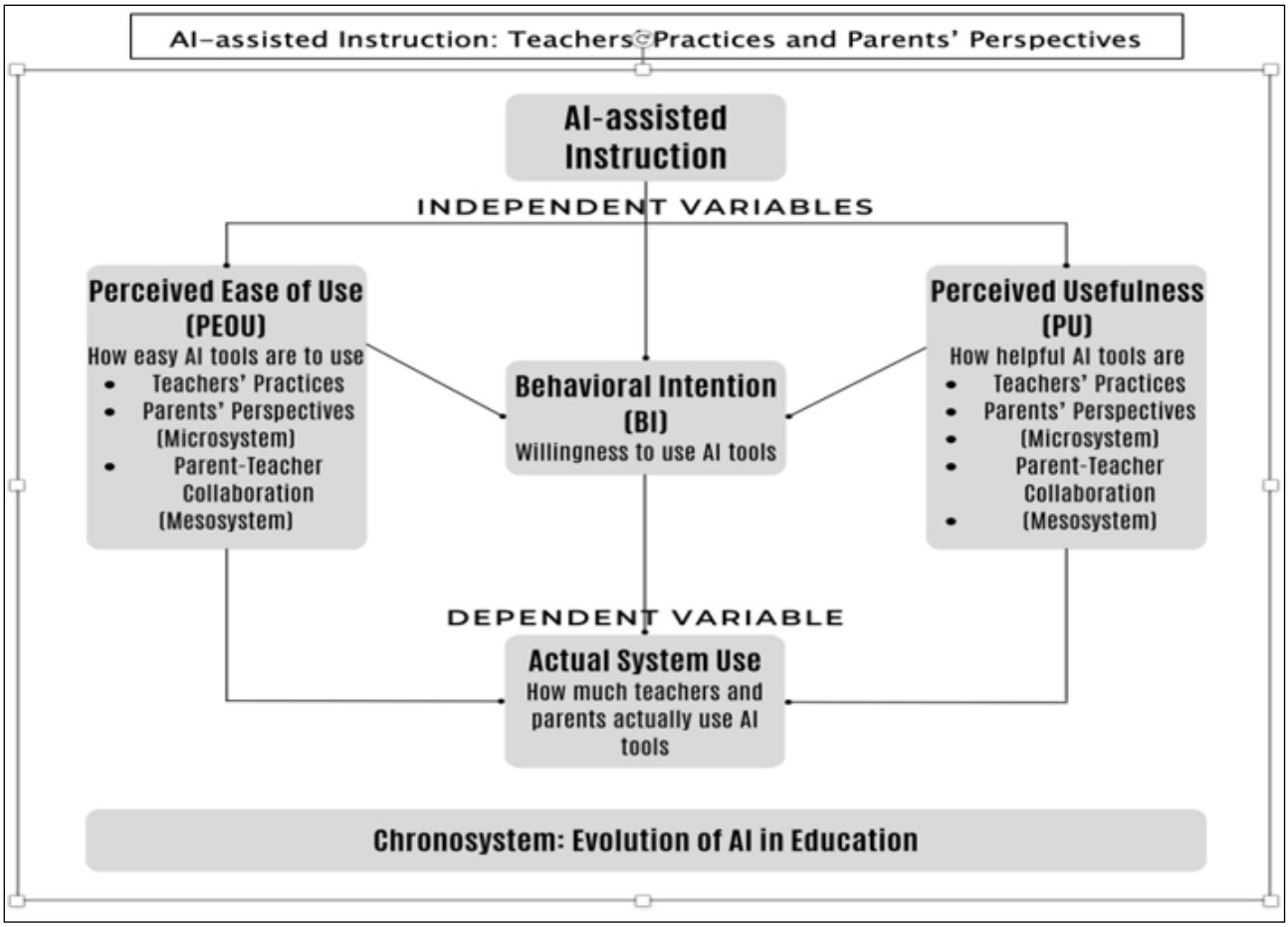

Fig.1 Conceptual Framework
(Canva, 2013)

III. RESEARCH OBJECTIVE

This study aimed to document the AI-assisted instructional practices of selected Filipino teachers and examine the parental perspectives on these practices in Maryland.

IV. METHODOLOGY

The methodology employed a qualitative, multi-case research design to investigate the AI-assisted instructional practices of Filipino elementary teachers in Maryland and the perceptions of their parents [19][20]. The research method enabled the examination of distinct classroom experiences thoroughly using multiple case analysis, revealing significant trends and differences [20]. In alignment with Yin's principles, purposeful case selection was prioritized based on theoretical relevance, focusing on information-rich cases rather than sample representativeness [21][20].

