

# EXPLORING THE POSSIBLE USE OF AI IN TEACHING MATHEMATICS: PERSPECTIVES FROM EDUCATORS

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## Abstract

PISA has recorded data that states that the Philippines is the sixth lowest country in the world in terms of the subject Mathematics. This current issue calls attention to focus on improving Filipino students' arithmetic skills. With technology being one of the most commonly used tools in teaching, this study investigated the possibility of using Artificial Intelligence (AI) to teach Mathematics. Through the earned perspectives from educators by employing a qualitative-phenomenological approach, the study underscores educators' perspectives on the possibility of using AI, tools that can be used to teach Mathematics, the challenges of incorporating AI, and its implications in the field. In line with these objectives, the study aims to emphasize the rise of technology - especially AI - which could lead to a major shift in mathematics education redefining how math is taught and learned in classrooms.

**Keywords:** Mathematics Education, Artificial Intelligence, Educators Perspectives.

## Introduction

Mathematics nurtures analytical and logical problem-solving skills, and AI now plays a growing role in education. Polak et al. (2022) found that AI uses the will-skill-tool model to develop resources that help educators integrate AI into classrooms, guiding teachers in supporting students struggling with math. Hwang and Tu (2021) highlighted AI's ability to address math challenges by diagnosing learning issues and offering personalized support, helping teachers provide tailored problems to enhance students' analytical thinking.

Artificial intelligence (AI) can potentially transform several industries, including mathematics education. AI offers innovative solutions in this field that can reshape how students learn, teachers teach, and how educational institutions function. A major benefit of AI in mathematics education is its ability to personalize learning. AI-powered platforms can evaluate individual students' strengths, weaknesses, learning preferences, and cognitive development, allowing for more customized learning experiences

and enhanced problem-solving tools (Owan et al., 2023; Jaiswal & Arun, 2021; Upadhyay & Khandelwal, 2019).

Educators' unfamiliarity with AI's applications can hinder its effective implementation in teaching. Limited knowledge and skills may lead to inconsistent use and difficulty integrating AI into lessons. Addressing this gap through tools and training can help educators efficiently incorporate AI in mathematics teaching (Wardat et al., 2024).

Teachers face challenges in using AI for lessons, particularly in math, where traditional methods dominate. This can hinder students' ability to apply AI effectively. Some students may rely on AI without proper understanding, leading to inaccuracies and misinformation in solving problems. These issues affect both students and teachers with limited AI experience, making AI integration a concern in classrooms (Wardat et al., 2024).

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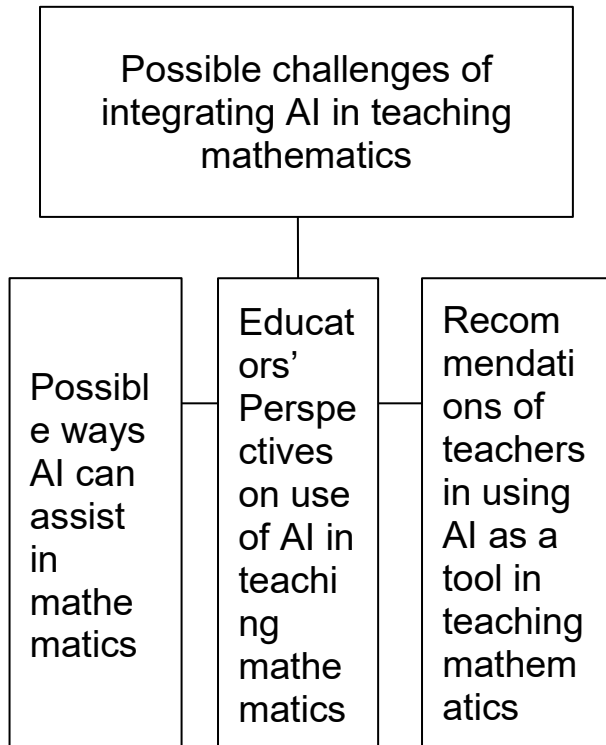
This study explored educators' perspectives on using AI in teaching mathematics, identifying its advantages, disadvantages, and challenges. It provided recommendations for effectively utilizing AI to support educators and enhance learning outcomes, aiming to understand its potential as a valuable resource in mathematics education.

The research is aligned with UNESCO's Sustainable Development Goal 4 (SDG 4). While it focused on inclusive education for all, including educators, AI could benefit educators by assisting with their lessons. According to UNESCO (2020), AI was one of the tools to support educators, and it highlighted the importance of using technology in lessons. That's why this study aimed to highlight the perspectives of educators on the possible use of AI in teaching mathematics.

