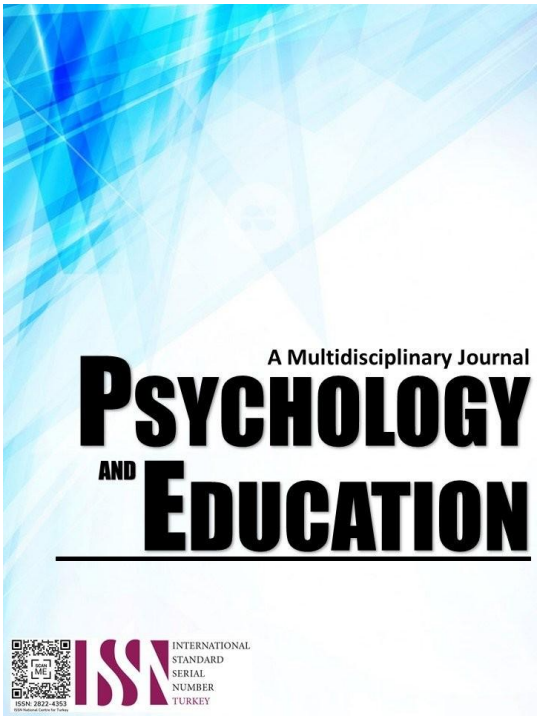
EXTENT OF CHALLENGES OF ARTIFICIAL INTELLIGENCE AND ITS INFLUENCE ON TEACHERS' PERFORMANCE



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Research Article

Extent of Challenges of Artificial Intelligence and its Influence on Teachers' Performance

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Abstract

This study was conducted to look into the extent of challenges of artificial intelligence and its influence on teachers' performance in Valencia District 4, Division of Valencia City, School Year (SY) 2024-2025. The researcher utilized a self-made survey questionnaire, which was subjected to a validation test. The pilot test got a Cronbach's Alpha Coefficient of .992, indicating that the instrument had excellent internal consistency. The respondents were the teachers in Valencia District 4, Division of Valencia City, School Year (SY) 2024-2025. The data were interpreted by using descriptive statistics such as frequency count, percentage, mean, standard deviation, and Pearson r Product Moment Correlation Coefficient. Based on the analysis, the following conclusions were reached: The widespread issues in all AI integration categories revealed the urgent necessity for focused initiatives to improve teacher preparedness and effectiveness. This emphasizes that simply offering AI tools is inadequate; extensive support, including customized training and the cultivation of favorable attitudes, is crucial for effective AI integration in educational settings. The predominance of "Very Satisfactory" performance among teachers indicates their capability to integrate AI, yet the necessity for enhancement implies that existing support systems may not fully maximize their potential. The substantial correlation between the problems of AI integration and teacher performance emphasizes the necessity of overcoming these challenges to enhance instructors' effective utilization of AI.

Keywords: *extent, challenges, artificial intelligence, influence, teachers' performance*

Introduction

The incorporation of artificial intelligence (AI) into educational environments presents both advantages and obstacles for educators and academic institutions. The present curriculum aims to improve educational quality in the Philippines by focusing on comprehensive student development and new pedagogical approaches. The integration of AI technologies into this curriculum presents complications that educators must address. AI tools possess the capacity to transform pedagogical methods, customize educational experiences, and optimize administrative functions. The effective incorporation of AI depends on overcoming the specific hurdles that educators may face while adapting to new technological innovations.

Despite the increasing interest in AI integration in education, a significant gap persists in the research concerning the specific issues encountered by teachers. Previous research has examined the overall advantages of AI in education and its possible effects on student learning results. Nevertheless, a scant study has examined the intricate effects of AI integration on instructors' performance within the framework of a specific curriculum. Comprehending these obstacles is essential for formulating tailored support systems, professional development initiatives, and legislative proposals that enhance the effective use of AI tools by educators. By addressing this research gap, researchers may provide significant insights that support evidence-based methods for optimizing AI integration and boosting teachers' capacity to utilize these technologies to improve learning experiences.

The legislative foundation for the incorporation of technology in Philippine education originates from the enactment of the Enhanced Basic Education Act of 2013, aimed at improving the nation's educational framework through technological integration and new pedagogical methods. Research highlighting the difficulties of AI integration in education encompasses works by Wang et al. (2019) regarding educators' perceptions of AI technology in the classroom and Jones et al. (2021) examining the effects of AI integration on instructional methodologies. These studies underscore the necessity for extensive teacher training, support mechanisms, and legislative frameworks to proficiently incorporate AI into educational curricula and improve teachers' efficacy in employing these technologies.

It is crucial to conduct the thesis "Adapting to Innovation: Investigating Challenges of Artificial Intelligence Integration and Its Influence on Teachers' Performance" because of the significant impact that artificial intelligence (AI) can have on education and the important role that teachers have in adapting to this technology. To optimize the adoption of AI in educational settings, it is crucial to understand the problems that educators confront while incorporating AI into the curriculum. Studying the impact of AI integration on teachers' performance can provide valuable insights into the changing field of education.

This research can help us understand the complexities, opportunities, and effects of technological innovation on teaching methods. This thesis not only enhances educational technology but also gives practical knowledge for policy decisions and professional development programs to improve teacher effectiveness in the digital age.

The researcher found it very significant to conduct this study to look into the challenges of artificial intelligence and its influence on teachers' performance in Valencia District 4, Division of Valencia City, School Year (SY) 2024-2025.

Research Questions

This study was conducted to investigate the extent of artificial intelligence's challenges and its influence on teachers' performance in Valencia District 4, Division of Valencia City, School Year (SY) 2024-2025. Specifically, this study answered the following questions:

1. What are the challenges of artificial intelligence in terms of training and professional development, perceived utility of AI integration, technological self-efficacy, support and resources, and attitudes toward innovation?
2. What is the teacher's performance as they use Artificial Intelligence?
3. Is there a significant relationship between the extent of artificial intelligence's challenges and teachers' performance as they use Artificial Intelligence?