Data collection involved a structured theoretical framework that emphasized AI's impact on teaching strategies and parental attitudes [20]. Three Filipino elementary teachers actively using AI tools weekly and three parents of students experiencing AI-assisted instruction were selected using purposive sampling [22]. Data from teachers was gathered through Zoom interviews, utilizing open-ended questions covering their introduction to AI, implementation strategies, and challenges. Parental perspectives were collected via Google Forms questionnaires, including demographic items and open-ended questions about their familiarity with, concerns about, and support for AI in education. Data collection involved Zoom interviews with teachers and Google Forms questionnaires for parents. Teachers were asked open-ended questions about their experiences with AI, including its implementation, challenges, and impact on teaching practices. At the same time, parents shared their perspectives on AI's role in their children's education, including concerns and suggestions for improvement.

The collected data underwent thematic analysis [23] for individual case studies before a cross-case analysis was conducted to identify themes and their relationships or discrepancies, which led to theory development [24][20]. This systematic approach ensured the validity and reliability of the findings. The study used purposive sampling to focus on cases that provided extensive relevant information, which improved external validity. The research protected participant rights through ethical protocols that included informed consent and anonymity procedures. The thorough methodology enabled researchers to understand AI integration in education by examining cultural and contextual elements alongside technological aspects [25][26].

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V. RESULTS AND DISCUSSION

This study explored the integration of Artificial Intelligence (AI) in Filipino elementary education, drawing from teacher interviews and parent responses to analyze practices, perceptions, and the balance between technological innovation and traditional methods.

➢ *Teachers' Practices*

The teachers shared some really helpful insights about using AI in their classrooms. They shared the positive results they have observed, as well as the challenges they have encountered. They explained how AI could make learning more personal for each student and help them manage their classrooms more effectively. Each teacher shared unique perspectives shaped by their experiences, with TP1 focusing on AI's capacity to automate tasks and engage students through gamified elements, TP2 describing AI as a supplementary "additional teacher" that addresses specific instructional needs, and TP3 leveraging AI for creative lesson planning and differentiated assessments. The participants recognized multiple advantages of the system; nevertheless, they also identified concerns, such as technical problems, pedagogical integration, and ethical issues regarding data privacy and AI misuse. The participants stressed the need for ongoing professional growth to maximize AI tool effectiveness while maintaining a balanced approach that emphasizes practical learning and teacher-led instruction. The collected responses demonstrated positive expectations about AI in education when implemented with careful consideration and ethical standards to enhance conventional teaching practices. Six themes emerged from the interviews: personalized learning and differentiated instruction, increased student engagement and motivation, efficiency and teacher workload, ethical considerations and data privacy, the need for training and professional development, and the human element in education.

➢ *Parents' Perspectives on AI Instruction*

The parent responses showed different levels of familiarity with AI tools and different opinions about their effects on their children's education. Some parents welcome AI because it helps personalize learning and keep their children interested, but others doubt its suitability for students with special needs, especially autism. Parents emphasize the importance of fundamental skill development and advocate for collaborative efforts between home and school to ensure that AI complements traditional educational practices. Parent responses highlighted the following themes: limited familiarity with AI in the classroom, mixed opinions on the role of AI in Education, concerns about skill development and over-reliance on AI, parental support for AI at home, the need for collaboration between parents and teachers, and expectations for AI in education.

➢ *Cross-Case Analysis of Teachers' and Parents' Responses*

The analysis of these findings shows multiple emerging patterns. First, teachers and parents agree that AI technology improves personalized learning and student engagement, but they also want to preserve conventional teaching approaches. Second, both groups agree that there is a need for extensive training and collaborative work to achieve the best results from AI tools. Third, in order to build trust in these systems, ethical issues and data protection concerns must be addressed immediately when implementing AI-assisted education. Furthermore, they emphasized that in order to create stimulating learning environments, educational settings require both innovative AI applications and traditional teaching methods.

The study demonstrated how AI education transformation occurs when implemented with careful ethical consideration. The findings indicated that AI technology enhances personalized learning and student engagement, but teachers remain essential for education. The study recommends that teachers should receive continuous professional development and parents should become more involved to achieve effective and responsible AI tool implementation, which benefits all students.

Table 1 Cross-Case Analysis of Teachers' Responses and Parents' Responses

Themes	Teachers' Responses	Parents' Responses
Theme 1: Personalized Learning and Differentiated Instruction	Teachers recognized AI's ability to tailor learning to individual needs. For example, TP1 highlighted how DreamBox, i-Ready, and Lexia provide real-time assessments and customized lessons, helping address specific learning gaps. Similarly, TP2 described AI as an "additional teacher," supporting her self-contained class for students with autism. TP3 emphasized AI's ability to suggest differentiated assessments and provide students with choices in demonstrating their understanding.	Parents acknowledged the potential of AI for personalized learning. PP1 noted AI's ability to create individualized learning plans and keep children engaged but warned against over-reliance on AI for problem-solving. PP2 expressed skepticism about AI for atypical learners, emphasizing the importance of hands-on approaches for her child with autism. PP3 raised concerns about skipping foundational skills due to AI automation.
Theme 2: Student Engagement and Motivation	Teachers noted that AI tools positively impacted student engagement. TP1	Parents echoed the benefits of AI for engagement. PP1 shared how AI tools