### Conceptual Framework

The conceptual paradigm of this study focused on educators' perspectives on the possible use of AI in teaching mathematics and explored the three key areas: (1) possible ways AI can assist in mathematics, (2) the possible challenges of AI integration in teaching mathematics, and (3) the recommendations of teachers in using AI as tool in teaching mathematics.

**Figure 1: The Conceptual Paradigm of the Study**



### Statement of The Problem

This study aimed to investigate math teachers' perceptions of the possible use of artificial intelligence (AI) in teaching mathematics. It sought to answer the following questions:

### Central Question

How do educators perceive the potential use of AI to enhance mathematics education?

### Probing Questions

1. In what ways can AI possibly assist teachers in teaching Mathematics?
2. What could be the possible challenges of integrating AI in teaching Mathematics?
3. What are the recommendations of teachers for using AI as a tool in teaching mathematics?

### Scope and Delimitation

This study aimed to explore educators' views on the possible use of artificial intelligence (AI) in teaching mathematics. It focused on the potential ways AI can assist, possible challenges and recommendations of teachers in using AI as a teaching tool, gathering insights through interviews.

The key informants were mathematics teachers in the Basic Education Department of a Private University in Bulacan. The study took place during the first semester of School Year 2024-2025.

### Methodology

#### Methods and Techniques of The Study

The study employed a qualitative approach to explore and describe educators' perspectives on the potential use of AI in mathematics instruction. Qualitative research focuses on existence, experience, perspective, meaning, and subjectivity, offering a unique lens to examine and evaluate the complexities of social phenomena (Lim, 2024).

The researchers used this approach to investigate educators' perspectives on AI's potential in teaching mathematics. The study made use of a phenomenological approach. Phenomenology, rooted in Edmund Husserl's philosophy, examines how people make meaning of their lived experiences (Williams, 2021). The study used this approach to better understand educators' personal experiences and offer insights into how AI impacted their classroom work.

### Respondents of The Study

The key informants for this study were mathematics teachers. The researcher's target key informants were at least 5 mathematics teachers but the number may vary depending on the availability. The study

used a purposive sampling technique. According to Bisht (2024), Purposive sampling is a non-random technique that selects participants based on criteria relevant to the study. The researchers used this technique to select key informants with specific knowledge and experiences relevant to the research objectives. Therefore, the researchers came up with the following criteria: (1) The educator must be a mathematics teacher working with at least three years of experience, and (2) they must be familiar with the current use of artificial intelligence.

### **Instruments of The Study**

The research employed a structured interview. According to Gordon (2024), structured interviews follow a prepared set of questions and evaluation criteria, conducted using a standard procedure. The researchers made use of structured interviews to collect clear responses from the educators. The key informants were asked the same questions to ensure consistency and comparability in their answers. This approach made it easier to compare their views on the potential use of AI in teaching mathematics while keeping the focus fair and aligned with the study's goals.

The following procedures below are specifically written to evaluate and assess the subjects fairly and consistently;

- The researchers searched for mathematics teachers in a private school in Bulacan and invited them for an Interview.
- The researchers prepared the interview questionnaire and got it validated by the experts to ensure the questions were clear.
- The researchers began by introducing themselves and the research topic and then proceeded to interview the key informants about their experiences, and their take on the possible integration of AI in teaching Mathematics. Each Interview lasted for approximately 30 minutes.
- The researchers documented every piece of information that the key informants provided.
- After the interview, the researchers expressed their gratitude to the key informants for participating.

The study underwent a validation process. This process consists of three experts: the first expert is currently a part time professor of a state university in Bulacan with a degree of Masters in Computer Assisted Instruction, the second and third experts are currently academic completers of Masters of Arts in Education Major in Mathematics.

### **Data Gathering Procedure**

The objective of this study was to explore the potential use of AI in education and understand educators' perspectives on its role in teaching mathematics. The following procedures were used to gather data:

Reviewing. Analysis of the research paper was conducted before selecting key informants for the study.

Selecting key informants. The researchers used purposive sampling, selecting key informants who were educators from a private school in Bulacan.

Qualitative Method Selection. The researchers gathered data through interviews to ensure active participation and mutual understanding.

Utilizes Open-ended Questions. The researchers used open-ended questions to let key informants share their thoughts and experiences on AI in mathematics education.

Key Informants Consent Form. The researchers asked for permission and informed the interviewees about the process to maintain trust and respect.

Analysis of Data Collected. The researchers used thematic analysis to analyze the collected data.