Methodology

Research Design

This study used the descriptive-correlational research design. It looked into the challenges of artificial intelligence and its influence on teachers' performance in Valencia District 4, Division of Valencia City, School Year (SY) 2024-2025.

Data on the extent of artificial intelligence's challenges were gathered using the researcher-made questionnaire, and teachers' performance as they use Artificial Intelligence will be used from their IPCRF.

Respondents

The study respondents were all the teachers in Valencia District 4, Division of Valencia City, School Year (SY) 2024-2025. They were the regular-permanent teachers assigned to Catumbalon National High School, Catumbalon Elementary School, Sinayawan Elementary School, and Pinatilan Elementary School. They have been observed to utilize artificial intelligence in teaching.

This study used Complete Enumeration as a sampling procedure. Complete enumeration is often feasible and practical when the population under study is small and manageable, allowing researchers to collect data from every individual within the population. When the research objectives require a detailed and thorough understanding of each element in the population, complete enumeration can provide comprehensive insights without the need for sampling. This sampling procedure is appropriate since the target respondents are reasonably specified and limited; thus, all members of the population must be included as participants.

Instrument

This study utilized a researcher-made survey questionnaire, which was composed of four parts, to gather the needed data.

Part I was on the extent of challenges of artificial intelligence and its influence on teachers' performance in terms of Training and Professional Development, Perceived Utility of AI Integration, Technological Self-Efficacy, Support and Resources, and Attitudes Towards Innovation. Columns for the choices were based on the Five-Point Likert Scale. The respondent checked the column for his chosen answer. Part II was about the teachers' performance when they used artificial intelligence.

Procedure

This study was conducted in accordance with the following procedure: First, the researcher sought the approval and endorsement letter of the Dean of Graduate School. It was then submitted to the Superintendent of Schools Division Office. When proper approval was obtained, the researcher approached the Public Schools District Supervisor of the locale of the study for her permission. Following that, the school heads of the chosen schools were approached for their permission to conduct a study on their respective campuses. Finally, the questionnaires were distributed to the selected respondents.

Data Analysis

The following statistical tools were used in this study:

Frequency count and percentage were used to determine the extent of use of Artificial Intelligence.

Mean and standard deviation were applied to determine the extent of artificial intelligence's challenges in terms of Training and Professional Development, Perceived Utility of AI Integration in teaching, Technological Self-Efficacy, Support and Resources, and Attitudes Toward Innovation.

Percentage and frequency counts were used to determine the teacher's performance using artificial intelligence.

Pearson r Product-Moment Correlation Coefficient or Pearson r was used to check the significant relationship between the extent of Artificial Intelligence challenges and teachers' performance as they use Artificial Intelligence.

Ethical Considerations

Participation in the study was completely optional, and the researcher emphasized the well-being, safety, and confidentiality of the participants. Participants were provided with informed consent paperwork and got comprehensive information regarding the study's

environment. The researcher utilized measures to mitigate any bias in participants' remarks and thereafter objectively recorded their feedback. To preserve confidentiality and uphold the integrity of the study, participants were allocated pseudonyms to convey their perspectives. Participants in the study are granted the option to refuse to answer any questions they deem harmful.

Results and Discussion

This section presents gathered and processed data, analyzes the data to answer the problems posed, and interprets the data in the light of descriptive research.

This study was conducted to look into the extent of challenges of artificial intelligence and its influence on teachers' performance in Valencia District 4, Division of Valencia City, School Year (SY) 2024-2025. Specifically, this study determined the extent of Challenges of Artificial Intelligence in terms of Training and Professional Development, Perceived Utility of AI Integration, Technological Self-Efficacy, Support and Resources, and Attitudes Towards Innovation; determined the teacher's performance as they used Artificial Intelligence; and found out the significant relationship between the extent of challenges of artificial intelligence integration and the teacher's performance as they use Artificial Intelligence .

The sections that follow present and discuss the extent of Artificial Intelligence's challenges in terms of Training and Professional Development, Perceived Utility of AI Integration, Technological Self-Efficacy, Support and Resources, and Attitudes Toward Innovation.

Table 1 presents the extent of the challenges of artificial intelligence in terms of training and professional development.

Table 1. *Extent of Challenges of Artificial Intelligence in terms of Training and Professional Development*

Indicator	*Mean*	*SD*	*Interpretation*
"There are professional development opportunities available to enhance my skills in integrating artificial intelligence into classroom instruction."	4.03	1.008	Large Extent
"I have received adequate training in incorporating artificial intelligence (AI) tools.	3.84	0.996	Large Extent
"Training sessions on artificial intelligence are tailored to meet the specific needs and challenges faced by educators in integrating these technologies."	3.78	0.953	Large Extent
"I am provided with ongoing support and resources to implement artificial intelligence components in the class effectively."	3.74	1.117	Large Extent
"I receive feedback and guidance on my use of artificial intelligence tools to improve the integration in my day-to-day teaching."	3.63	1.071	Large Extent
Overall	3.81	0.945	Large Extent

Legend: *4.20–5.00 – Very Large Extent; 3.40–4.19 – Large Extent; 2.60–3.39 – Moderate Extent; 1.80–2.59 – Small Extent; 1.00–1.79 – Very Small Extent.*

The findings in Table 1 indicate that the challenges related to artificial intelligence (AI) in training and professional development are generally observed to a Large Extent. Among the indicators, the availability of professional development opportunities to enhance skills in AI integration has the highest mean of 4.03 and Standard Deviation of 1.008. A significant challenge in integrating AI is the lack of comprehensive training programs for teachers. Research by Zawacki-Richter et al. (2019) highlights that many educators feel unprepared to utilize AI technologies effectively, leading to anxiety and resistance to change. The absence of structured professional development programs hampers teachers' ability to leverage AI tools in their classrooms. Also, teachers' varying levels of digital literacy can significantly impact the integration of AI in the classroom.