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	shared how gamified elements in Lexia, like rewards and certificates, motivated students. TP2 observed that AI tools helped maintain structured routines for autistic students, increasing engagement, though it varied based on severity. TP3 described her science class as highly engaging, combining hands-on activities with AI tools, with students calling it "the best science class ever."	like Duolingo made learning fun and exciting for her fourth grader. PP2 agreed on AI's potential to engage students but expressed concerns about its effectiveness for atypical learners. PP3 preferred traditional hands-on approaches over AI for her child's needs.
Theme 3: Need for Training and Collaboration	Teachers highlighted the need for ongoing training and collaboration. TP2 noted that while she received training on platforms like DreamBox and Lexia, there was no discussion on their AI components, emphasizing the need for AI-specific professional development. TP3 attended one workshop and conducted her own research, stressing the importance of integrating AI creatively rather than relying on scripted curricula.	Parents called for better communication and training. PP1 suggested workshops to familiarize parents with AI tools and ensure effective collaboration with teachers. PP2 emphasized the importance of appropriate training to understand AI's role in complementing their child's learning style. PP3 advocated for education on how AI can best support children at different developmental stages.
Theme 4: Balancing Innovation with Traditional Methods	Teachers agreed on the importance of balancing AI with traditional methods. TP3 emphasized teaching foundational science concepts through hands-on experiences before integrating AI tools. TP2 shared similar concerns, highlighting the need for direct teacher-led instruction, especially for students with autism.	Parents agreed on the importance of balancing AI with traditional methods. Parents shared concerns about over-reliance on AI. PP1 supported AI but stressed the need for children to develop problem-solving skills independently. PP2 opposed AI in special education classrooms, prioritizing hands-on learning. PP3 emphasized the importance of balancing AI with skill acquisition through traditional methods.

Collaborative communication between educators and parents is necessary for schools to optimize the educational benefits of AI while maintaining the integrity of traditional teaching methods.

VI. CONCLUSION

The analysis of the four themes yields several significant conclusions regarding AI implementation in education. Regarding personalized learning and differentiated instruction (Theme 1), the evidence demonstrates that while AI-driven personalized learning effectively meets individual student needs by functioning as an "additional teacher," there are valid concerns about over-reliance potentially undermining the development of independent problem-solving and critical thinking skills. In terms of student engagement and motivation (Theme 2), the study concluded that while AI-driven gamification effectively enhances student motivation and engagement through features like reward systems and progress tracking, its effectiveness varies significantly among different learner types, with some atypical learners responding better to traditional hands-on approaches.

The success of AI implementation in classrooms depends on more than technical knowledge because teachers need to develop their understanding of AI (Theme 3). The current professional development system has not provided educators with the essential understanding of AI, which creates a significant gap in teacher preparation. Looking at how innovation fits with traditional teaching methods (Theme 4), the study suggested that the best approach is to use AI as a helpful supplement, not a replacement, for human-centered instruction. It is important to teach core concepts through traditional methods first and then use AI tools to reinforce and enhance that learning. This balanced approach puts the personal connection between students and teachers at the center while also making the most of what technology can do. It shows that the best learning experiences happen when you incorporate human understanding with innovative tools. When these elements are put together, education becomes both deliberate and progressive, which is an ideal approach to support children's learning.

RECOMMENDATION

The recommendations for enhancing educational AI implementation in schools focus on creating a balanced and effective integration of AI tools with traditional teaching methods. Schools need to create detailed plans that include data protection protocols and provide equal AI resource access to every student. Prioritizing AI platforms like DreamBox, i-Ready, and Lexia can provide immediate feedback while fostering independent thinking and critical skills. In order to preserve alignment with essential learning objectives and

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maintain student engagement, schools should incorporate gamification strategies that complement traditional teaching methods with innovative artificial intelligence components.

Educators need professional development programs that focus on practical AI training to build their confidence in using these technologies. Schools need to use AI with caution by maintaining their traditional educational values while benefiting from technological advantages. Teachers can combine their established methods with innovative tools to create better learning opportunities for students.

Schools need to create direct communication systems about classroom AI tools while organizing workshops to teach parents about their educational applications. Parents will maintain their involvement in their children's education through continuous updates and educational resources. When parents and teachers collaborate, they develop an essential support system that optimizes AI advantages, resolves technology dependency issues, and cultivates fundamental skills.

Based on the analysis and findings, an actionable plan could include the following: professional development for teachers, training and workshops for teachers and parents, a collaborative framework between teachers and parents, and parent education. This plan enables schools to create an environment that maximizes AI capabilities while addressing all stakeholders' concerns. This balanced method ensures AI tools enhance traditional teaching methods without replacing them to provide students with a holistic educational experience.

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