### **Data Processing & Statistical Treatment of Data**

The researchers used thematic analysis to analyze the data collected in this study. Thematic analysis is a tool for qualitative research, used to identify, and analyze, patterns within data (Majumdar, 2022, as cited in Braun & Clarke, 2006). This method was useful for qualitative studies, offering a structured approach to identifying themes and insights for a comprehensive understanding of the data. The researchers used Colaizzi's Phenomenological Method. Praveena (2021) states that Colaizzi's method includes seven steps, such as reading interview transcripts, formulating and organizing meanings, and creating an exhaustive description. Using Colaizzi's method, the researchers systematically organized the data, providing a clear framework for detailed analysis.

### **Ethical Consideration(s)**

The following ethical considerations were implemented to ensure the safety in conducting the research.

1. The study explored educators' perspectives on integrating AI in teaching mathematics, emphasizing the importance of their insights. Key informants were clearly informed of the study's purpose to ensure meaningful contributions.

2. Key informants were selected based on their experience in teaching mathematics and familiarity with AI.

3. The study identified potential risks, like emotional discomfort, and implemented measures to support key informants.

4. The researchers informed the key informants about the benefits of their involvement, including contributions to understanding AI in mathematics education.

5. The study did not involve animals but was committed to ethical standards by respecting animal welfare guidelines.

6. All data was kept confidential, and key informant's identities remained anonymous in published materials.

7. Informed consent was obtained before recording interviews, explaining the recordings' purpose and use.

8. Permission was asked to use standardized instruments for data collection, ensuring necessary approvals were obtained.

9. Key informants can depart from the study at any time without explanation.

10. Key informants can refuse to answer sensitive questions, building a respectful research environment.

11. The researchers informed the key informants about the study's findings and their contributions' impact.

12. The researchers encouraged the key informants to ask questions, ensuring they felt comfortable and informed.

13. The researchers implemented appropriate procedures to ensure the proper safekeeping and disposal of collected data to comply with data protection regulations.

14. Any potential conflicts of interest were disclosed and addressed to maintain research integrity and transparency.

The paper was submitted for review to the ethics committee of a private university in Bulacan.

## Results and Discussion

The analysis identified three key themes regarding the potential use of AI in teaching mathematics from the perspective of educators.

(1) AI can help reduce teachers' administrative workload, and simplify complex concepts;

(2) teachers may face application challenges;

(3) AI should only serve as a supplementary tool rather than replacing teachers.

**Central Question:** How do educators perceive the potential of AI to enhance mathematics education?

**SOP 1:** In what ways can AI possibly assist teachers in teaching Mathematics?

**Emergent Theme 1: On ways how AI can assist teachers in teaching Mathematics**

| Meaning Units                                                                                                                                   | Condensed Meaning Units                                                                                                                                                                                                                    | Sub Theme                                                                                                                                                  | Theme                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <i>"AI can create engaging, interactive learning experiences through simulations and gamified math problems, enhancing student motivation."</i> | Teachers can implement new learning methods with the use of AI. They can prompt AI to create interactive activities such as simulations or gamification of activities to make it more fun and less complex for the students to learn math. | AI helps teachers to be innovative in their teaching strategies, creating new learning methods and interactive educational experiences for their students. | AI can help teachers reduce administrative tasks, simplify concepts, and make learning more interactive, engaging, and personalized. |
| <i>"It can benefit on how to adapt on new learning platforms such as interactive simulations, gamification and alike"</i>                       |                                                                                                                                                                                                                                            |                                                                                                                                                            |                                                                                                                                      |
| <i>"AI can make math more fun by creating games that engage students while helping them learn"</i>                                              |                                                                                                                                                                                                                                            |                                                                                                                                                            |                                                                                                                                      |

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <i>“Reduces the administrative tasks for teachers, and gives students personalized learning experiences.”</i>                                             | AI helps reduce teachers' workload by assisting with administrative tasks like lesson planning, suggesting resources, and generating worksheet assessments. With the extended assistance of AI, teachers can focus more on their students. | AI can assist teachers in creating lesson plans and act as one source of information due to its nature of being an engine that can help provide answers by only using prompts. |  |
| <i>“AI can assist teachers in planning lessons by suggesting resources, activities, and problem sets aligned with curriculum standards.”</i>              |                                                                                                                                                                                                                                            |                                                                                                                                                                                |  |
| <i>“AI helps teachers generate worksheets and practice tests and it suggests ways to sequence lessons to build on prior knowledge more effectively. “</i> |                                                                                                                                                                                                                                            |                                                                                                                                                                                |  |
| <i>“AI helps by using visuals to make math concepts easier to understand and supports students with help outside of class.”</i>                           | AI can visualize complex data, turning it into an easier concept which can help students to understand math easier.                                                                                                                        | AI can help students visualize complex ideas and simplify assessments to aid teachers in making students understand concepts easily.                                           |  |
| <i>“Visualizing complex data and analyzing data.”</i>                                                                                                     |                                                                                                                                                                                                                                            |                                                                                                                                                                                |  |
| <i>“It helps by simplifying assessment and student grasp challenging concepts more effectively.”</i>                                                      | AI can help by simplifying assessments and enabling students to comprehend challenging concepts.                                                                                                                                           |                                                                                                                                                                                |  |