On the other hand, receiving feedback and guidance on the use of AI tools in teaching has the lowest mean of 3.63 and Standard Deviation of 1.071, implying that while feedback mechanisms exist, they may not be sufficiently frequent or comprehensive. A study by Borkowski et al. (2021) found that educators with limited technological skills often struggle to implement AI-driven tools effectively, resulting in the underutilization of available resources. This disparity emphasizes the need for targeted training that addresses specific technological competencies. Many teachers exhibit resistance to integrating AI due to established pedagogical practices and institutional constraints.

Other indicators, such as adequate training in AI incorporation with a Mean of 3.84 and Standard Deviation of 0.996 and tailored training sessions with a Mean of 3.78 and Standard Deviation of 0.953, also reflect a large extent of challenges, suggesting that while training is provided, it may not fully address the specific needs of educators. Additionally, ongoing support and resources for AI implementation, with a Mean of 3.74 and a Standard Deviation of 1.117, indicate a need for sustained institutional support. According to Almazroi et al. (2022), cultural attitudes toward innovation can create significant barriers to adopting AI technologies in education. Without effective management strategies and ongoing support, teachers may feel overwhelmed by the rapid pace of technological advancement.

Overall, with an aggregate mean of 3.81 and Standard Deviation of 0.945, the results suggest that while training and professional development opportunities for AI are present, there remain challenges in ensuring their adequacy, accessibility, and relevance to educators' needs.

The data illustrates that while professional development on AI integration is broadly available, its effectiveness is compromised by a lack of personalized feedback and tailored training, as evidenced by the discrepancy between the highest mean for opportunity

availability and the lowest for feedback. This suggests that mere training provision is insufficient; educators require targeted, ongoing support and feedback to integrate AI into their teaching practices effectively. It highlights the necessity for professional development to evolve beyond generic workshops to include personalized mentorship and continuous evaluation.

The variation in means, with lower scores in areas like tailored sessions and ongoing support, underscores the need for institutions to adopt a comprehensive, long-term approach to AI training, ensuring that educators receive the specific, relevant, and sustained support needed to confidently and effectively leverage AI in their classrooms, thereby enhancing educational outcomes. This finding is supported by Redecker (2017), who posed the framework that emphasizes the need for educators to develop digital competencies, which requires ongoing, tailored professional development, and Darling-Hammond, Hyler, and Gardner (2017), who reported highlights that effective professional development is continuous, collaborative, and focused on teachers' specific needs, which is crucial for AI integration.

Table 2 shows the extent of the challenges of artificial intelligence in terms of the perceived utility of AI.

Table 2. *Extent of Challenges of Artificial Intelligence in Terms of Perceived Utility of AI Integration*

Indicator	*Mean*	*SD*	*Interpretation*
"I think that incorporating AI technologies in the curriculum helps students develop essential 21st-century skills."	3.73	1.111	Large Extent
"I believe that integrating artificial intelligence technologies enhances student engagement and participation."	3.72	0.942	Large Extent
"I see artificial intelligence integration as a valuable method for personalizing learning and catering to individual student needs."	3.66	1.067	Large Extent
"I believe that AI integration enhances my effectiveness as an educator and facilitates	3.56	1.102	Large Extent
"I perceive that using AI tools enriches the learning experience and improves student learning outcomes." better teaching practices."	3.52	0.921	Large Extent
Overall	3.64	0.949	Large Extent

Legend: *4.20–5.00 – Very Large Extent; 3.40–4.19 – Large Extent; 2.60–3.39 – Moderate Extent; 1.80–2.59 – Small Extent; 1.00–1.79 – Very Small Extent.*

The results in Table 2 suggest that the challenges related to the perceived utility of artificial intelligence (AI) are observed to a Large Extent, with an Overall Mean of 3.64 and a Standard Deviation of 0.949. Among the indicators, the belief that incorporating AI technologies in the curriculum helps students develop essential 21st-century skills has the highest mean of 3.73 and Standard Deviation of 1.111. Many educators view AI as a tool to enhance their teaching effectiveness. Research has shown that AI-powered tools, such as intelligent tutoring systems, can provide personalized learning experiences for students, which in turn supports teachers in meeting diverse learners' needs (Luckin et al., 2016). Teachers perceive that these tools can help them deliver tailored instruction and improve student engagement.

Conversely, the perception that using AI tools enriches the learning experience and improves student learning outcomes has the lowest mean of 3.52 and Standard Deviation of 0.921. Other indicators, such as AI's role in enhancing student engagement with a Mean of 3.72 and Standard Deviation of 0.942 and personalizing learning with a Mean of 3.66 and Standard Deviation of 1.067, highlight that educators see AI as a valuable tool for individualized instruction but may face difficulties in applying it effectively. Similarly, the belief that AI improves teaching effectiveness with a Mean of 3.56 and Standard Deviation of 1.102 reflects positive perceptions, though barriers to full utilization remain.

Also, AI tools can automate administrative tasks, such as grading and progress tracking, allowing teachers to spend more time on instructional activities. This perceived utility is significant, where educators are expected to implement various teaching strategies. Studies indicate that teachers appreciate the time-saving benefits of AI integration, leading to improved job satisfaction and performance (Baker & Siemens, 2020).

The data reveals that although educators typically view AI as beneficial, especially for fostering 21st-century abilities, they face considerable obstacles in converting this perceived advantage into concrete enhancements in learning experiences and outcomes. The disparity between the elevated mean for 21st-century skills development and the diminished mean for enhanced learning experiences indicates that educators acknowledge AI's potential yet encounter challenges in its practical implementation to improve immediate student learning results.

This underscores the necessity for specialized professional development aimed at showcasing and executing specific AI tactics to enhance student engagement and tailor learning, hence closing the divide between perceived efficacy and tangible classroom outcomes. Redecker (2017) emphasizes the importance of educators developing digital competencies, which include the ability to effectively use digital technologies like AI to enhance teaching and learning.

The variability among indicators, especially the reduced average for enhanced teaching effectiveness, highlights the imperative of equipping educators with evidence-based practices and explicit guidelines for integrating AI into their instruction to attain quantifiable advancements in student learning. Ertmer and Ottenbreit-Leftwich (2010) published that educators' beliefs and perceived usefulness of technology impact how they use technology in the classroom.

Without the right training and help based on tried-and-true methods, teachers may not fully utilize AI's potential to improve the effectiveness of their lessons. Also, integrating AI has many benefits, such as personalized learning, instant feedback, and streamlined administrative tasks. However, these benefits can only be realized if teachers are confident and know how to use AI in a useful way. To close this gap, teachers need to get training in both the technical and pedagogical parts of AI.

Table 3 displays the extent of the challenges of artificial intelligence in terms of technological self-efficacy.

Table 3. *Extent of Challenges of Artificial Intelligence in terms of Technological Self-Efficacy*

Indicator	*Mean*	*SD*	*Interpretation*
"I feel empowered to explore innovative ways of integrating artificial intelligence into classroom activities and assessments."	3.90	1.199	Large Extent
"I feel confident in my ability to use artificial intelligence tools effectively within the class."	3.86	1.146	Large Extent
"I have the skills necessary to adapt and learn new AI tools for educational purposes."	3.86	1.220	Large Extent
"I believe that I can troubleshoot technological issues related to AI integration in the curriculum on my own."	3.82	1.196	Large Extent
"I am comfortable experimenting with new AI technologies and incorporating them into my teaching practices."	3.69	1.095	Large Extent
Overall	3.83	1.112	Large Extent

Legend: *4.20–5.00 – Very Large Extent; 3.40–4.19 – Large Extent; 2.60–3.39 – Moderate Extent; 1.80–2.59 – Small Extent; 1.00–1.79 – Very Small Extent.*

The results in Table 3 indicate that the challenges related to technological self-efficacy in artificial intelligence (AI) are observed to be large, with an overall mean of 3.83 and a standard deviation of 1.112. Among the indicators, feeling empowered to explore innovative ways of integrating AI into classroom activities and assessments has the highest mean of 3.90 and Standard Deviation of 1.199. Teachers face various challenges in AI integration, including technical issues (such as lack of infrastructure), insufficient training, and limited access to AI tools. These barriers are compounded when teachers lack confidence in their technological abilities (Popenici & Kerr, 2017). Without strong technological self-efficacy, teachers may struggle to integrate AI tools effectively, leading to lower performance outcomes.

The MATATAG curriculum emphasizes critical thinking, collaboration, and technology integration, which requires a robust understanding of AI technologies.

Conversely, comfort in experimenting with new AI technologies and incorporating them into teaching practices has the lowest mean of 3.69 and Standard Deviation of 1.095. Other indicators, such as confidence in using AI tools effectively with a Mean of 3.86 and Standard Deviation of1.146 and having the necessary skills to adapt and learn new AI tools with a Mean of 3.86 and Standard Deviation of 1.220, suggest that educators generally believe in their ability to learn and apply AI technologies but may require additional training and support.

However, studies indicate that many teachers feel ill-prepared to incorporate AI into their teaching, highlighting the need for more professional development opportunities. Professional development plays a crucial role in enhancing teachers' technological self-efficacy. Research shows that continuous AI-related training and professional learning communities can significantly boost teachers' confidence in using AI-powered tools (Zawacki-Richter et al., 2019).

Similarly, the ability to troubleshoot AI-related technological issues with a Mean of 3.82 and Standard Deviation of 1.196 reflects a positive outlook on problem-solving. However, it highlights potential challenges in resolving technical difficulties independently. Teachers who lack confidence in their ability to use AI-powered tools are less likely to experiment with them, which can inhibit innovation and reduce overall teaching effectiveness (Teo, 2016). Additionally, older teachers may face greater challenges in adopting AI tools due to a lack of familiarity with digital technologies, leading to a wider gap in performance between teachers with high and low technological self-efficacy (Teo et al., 2019).

The data indicates that although instructors exhibit a strong sense of self-efficacy in investigating and adapting to AI, as seen by the elevated overall mean and specific metrics, a significant obstacle exists in their comfort with the practical experimentation and application of new AI tools. This discrepancy indicates that educators have theoretical confidence in their AI capabilities but lack the practical experience or support to implement this confidence in the classroom. This highlights the necessity for focused professional development that transcends theoretical knowledge to encompass practical application and experimentation (Redecker, 2017). He posed the importance of educators developing digital competencies, including self-efficacy in using digital technologies like AI.

The marginally lower average for addressing AI issues underscores the necessity of offering comprehensive technical support and training to enhance educators' confidence in managing technical challenges, thus promoting a more proactive and experimental methodology in integrating AI into their teaching practices, Redecker (2017). Furthermore, tackling these problems facilitates fair AI integration by enabling all educators, irrespective of their technical expertise, to leverage AI's potential to improve learning outcomes.

Table 4 presents the extent of the challenges of artificial intelligence in terms of support and resources.

Table 4. *Extent of Challenges of Artificial Intelligence in Terms of Support and Resources*

Indicator	*Mean*	*SD*	*Interpretation*
"Adequate technical support is available to assist with the implementation of artificial intelligence tools."	3.73	1.180	Large Extent
"Support staff are readily available to troubleshoot issues related to AI integration."	3.66	1.191	Large Extent
"There are sufficient resources provided to acquire and maintain the necessary AI technologies for classroom use."	3.64	1.149	Large Extent
"Financial resources are allocated to ensure the continued availability and updating of AI tools for educational use within the curriculum."	3.63	1.209	Large Extent
"I have access to training materials and guides that help me effectively integrate artificial intelligence into the curriculum."	3.58	1.221	Large Extent
Overall	3.65	1.110	Large Extent

Legend: *4.20–5.00 – Very Large Extent; 3.40–4.19 – Large Extent; 2.60–3.39 – Moderate Extent; 1.80–2.59 – Small Extent; 1.00–1.79 – Very Small Extent.*

The findings in Table 4 indicate that challenges related to support and resources for artificial intelligence (AI) are observed to a Large Extent, with an Overall Mean of 3.65 and a Standard Deviation of 1.110). Among the indicators, the availability of adequate technical support for AI implementation has the highest mean of 3.73 and Standard Deviation of 1.180. On the other hand, access to training materials and guides for AI integration has the lowest mean of 3.58 and Standard Deviation of 1.221. One of the significant hurdles in AI integration is the lack of sufficient teacher training and professional development programs that help teachers understand how to use AI tools effectively in their classrooms (Holmes et al., 2019).