The table presents the ideas gathered from the key informants: (1) Teachers can implement an innovative way of teaching; (2) AI's assistance helps teachers save time on administrative tasks, freeing them up to focus on teaching; (3) AI can turn complex data, into an easier concept. Their responses support how AI-powered tools revolutionize teaching and learning.

This study aligns with the findings of Lawrence et al. (2023), that artificial intelligence (AI) can enhance teachers' capabilities by sharing control over different parts of learning activities, particularly in complex scenarios like dynamic learning transitions. With AI's assistance, teachers can share their tasks with AI, reducing their workload.

Although AI can provide benefits to teachers in many ways such as reducing their workload with AI's collaboration, it is still open to accuracy concerns.

According to Lowe (2024), AI's potential biases and errors can undermine academic integrity and student learning outcomes. In addressing these concerns, it would require rigorous testing, evaluation, and human oversight of AI-powered educational tools.

## **SOP 2: What could be the possible challenges of integrating AI in teaching Mathematics?**

### **Emergent Theme #2 Possible Challenges of AI integration in teaching mathematics.**

| Meaning Units                                                                                                                                                                             | Condensed Meaning Units                                                                                                                                                                                                                             | Sub Theme                                                                                                                                       | Theme                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>eachers need to have a significant experience or knowledge when it comes to AI to be able to fully maximize/utilize the potential of AI and for integrating it in their teaching.”</i> | Teachers may find it challenging to incorporate AI in teaching Mathematics if they do not have experience or knowledge of how AI works. One factor to this could be the generation difference among Mathematics teachers.                           | Familiarity with using AI plays a big role in how it can be used effectively among Mathematics teachers.                                        | Teachers may encounter problems such as unfamiliarity of use, overreliance, data privacy risks, practical problems in using AI, and inaccuracy of the information provided. |
| <i>“Some teachers may not be familiar with how to integrate AI into their teaching practices effectively.”</i>                                                                            |                                                                                                                                                                                                                                                     |                                                                                                                                                 |                                                                                                                                                                             |
| <i>“Additionally, some teachers are not familiar with AI due to generational or age differences.”</i>                                                                                     |                                                                                                                                                                                                                                                     |                                                                                                                                                 |                                                                                                                                                                             |
| <i>“There were several things to be seen as possible challenges, I named some like overreliance on technology use, technical expertise, and accessibility.”</i>                           | One significant concern is the over-reliance on technology. Both teachers and students may develop an excessive dependence on AI, which could lead to a neglect of traditional learning methods and critical skills essential for academic success. | The possible use of AI could lead to overreliance among teachers and students.                                                                  |                                                                                                                                                                             |
| <i>“Teachers and students can become overly reliant on AI.”</i>                                                                                                                           |                                                                                                                                                                                                                                                     |                                                                                                                                                 |                                                                                                                                                                             |
| <i>“Students may lose out on critical thinking skills if they rely too heavily on AI to solve problems or provide answers.”</i>                                                           |                                                                                                                                                                                                                                                     |                                                                                                                                                 |                                                                                                                                                                             |
| <i>“Since AI systems frequently gather and examine student data, privacy, and data security are also issues.”</i>                                                                         | AI systems in education raise privacy and data security concerns due to the collection and analysis of student data. Schools must follow data protection policies that will clearly outline the                                                     | The possible use of AI could pose data privacy risks due to its nature of collecting data. Schools must have policies that can help protect and |                                                                                                                                                                             |
| <i>“Schools must make sure they adhere to data protection</i>                                                                                                                             |                                                                                                                                                                                                                                                     |                                                                                                                                                 |                                                                                                                                                                             |

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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <i>regulations and safeguard the private information of their students.”</i>                                                                                                        | guidelines that teachers should follow in the the possibility of incorporating IA in teaching Mathematics.                                                                                                                                                                      | guide teachers and students.                                                                                                                              |  |
| <i>“Additionally, AI is dependent on internet access, which can be an obstacle, especially in areas with limited connectivity.”</i>                                                 | AI in mathematics education faces practical challenges, especially in remote environments. Limited internet access, a lack of necessary devices, and poor technology infrastructure can hinder the effective use and accessibility of AI tools for both students and educators. | Incorporating AI will require devices and internet usage that teachers and students in remote environments or without capability will not have access to. |  |
| <i>“Another challenge is the lack of necessary devices; not all students have access to the technology required to use AI tools effectively.”</i>                                   |                                                                                                                                                                                                                                                                                 |                                                                                                                                                           |  |
| <i>“It’s possible that it will generate incorrect answers just like what I experienced in the past.”</i>                                                                            | AI can generate inaccurate responses as it relies solely on algorithms and information provided by the users. If the provided data is incomplete or incorrect, the AI’s output will likely reflect these flaws.                                                                 | AI does not always give accurate information, therefore teachers should be responsible for ensuring the accuracy of how it will be used in teaching.      |  |
| <i>“The different symbols, greek letters, natural numbers, subscripts, superscripts, figures, illustration, etc.”<br/>“Maybe the possible challenge is the improper use of AI.”</i> |                                                                                                                                                                                                                                                                                 |                                                                                                                                                           |  |

The figure shows the possible challenges in integrating AI in teaching mathematics. Based on the collected data, the key informants of the study encounter some challenges in integrating AI in teaching mathematics such as

- (1) AI requires knowledge in the proper application;
- (2) overreliance on AI could neglect traditional teaching methods;
- (3) privacy and data security issues regarding in data collection;
- (4) technological requirements in using AI;
- (5) inaccurate responses of AI.

The study identifies similar challenges to those found in Celik (2022). Effective AI integration in education requires teachers to have specific technological and pedagogical knowledge related to AI. Additionally, with new ethical issues emerging from AI use, teachers must be aware of the proper application of AI to adapt it effectively in their teaching performances.

On the other hand, the study of Zhai et al. (2024) emphasizes that over-reliance on AI, where users uncritically accept AI-generated recommendations, can lead to errors in decision-making. This issue is often due to difficulties in assessing AI’s reliability or knowing how much trust to place in its suggestions. Over-reliance on AI, leads to challenges in enhancing productivity and effectiveness among teachers and students. The researchers found that over-reliance on AI can affect traditional learning and teaching skills such as problem-solving skills.

This aligns with the study of Huang (2023), who observes that the widespread use of AI in education has raised significant public concern about AI ethics. The protection of student data privacy has become an urgent issue that needs to be addressed.

### **SOP 3: What are the recommendations of teachers for using AI as a tool in teaching mathematics?**

#### **Emergent Theme #3 Recommendations of teachers in using AI as a tool in teaching mathematics**

| Meaning Units                                                                                                                                                                                                                                                                                                                                                                                                             | Condensed Meaning Units                                                                                                                                                                 | Sub Theme                                                                                                                                                                                | Theme                                                                                                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>“I recommend using AI to supplement, not replace, traditional teaching and ensuring all students have access to the necessary technology. I also suggest balancing AI with traditional methods to provide a well-rounded learning experience.”</i>                                                                                                                                                                     | The use of AI can be recommended but this should not replace traditional practices instead, it should balance with the current teaching practices.                                      | AI should only be used as a supplementary material in teaching by balancing its use with traditional practices to cater to a holistic teaching and learning experience for the students. | Traditional teaching should be the primary focus, with AI serving only as a supplementary tool and it should not take the place of the teachers. |
| <i>“Rather than taking the place of traditional methods of instruction, AI should be utilized to enhance them.”</i>                                                                                                                                                                                                                                                                                                       | AI can be recommended as a tool to enhance methods of instruction, but not everything should be relied on.                                                                              |                                                                                                                                                                                          |                                                                                                                                                  |
| <i>“It can be a guide in solving math problems, but do not rely too much on it.”</i>                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                         |                                                                                                                                                                                          |                                                                                                                                                  |
| <i>“I believe that it's essential that teachers abide by a few basic guidelines when utilizing AI as a teaching tool for mathematics to make sure that the learning process is improved.”</i>                                                                                                                                                                                                                             | AI can be recommended if there are guidelines that teachers can follow to improve teaching practices especially today that AI can no longer be ignored.                                 | The use of AI among teachers should be guided through a policy to ensure that it is used with the purpose of improving learning by balancing teaching practices.                         |                                                                                                                                                  |
| <i>“As teachers, we must use AI responsibly”</i>                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                         |                                                                                                                                                                                          |                                                                                                                                                  |
| <i>“To use AI as a helping tool and not as a replacement in actual learning. We cannot neglect its existence in today's era.”</i>                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                         |                                                                                                                                                                                          |                                                                                                                                                  |
| <i>“AI should not take the place of teachers' essential human interaction and emotional support, even though it can offer individualized instruction, additional practice, and automate tasks like grading.”</i>                                                                                                                                                                                                          | While in the age of using AI, it is still a responsibility among teachers for students to experience interactions while encouraging self-directed learning through AI.                  |                                                                                                                                                                                          |                                                                                                                                                  |
| <i>“Teachers still need to be actively involved in helping and inspiring students, even if AI can be a fantastic tool. Teachers should, however, make sure that technology and personal interaction are balanced. Although AI can offer helpful feedback, it cannot take the place of teachers' guidance, support, and social-emotional bonds. It's critical to keep interacting with learners and providing advice.”</i> | While the use of AI in teaching mathematics is recommended, within the classroom, interactions and engagements should be maintained in order to provide proper guidance among students. | AI should be used as a tool to give feedback while maintaining proper interaction between teachers and students.                                                                         |                                                                                                                                                  |
| <i>“Teachers should assess the effectiveness of the AI they use. Effective use of AI requires understanding their strengths, limitations, and best practices.”</i>                                                                                                                                                                                                                                                        | Teachers are recommended to assess the AI tools that they use. While it can be recommended as a                                                                                         | AI should also be assessed depending on how it was used in order to understand its                                                                                                       |                                                                                                                                                  |