Other indicators, such as the availability of support staff to troubleshoot AI-related issues with a Mean of 3.66 and Standard Deviation of 1.191, and sufficient resources for acquiring and maintaining AI technologies with a Mean of 3.64 and Standard Deviation of 1.149, indicate that educators face challenges in securing ongoing support and necessary tools for AI integration. Additionally, the allocation of financial resources for AI tools with a Mean of 3.63 and Standard Deviation of 1.209. AI integration requires a robust technological infrastructure, including access to reliable internet, digital devices, and AI-powered software.

In many educational settings, particularly in developing countries, teachers face significant challenges due to the lack of adequate technological resources (Selwyn, 2020). In the Philippines, where access to technology can be uneven across urban and rural areas, teachers often find it challenging to incorporate AI into their classrooms due to a shortage of computers, insufficient access to AI tools, or limited technical support. Schools often struggle with financial limitations that make it difficult to invest in the necessary AI technologies and infrastructure (Mishra & Koehler, 2021).

The data indicates that although technical assistance for AI adoption is somewhat accessible, as evidenced by the highest mean, educators face challenges in obtaining crucial training materials and guides, reflected by the lowest mean, underscoring a significant deficiency in resource availability. This discrepancy indicates that although institutions may offer troubleshooting support, they inadequately furnish teachers with essential knowledge and practical resources for effective AI integration, highlighting the need for a more holistic approach to resource allocation that emphasizes both technical assistance and accessible educational materials.

The persistent and significant challenges across indicators, including the availability of support staff and financial resources, underscore the necessity for institutions to invest in a comprehensive support system. This system should encompass not only technical assistance but also accessible training resources and sustainable funding for AI tools, ensuring educators possess the requisite tools and knowledge to utilize AI in their teaching methodologies effectively. This finding is supported by Harris and Jones (2020), who emphasized the importance of providing schools with adequate resources and support to facilitate improvement efforts, including the integration of new technologies like AI.

Table 5 shows the extent of the challenges of artificial intelligence in terms of attitudes toward innovation.

Table 5. *Extent of Challenges of Artificial Intelligence in terms of Attitudes Towards Innovation*

Indicator	*Mean*	*SD*	*Interpretation*
"I am open to exploring new ways of teaching and learning through the integration of artificial intelligence."	3.70	1.044	Large Extent
"I believe that embracing AI technologies can enhance educational experiences and outcomes for students within the curriculum."	3.68	1.048	Large Extent
"I see innovation in education, such as AI integration, as an opportunity for growth and improvement in teaching practices."	3.68	1.022	Large Extent
"I view technological innovation, particularly AI integration, as a valuable tool for addressing challenges and improving student learning."	3.68	1.089	Large Extent
"I am enthusiastic about incorporating new technologies like AI into the curriculum to adapt to changing educational landscapes."	3.64	1.125	Large Extent
Overall	3.67	1.010	Large Extent

Legend: *4.20–5.00 – Very Large Extent; 3.40–4.19 – Large Extent; 2.60–3.39 – Moderate Extent; 1.80–2.59 – Small Extent; 1.00–1.79 – Very Small Extent.*

Table 5 reveals that challenges related to attitudes toward innovation in artificial intelligence (AI) are observed to be large, with an overall mean of 3.67 and a standard deviation of 1.010. Among the indicators, openness to exploring new ways of teaching and learning

through AI integration has the highest mean of 3.70 and Standard Deviation of 1.044. The success of AI integration in any curriculum largely depends on teachers' attitudes towards innovation. Research indicates that teachers who hold positive attitudes toward technological innovation are more likely to embrace AI tools in their classrooms, leading to improved teaching practices and student outcomes (Howard & Mozejko, 2015). Studies by Zawacki-Richter (2019) reveal that teachers who perceive AI as enhancing their teaching efficiency are more open to adopting such technologies.

Conversely, enthusiasm about incorporating new technologies like AI to adapt to changing educational landscapes has the lowest mean of 3.64 and Standard Deviation of 1.125. This implies that while educators acknowledge AI's potential, some may have reservations or uncertainties regarding its practical implementation and long-term impact on education. Resistance to change is a common challenge in the integration of new technologies. Teachers may resist AI-powered pedagogical tools due to a lack of familiarity, concerns about their relevance to core teaching practices, or fear that AI will replace traditional teaching roles. This resistance can impede the successful integration of AI into the curriculum and negatively affect teachers' performance (Selwyn, 2020).

Other indicators, such as the belief that AI enhances educational experiences and student outcomes with a Mean of 3.68 and Standard Deviation of 1.048, viewing AI as an opportunity for growth in teaching practices with a Mean of 3.68 and Standard Deviation of1.022, and recognizing AI as a valuable tool for addressing educational challenges with a Mean of 3.68 and Standard Deviation of 1.089.

The data reveals that although educators typically demonstrate a willingness to consider AI in teaching, as evidenced by the highest mean, their enthusiasm for actively integrating these technologies to adapt to changing educational environments is relatively diminished, indicating a disparity between theoretical acceptance and practical enthusiasm. This indicates that although educators acknowledge the prospective advantages of AI, they may lack confidence or perceive obstacles to its comprehensive integration, underscoring the necessity for professional development that not only illustrates AI's value but also addresses educators' apprehensions and offers pragmatic strategies for implementation.

The persistent and significant challenges across various indicators, including the belief in AI's ability to enhance educational experiences and its efficacy in addressing issues, highlight the necessity of cultivating a supportive environment that promotes innovation and offers continuous assistance to convert positive attitudes into effective classroom practices (Fullan, 2016) highlights that successful educational change requires fostering positive attitudes towards innovation and providing support for implementation.

The teacher's performance as they used Artificial Intelligence is presented and discussed next.

Table 6 displays the teacher's performance as they use Artificial Intelligence.

Table 6. *Teacher's Performance as They Use Artificial Intelligence*

Range	*f*	*%*	*Adjectival Rating*
4.500 – 5.000	14	12.2	Outstanding
3.500 – 4.499	54	47.0	Very Satisfactory
2.500 – 3.499	30	26.1	Satisfactory
1.500 – 2.499	17	14.7	Unsatisfactory
Below 1.499	0	0	Poor
Total	115	100.0	

The data in Table 6 on teacher performance in using artificial intelligence (AI) reveals a diverse distribution of ratings. The majority of teachers, 54 or 47.0%, fall within the 3.500 – 4.499 range, indicating a Very Satisfactory level of performance. This suggests that nearly half of the teachers effectively integrate AI into their teaching, though there is still room for improvement.

Conversely, insufficient training and a lack of understanding of AI technologies can result in negative attitudes and reluctance to adopt AI. In the context of the MATATAG curriculum, teachers who are not adequately supported in the integration process may struggle to incorporate AI, potentially affecting their teaching quality and job satisfaction (Popenici & Kerr, 2017). Teachers who successfully integrate AI into their classrooms report improved teaching efficiency, with AI-powered tools providing personalized instruction, automating routine tasks, and offering real-time feedback on student progress.

Research suggests that AI can augment teachers' performance by freeing them from administrative burdens, allowing more time for creative and student-centered teaching (Holmes, 2019). Teachers using AI for grading, assessment, and content delivery can focus on more interactive and dynamic learning environments.

A significant portion of teachers also demonstrated Satisfactory performance, with 30 teachers, or 26.1%, scoring within the 2.500 – 3.499 range. This implies that while they are incorporating AI to some extent, they may need additional support or training to enhance their proficiency. Notably, 14 teachers, or 12.2%, achieved an Outstanding rating (4.500 – 5.000 range), highlighting a small but commendable group excelling in AI integration. However, 17 teachers, or 14.7%, fell into the Unsatisfactory category (1.500 – 2.499 range), suggesting that they struggle with AI implementation and may require targeted interventions to improve their performance. Encouragingly, no teachers were rated Poor below 1.499, with 0 or 0%, indicating that all educators have at least some levels of AI integration in their teaching practices.

Moreover, the integration of AI is influenced by the broader cultural attitudes toward technology and innovation within the educational

system. Teachers who work in cultures that value technological innovation are more likely to adopt AI tools. However, in regions where technology is seen as disruptive, teachers may be more resistant to integrating AI into their pedagogical practices, affecting their overall performance (Kumar & Chandrasekaran, 2018).

The data reveals considerable variability in teacher performance utilizing AI, with a substantial proportion attaining "Very Satisfactory" and "Satisfactory" ratings, while a significant cohort experiences "Unsatisfactory" performance. This distribution indicates that, although numerous educators are effectively incorporating AI, there is a distinct necessity for tailored professional development to accommodate varying competency levels, particularly emphasizing focused support for those facing challenges in adoption. A small cohort of "Outstanding" performers underscores the potential for peer-led learning and mentorship initiatives, wherein successful AI integrators can disseminate best practices and assist their colleagues, thereby cultivating a culture of continuous development and collaborative learning (Timperley, 2015).

The following section presents and discusses the significant relationship between the extent of artificial intelligence challenges and teachers' performance as they use Artificial Intelligence.

Table 7 presents the Table the test of significant relationship between the extent of challenges of artificial intelligence and the teacher's performance as they use artificial intelligence.

Table 7. *Test of Significant Relationship between the Extent of Challenges of Artificial Intelligence and the Teacher's Performance as They Use Artificial Intelligence*

Variable	*r*	*p-value*	*Interpretation*
Training and Professional Development	.819	.000	Significant
Perceived Utility of AI Integration	.911	.000	Significant
Technological Self-Efficacy	.878	.000	Significant
Support and Resources	.879	.000	Significant
Attitudes Towards Innovation	.893	.000	Significant
Overall	.927	.000	Significant

The results in Table 7 on the test of a significant relationship between the extent of challenges in artificial intelligence (AI) and teacher performance indicate strong and significant correlations across all variables. The overall correlation of r = .927 and p = .000 suggests a powerful relationship between AI integration challenges and teacher performance, meaning that as challenges increase or decrease, teacher performance is significantly affected.

This finding contradicts Zawacki-Richter et al. (2019) on the notion that one of the primary challenges in AI integration is the preparedness of teachers to use these advanced technologies. Zawacki-Richter et al. (2019) highlight that many teachers lack the necessary training and familiarity with AI-powered tools, which impedes their ability to incorporate AI into their teaching practices effectively. This lack of readiness directly affects teacher performance, as unfamiliarity with AI tools can lead to inefficient classroom management and less effective teaching strategies. Also, teachers may resist AI integration due to skepticism about the value of these technologies, concerns over job displacement, or fear of being replaced by AI systems.

Among the individual variables, the Perceived Utility of AI Integration with r = .911 and p = .000 shows the strongest correlation with teacher performance. This indicates that teachers who see AI as beneficial tend to perform better in integrating AI into their teaching. Similarly, Attitudes Towards Innovation with r = .893 and p = .000 and Support and Resources with r = .879 and p = .000 also exhibit strong correlations, implying that teachers who embrace innovation and receive adequate support tend to integrate AI more effectively.

AI-powered analytics can help teachers make data-driven decisions that improve their instructional methods and, ultimately, student outcomes. Siemens and Baker (2020) found that teachers who use AI tools to analyze student data can more effectively tailor their instruction to meet individual learners' needs, leading to improved teaching effectiveness and higher performance ratings.