|                                                                                                                                             |                                                                                                                                                  |                                                                                  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|--|
| <i>“Avoid using AI-generated questions for exams without thoroughly checking them for quality and correctness”.</i>                         | supplementary tool in teaching, AI cannot be recommended as a tool for creating questions in examinations especially if the use is unsupervised. | strengths and weaknesses to provide the best practices in teaching and learning. |  |
| <i>“When utilizing AI for lesson planning or creating materials, always review and refine the output to ensure accuracy and relevance.”</i> | In using AI, teachers should also be responsible for double-checking details to ensure that the materials are accurate.                          |                                                                                  |  |

The figure interprets the responses given by the key informants, here are some of the recommendations:

- (1) AI should be used as supplementary tool;
- (2) Teachers should have guidelines with the use of AI;
- (3) AI should give feedback while keeping teacher-student interaction strong;
- (4) AI should be evaluated based on its use to identify strengths and weaknesses, supporting best practices in teaching and learning.

This corresponds with the results of Chan and Tsi (2024), which suggest AI in higher education should enhance rather than replace human teachers. The study revealed that there are some factors that AI can not replace such as critical thinking and emotional intelligence. The authors argue for a balanced use of AI, emphasizing its role as a supportive tool.

The findings also relate to Chounta et al. (2021), who emphasize the need for support in helping teachers effectively integrate AI into their practice, as many teachers lack sufficient knowledge of how AI can assist them.

Based on the insights gathered from the teachers, shows that AI in math education shows implications across multiple areas. It has the potential to take part in the administrative tasks of the teachers. Generating learning materials, worksheets, and powerpoint presentations, and providing feedback about a student’s performance.

### Theoretical and Practical Implications of The Study

The results of this study align with the Technology Acceptance Model (TAM) Theory by Chen et al. (2020), showing that perceived usefulness influences the utilization of AI tools in mathematics education. These factors enable educators to create interactive simulations and integrate AI-driven tools, enhancing active teaching and improving student learning experiences.

In the advancement of artificial intelligence (AI), the researchers proposed some suggested activities to address the issues. One suggestion is having an activity to use AI in making worksheets. For teachers, this activity will help them save time, instead of doing the worksheets manually, AI can auto-generate powerpoint presentations, and games for their lessons, so that the teachers can focus more on their teaching skills.

With the rising popularity of AI in teaching, the researchers proposed Project-Based Learning as an activity that benefits both teachers and students. Integrating AI into PBL allows students to work on personalized, data-driven projects, while teachers can use AI to provide feedback, track progress, and customize resources.

### Limitation of The Study

This study is limited to mathematics teachers within the premises of a Private University in Bulacan only. The conclusion and recommendations of the study may not be applicable to other teachers from other schools. However, the results may provide additional insights about the potential use of AI in teaching mathematics.

### Conclusion

1. AI can assist teachers by aiding in the implementation of innovative strategies and providing personalized learning experiences, to lessen administrative work while simplifying complex mathematics concepts by engaging students in active learning environments.
2. Incorporating AI in teaching Mathematics among educators poses challenges such as unfamiliarity with AI applications and their use, over-reliance on AI, potentially providing inaccurate information, and data privacy concerns.
3. In line with the possibility of utilizing AI, teachers recommend that AI tools be evaluated by identifying their strengths and weaknesses. AI should only be a supplementary material or resource to

balance the traditional teaching methods. Over-reliance on AI is not recommended in order to keep a strong teacher-student interaction in the classroom.