Additionally, Technological Self-Efficacy (r = .878 and p = .000) and Training and Professional Development (r = .819 and p = .000) show significant relationships with teacher performance, emphasizing the importance of confidence in using AI tools and access to relevant training in enhancing AI integration. While AI can enhance instructional efficiency, some teachers express concerns about losing control over classroom decisions as AI systems increasingly dictate curriculum pacing and content delivery (Williamson & Eynon, 2020).

Therefore, the null hypothesis, which states that there is no significant relationship between the extent of artificial intelligence challenges and teachers' performance as they use Artificial Intelligence, is rejected.

The data indicates a strong and significant association between the problems of AI integration and teacher performance, implying that the degree of these challenges directly affects instructors' capacity to utilize AI effectively. The robust association with "Perceived Utility" highlights the necessity of cultivating a conviction among educators that AI is advantageous, as this directly correlates with enhanced performance. The substantial correlations among all variables, such as "Technological Self-Efficacy," "Training," and "Support," underscore the imperative for a comprehensive strategy in AI integration, wherein institutions must tackle both practical and perceptual obstacles to guarantee that educators are assured, adequately trained, and supported in their utilization of AI (Redecker,

2017).

Conclusions

Based on the analysis, the following conclusions were reached:

The widespread issues in all AI integration categories revealed the urgent necessity for focused initiatives to improve teacher preparedness and effectiveness. This emphasizes that simply offering AI tools is inadequate; extensive support, including customized training and the cultivation of favorable attitudes, is crucial for effective AI integration in educational settings. The general issues indicate a systemic necessity to tackle both the technological dimensions of AI integration and the pedagogical and psychological elements that affect teachers' adoption and effective utilization of AI in education.

The predominance of "Very Satisfactory" performance among teachers indicates their capability to integrate AI, yet the necessity for enhancement implies that existing support systems may not fully maximize their potential. This indicates that although fundamental AI integration abilities exist, improving pedagogical strategies and offering advanced training are essential for optimizing the efficacy of AI in educational activities.

The substantial correlation between AI integration problems and teacher performance emphasizes the necessity of overcoming these challenges to enhance instructors' effective utilization of AI. This indicates that removing obstacles like insufficient training, resource scarcity, and adverse attitudes directly improves teachers' capacity to utilize AI for better educational results.

In light of the results, the following recommendations were made:

Teachers may participate in accessible AI training and professional development programs to improve their competencies and tackle recognized issues. They may pursue collaboration opportunities with colleagues and experts to exchange best practices and formulate methods for surmounting pedagogical and psychological obstacles to AI integration.

The Department of Education may offer and promote advanced training and professional development chances for teachers that go beyond basic AI skills. This will give teachers the tools they need to improve and come up with new ways to teach that use AI effectively. DepEd may also help set up and support collaborative sites where teachers can share and learn the best ways to do things. This will build a strong community of practice that makes it easier to use AI responsibly in a variety of educational settings. This method will not only improve teachers' skills but will also make sure that the changes brought about by AI in education are moral, open to everyone, and in line with national goals for better and more updated learning.

School leaders may prioritize the creation and execution of specialized professional development programs that tackle the recognized obstacles of AI integration, ensuring teachers obtain sufficient training and resources. They may cultivate a supportive educational culture that promotes creativity and mitigates negative perceptions about AI, establishing an environment in which teachers feel empowered to incorporate AI into their pedagogical practices effectively.

References

Almazroi, A., et al. (2022). Navigating Resistance: Cultural and Institutional Challenges in AI Integration in Education. International Journal of Educational Management, 36(2), 332-345.

Baker, R. S., & Siemens, G. (2020). Learning Analytics and AI in Education: A Systematic Review of AI-Powered Interventions for Learning Performance. Journal of Learning Analytics, 7(3), 1-22.

Borkowski, K., et al. (2021). Digital Literacy in Teacher Training: Bridging the Gap for AI Integration in Education. Journal of Digital Learning in Teacher Education, 37(1), 45-60.

Darling-Hammond, L., et al. (2017). Effective Teacher Professional Development. Palo Alto, CA: Stanford Center for Opportunity Policy in Education.

Darling-Hammond, L., Hyler, M. E., Gardner, M. (2017). Effective teacher professional development. Learning Policy Institute.

Darling-Hammond, L., Hyler, M. E., Gardner, M. (2017). Effective teacher professional development. Learning Policy Institute.

Dillenbourg, P. (2016). AI-Supported Collaborative Learning and Its Impact on Teacher Performance. Journal of Computer-Supported Collaborative Learning, 11(2), 119-143.

Ertmer, P. A., & Ottenbreit-Leftwich, A. T. (2010). Teacher technology change: How knowledge, confidence, beliefs, and culture intersect. Journal of Educational Computing Research, 43(3), 255-284.

Ertmer, P. A., & Ottenbreit-Leftwich, A. T. (2010). Teacher technology change: How knowledge, confidence, beliefs, and culture intersect. Journal of Educational Computing Research, 43(3), 255-284.

Fullan, M. (2016). The new meaning of educational change. Teachers College Press.

Fullan, M. (2016). The new meaning of educational change. Teachers College Press.

Harris, A., & Jones, M. (2020). School improvement: What is the research evidence? Routledge.

Harris, A., & Jones, M. (2020). School improvement: What is the research evidence? Routledge.

Heffernan, N., & Heffernan, C. (2019). AI-Powered Learning: Aligning Curriculum and Instructional Resources with AI Tools in K-12 Education. AI in Education Journal, 5(3), 95-112.

Heffernan, N., & Heffernan, C. (2019). The Impact of AI on Teacher Workload and Stress: A Study of Early AI Implementations in Schools. AI in Education Journal, 3(2), 95-108.

Hew, K. F., & Brush, T. (2017). Integrating Technology in K-12 Education: Teachers' Perceptions of Leadership Support and Their Innovation Attitudes. Journal of Educational Technology Research & Development, 65(4), 733–750.