### Recommendations

1. It is encouraged that teachers utilize AI to create innovative learning strategies that students do not usually experience in the traditional classroom. Teachers are also encouraged to use AI to lessen administrative work with the assurance that the quality of administrative work is not compromised.
2. Teachers should be educated on how to effectively implement AI tools in their teaching and also on how to critically evaluate the information generated by AI, ensuring accuracy, relevance, and ethical considerations, to foster responsible and effective integration of AI into their teaching practices.
3. It is advised for teachers to regularly evaluate AI tools to identify their capabilities and limitations before integrating them into their teaching practice, allowing teachers to maximize their use. It should be utilized as a supportive tool rather than a replacement, maintaining better connections between teachers and students.
4. Future researchers are advised to further explore the potential integration of AI, not only within mathematics education but also across a wide range of subjects, to better understand its broader impact on teaching and learning.

### Conflict of Interest

There is no conflict of interest between the authors in this manuscript. Results have been deduced objectively; nothing influenced this result by any individual, monetary, or institutional interests. In effect, utmost endeavors were in order to conduct a bias-free operation of gathering and analyzing the data into interpretation and producing a study based on merit, away from research inconsistencies.

### References

1. Bisht, R. (2024, July 14). What is Purposive Sampling? Methods, Techniques, and Examples Researcher. Life. [https://researcher.life/blog/article/what-is-purposive-sampling-methods-techniques-and-examples/](https://researcher.life/blog/article/what-is-purposive-sampling-methods-techniques-and-examples/)
2. Celik, I. (2022). Towards Intelligent-TPACK: An empirical study on teachers' professional knowledge to ethically integrate artificial intelligence (AI)-based tools into education. *Computers in Human Behavior*, 138, 107468. <https://doi.org/10.1016/j.chb.2022.107468>
3. Chan, C. K. Y., & Tsi, L. H. (2024). Will generative AI replace teachers in higher education? A study of teacher and student perceptions. *Studies in Educational Evaluation*, 83, 101395. <https://doi.org/10.1016/j.stueduc.2024.101395>
4. Chen, X., Xie, H., Zou, D., & Hwang, G. (2020). Application and theory gaps during the rise of Artificial Intelligence in Education. <https://www.semanticscholar.org/paper/Application-and-theory-gaps-during-the-rise-of-in-Chen-Xie/5434e470c21cde0af431202846c8c6d5d453b4ca>
5. Chiu, T. K., Moorhouse, B. L., Chai, C. S., & Ismailov, M. (2023). Teacher support and student motivation to learn with Artificial Intelligence (AI) based chatbot. *Interactive Learning Environments*, 1–17. <https://doi.org/10.1080/10494820.2023.2172044>
6. Chounta, I., Bardone, E., Raudsep, A., & Pedaste, M. (2021). Exploring Teachers' Perceptions of Artificial Intelligence as a Tool to Support their Practice in Estonian K-12 Education. *International Journal of Artificial Intelligence in Education*, 32(3), 725–755. <https://doi.org/10.1007/s40593-021-00243-5>
7. Gordon, C. (2024, August 21). Structured Interviews: definition, benefits, challenges & examples. Recruiters LineUp. [https://www.recruiterslineup.com/structured-interviews-definition-benefits-challenges-examples/](https://www.recruiterslineup.com/structured-interviews-definition-benefits-challenges-examples/)
8. Huang, L. (2023b). Ethics of Artificial intelligence in Education: Student privacy and data protection. *Science Insights Education Frontiers*, 16(2), 2577–2587. <https://doi.org/10.15354/sief.23.re202>
9. Hwang, G., & Tu, Y. (2021). Roles and Research Trends of Artificial Intelligence in Mathematics Education: A Bibliometric mapping analysis and Systematic review. *Mathematics*, 9(6), 584. <https://doi.org/10.3390/math9060584>
10. Jaiswal, A., & Arun, C. J. (2021). Potential of artificial intelligence for transformation of the education system in India. *International Journal of Education and Development Using Information and Communication Technology*, 17(1), 142–158. [http://files.eric.ed.gov/fulltext/EJ1285526.pdf](http://files.eric.ed.gov/fulltext/EJ1285526.pdf)

11. KR, N. P., & S, N. S. (2021). Application of Colaizzi's method of data analysis in phenomenological research. *Medico-Legal Update*, 21(2), 914–918. <https://doi.org/10.37506/mlu.v21i2.2800>
12. Lawrence, L., Echeverria, V., Yang, K., Aleven, V., & Rummel, N. (2023). How teachers conceptualize shared control with an AI co-orchestration tool: A multiyear teacher-centred design process. *British Journal of Educational Technology*, 55(3), 823–844. <https://doi.org/10.1111/bjet.13372>
13. Lim, W. M. (2024). What is qualitative research? An overview and guidelines. *Australasian Marketing Journal (AMJ)*. <https://doi.org/10.1177/14413582241264619>
14. Lowe, M. (2024). The more things change: the ethical impacts of artificial intelligence in higher education. [\[https://eric.ed.gov/?q=AI+can+help+by+simplifying+assessments+and+enabling+students+to+comprehend+challenging+concepts.&id=EJ1435770\]](https://eric.ed.gov/?q=AI+can+help+by+simplifying+assessments+and+enabling+students+to+comprehend+challenging+concepts.&id=EJ1435770)(<https://eric.ed.gov/?q=AI+can+help+by+simplifying+assessments+and+enabling+students+to+comprehend+challenging+concepts.&id=EJ1435770>)
15. Maghsudi, S., Lan, A., Xu, J., & van der Schaar, M. (2021). Personalized Education in the Artificial Intelligence Era: What to Expect Next. *IEEE Signal Processing Magazine*, 38(3), 37-50. <https://doi.org/10.1109/MSP.2021.3055032>
16. Majumdar, A. (2021). Thematic analysis in qualitative research. In *IGI Global eBooks* (pp. 604–622). <https://doi.org/10.4018/978-1-6684-3881-7.ch031>
17. Opesemowo, O. A. G., & Ndlovu, M. (2024). Artificial intelligence in mathematics education: The good, the bad, and the ugly. *Journal of Pedagogical Research*. <https://doi.org/10.33902/jpr.202426428>
18. Owan, V. J., Abang, K. B., Idika, D. O., Etta, E. O., & Bassey, B. A. (2023). Exploring the potential of artificial intelligence tools in educational measurement and assessment. *Eurasia Journal of Mathematics, Science and Technology Education*, 19(8), em2307. <https://doi.org/10.29333/ejmste/13428>
19. Pedro, F., Subosa, M., Rivas, A., & Valverde, P. (2019). Artificial intelligence in education: challenges and opportunities for sustainable development. MINISTERIO DE EDUCACIÓN. [\[http://repositorio.minedu.gob.pe/handle/20.500.12799/6533\]](http://repositorio.minedu.gob.pe/handle/20.500.12799/6533)(<http://repositorio.minedu.gob.pe/handle/20.500.12799/6533>)
20. Polak, S., Schiavo, G., & Zancanaro, M. (2022, April). Teachers' Perspective on Artificial Intelligence Education: an Initial Investigation. In *CHI Conference on Human Factors in Computing Systems Extended Abstracts (1–7)*. <https://doi.org/10.1145/3491101.3519866>
21. S. Maghsudi, A. Lan, J. Xu and M. van der Schaar (2021). Personalized Education in the Artificial Intelligence Era: What to Expect Next. *IEEE Signal Processing Magazine*, 38(3), 37-50. doi: 10.1109/MSP.2021.3055032
22. UNESCO Physical Document. (n.d.). UNESCO. [\[https://unesdoc.unesco.org/ark:/48223/pf0000371417\]](https://unesdoc.unesco.org/ark:/48223/pf0000371417)(<https://unesdoc.unesco.org/ark:/48223/pf0000371417>)
23. Upadhyay, A. K. & Khandelwal, K. (2019). Artificial intelligence-based training learning from application. *Development and Learning in Organisations*, 33(2), 20-23. <https://doi.org/10.1108/DLO-05-2018-0058>
24. Wardat, Y., Tashtoush, M. A., AlAli, R., & Jarrah, A. M. (2023). ChatGPT: A revolutionary tool for teaching and learning mathematics. *Eurasia Journal of Mathematics Science and Technology Education*, 19(7), em2286. <https://doi.org/10.29333/ejmste/13272>
25. Williams, H. (n.d.). The meaning of "Phenomenology": qualitative and philosophical phenomenological research methods. NSUWorks. [\[https://nsuworks.nova.edu/tqr/vol26/iss2/4\]](https://nsuworks.nova.edu/tqr/vol26/iss2/4)
26. Zhai, C., Wibowo, S., & Li, L. D. (2024). The effects of over-reliance on AI dialogue systems on students' cognitive abilities: a systematic review. *Smart Learning Environments*, 11(1).