Holmes, W., (2019). The Impact of Artificial Intelligence on Teachers' Pedagogical Practices and Performance. Journal of Educational Technology & Society, 22(2), 77–87.

Holmes, W., et al. (2019). AI in Education: The Importance of Teacher Training and Continuous Support. International Journal of AI in Education, 29(3), 567–587.

Holmes, W., et al. (2019). AI-Enhanced Classroom Management and Teacher Performance: A Study of AI Tools in Educational Settings. Journal of Educational Technology & Society, 22(2), 77–87.

Howard, S. K., & Mozejko, A. (2015). Teachers' Attitudes Towards Technology: The Influence of Confidence, Experience, and Professional Development. Educational Technology Research and Development, 63(2), 55-77.

Hwang, G. J., et al. (2020). Challenges and Strategies of Implementing Artificial Intelligence in Education: Perspectives from Teachers and Students. Computers & Education, 159, 104057.

Kessler, E. G., et al. (2023). Personalizing Professional Development for Teachers: Enhancing AI Integration in the Matatag Curriculum. Journal of Educational Computing Research, 61(1), 135-156.

Kong, S. (2022). Peer Collaboration and Teacher Networks in AI Integration: Enhancing Teacher Performance through Supportive Communities. International Journal of AI in Education, 31(1), 33–48.

Kumar, P., & Chandrasekaran, V. (2018). Cultural Attitudes Towards Technological Innovation and Teacher Readiness in Developing Nations. International Journal of Educational Technology Research, 13(2), 85-101.

Lee, J. (2020). Fostering Collaborative Learning for AI Integration in Education: A Case Study on Teacher Professional Development. Educational Technology Research and Development, 68(4), 1881-1904.

Luckin, R., et al. (2016). AI as a Pedagogical Assistant: Enhancing Teacher Performance through Automation and Analytics. International Journal of Artificial Intelligence in Education, 26(2), 169–182.

Luckin, R., et al. (2016). Intelligence Unleashed: An Argument for AI in Education. Pearson Education.

Mishra, P., & Koehler, M. J. (2021). Technological Pedagogical Content Knowledge (TPACK) Framework: Addressing Resource Gaps in AI-Driven Classrooms. Computers in Education Journal, 37(2), 115-130.

Popenici, S. A., & Kerr, S. (2017). Exploring the Impact of Artificial Intelligence on Teaching and Learning in Higher Education. Research and Practice in Technology Enhanced Learning, 12(22), 1-13.

Popenici, S., & Kerr, S. (2017). Exploring the Impact of Artificial Intelligence on Teaching and Learning in Higher Education. Research and Practice in Technology Enhanced Learning, 12(22), 1-13.

Redecker, C. (2017). European framework for the digital competence of educators: DigCompEdu. Publications Office of the European Union.

Redecker, C. (2017). European framework for the digital competence of educators: DigCompEdu. Publications Office of the European Union.

Selwyn, N. (2020). Artificial Intelligence in Education: A Systematic Review of Trends and Future Directions. Educational Review, 72(1), 1–18.

Selwyn, N. (2020). Digital Divide and AI in Education: Infrastructure Challenges and Resource Gaps. Education and Information Technologies, 25(3), 711–724.

Selwyn, N. (2020). Digital Divides and AI Integration in Education: The Challenges of Infrastructure and Access. Educational Review, 72(1), 1–18.

Selwyn, N. (2020). Education and Technology: Key Issues and Debates. Continuum.

Siemens, G., & Baker, R. S. (2020). Learning Analytics and AI in Education: Enhancing Teacher Decision Making and Performance. Journal of Learning Analytics, 7(3), 1-22.

Teo, T. (2016). Exploring Teachers' Technological Self-Efficacy in Education: The Role of Age and Experience. Computers & Education, 95, 145–159.

Williamson, B., & Eynon, R. (2020). AI, Big Data, and the Role of Technical Support in Education: Ethical and Practical Considerations. Learning, Media and Technology, 45(2), 1–18.

Williamson, B., & Eynon, R. (2020). Algorithms, Bias, and the Ethics of AI in Education. Learning, Media and Technology, 45(2), 1–18.

Williamson, B., & Eynon, R. (2020). Teacher Autonomy in an AI-Driven Classroom: Ethical Implications and Performance Outcomes. Journal of Learning, Media, and Technology, 45(2), 1–18.

Williamson, B., & Eynon, R. (2020). The Future of Teaching in an AI-Powered World: Challenges and Ethical Concerns. Journal of Learning, Media, and Technology, 45(2), 1–18.

Zawacki-Richter, O. (2019). Systematic Review of Research on Artificial Intelligence in Higher Education. International Journal of Educational Technology in Higher Education, 16(1), 39.

Zawacki-Richter, O., (2019). A Systematic Review of Research on AI in Education: Benefits, Challenges, and Teachers' Attitudes. Educational Technology Research & Development, 67(4), 63-80.

Zawacki-Richter, O., et al. (2019). Artificial Intelligence in Education: Teacher Competency and Support Mechanisms. Journal of Educational Technology in Higher Education, 16(1), 24-38.

Zawacki-Richter, O., et al. (2019). Artificial Intelligence in Education: Analyzing Teacher Competence and Preparedness. Journal of Educational Technology Research and Development, 67(4), 63-80.

Zawacki-Richter, O., et al. (2019). Professional Development and Support in the Era of AI-Powered Education. Journal of Educational Technology Research and Development, 67(4), 90-101.

Zawacki-Richter, O., et al. (2019). Systematic Review of Research on Artificial Intelligence in Education: Current Trends and Future Directions. International Journal of Educational Technology in Higher Education, 16(1), 1-27.

Zawacki-Richter, O., et al. (2019). The Role of Teachers in AI-Powered Education: Challenges and Opportunities for Professional Development. Educational Technology Research & Development, 67(4), 63-80.

Zhang, W., & Aslan, S. (2020). Professional Development and Teachers' Confidence in Using AI for Educational Innovation: A Mixed-Methods Study. Journal of Technology and Teacher Education, 28(2), 195–216.

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