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Junior High School Mathematics Teachers' Practices and Perceptions of Artificial Intelligence Implementation in Buleleng Regency

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ABSTRACT : This study aims to describe the profile of junior high school mathematics teachers in Buleleng Regency regarding the implementation of artificial intelligence (AI) in mathematics learning. The research employed a descriptive exploratory survey design with a qualitative approach. Data were collected through open-ended questionnaires to explore teachers' perceptions, followed by focused interviews to obtain deeper insights. The findings indicate that overall AI adoption among mathematics teachers remains low, although a small number of teachers have begun to integrate AI into their teaching and learning practices. The types of AI used vary, ranging from general design tools to mathematics-specific applications, while the use of large language models remains limited. Teachers who have not adopted AI cite reasons such as lack of perceived need, limited exposure, insufficient information, and uncertainty about its effectiveness. Teachers who have used AI primarily apply it to develop teaching materials and assessments. Most teachers allow students to use AI, provided that its use supports evaluative and reflective learning. Teachers who have adopted AI report benefits related to efficiency, instructional variety, and personalization of learning materials. These findings highlight varying levels of acceptance and readiness among teachers in integrating AI into mathematics education

KEYWORDS: *Artificial intelligence, mathematics learning, teacher perception, teacher profile, junior high school*

I. INTRODUCTION

This study is motivated by findings from previous research that raise critical concerns regarding the implementation of Artificial Intelligence (AI) in education and learning. García-Martínez et al [1] highlight that the use of AI in learning involves significant design and ethical challenges. Mohammed [2] expresses concerns about the implications of AI for human interaction, children's privacy, and the role of educators in fostering holistic development. Pack and Maloney [3] emphasize the potential for bias in AI algorithms and the need for adequate teacher preparation and support. Similarly, Dea and O'Dea [4] point out the lack of strong empirical evidence regarding the pedagogical impact of AI on learning outcomes. In addition, interviews conducted by the authors with representatives of the Mathematics Teachers' Association (MGMP) of Buleleng Regency on March 19, 2024 revealed teachers' concerns about the impact of AI, particularly the ease with which students can complete assignments and solve complex mathematics problems simply by copying responses generated by AI. At the same time, there is currently no validated and empirically tested AI-based instructional model specifically designed for mathematics learning.

Nevertheless, it cannot be denied that AI plays an increasingly influential role in contemporary educational discourse. Several studies report positive outcomes. Diguzel [5] found that AI enhances learning outcomes, productivity, and student engagement, while also opening new opportunities for more individualized and self-directed learning. Su [6] reported that the application of AI in problem-based learning can improve students' cognitive skills and logical reasoning, and that students demonstrate positive thinking dispositions when applying new knowledge to problem-solving tasks.

A search of research articles in the ERIC database (https://eric.ed.gov/?q=Ai+based+teaching+and+learning+mathematics&ft=on&pg=4) using the keyword "AI based teaching and learning mathematics" retrieved 12,296 articles published over the past five years, including 2,570 in 2023 and 406 in 2025. However, only seven research articles explicitly included the term "mathematics," and only three specifically discussed AI. This indicates that research on the implementation of AI in mathematics education is still very new and requires further investigation. Meng-Leong How and Wei Loong David Hung [7] stated that STEAM teachers

can develop students' AI thinking skills through group discussions, subsequently inviting each group to share human-centered reasoning with the support of AI alongside the teacher and the entire class. Mohamed Zulhilmi bin Mohamed et al [8] in a literature review, concluded that AI use in mathematics learning offers several benefits, including promoting students' critical thinking and responsibility in addressing everyday solutions, as well as enhancing understanding of fundamental problems in geometry, mathematics, and statistics.

Given these contrasting perspectives, it is necessary to examine the context of teachers, particularly junior high school mathematics teachers in Buleleng Regency, with respect to their perceptions and performance profiles in implementing AI in mathematics learning. Accordingly, this study is entitled "Junior High School Mathematics Teachers' Practices and Perceptions of Artificial Intelligence Implementation in Buleleng Regency.The research questions are as follows: (1) How do junior high school mathematics teachers in Buleleng Regency perceive the implementation of AI in learning? and (2) What is the performance profile of junior high school mathematics teachers in Buleleng Regency in implementing AI in mathematics learning? The urgency of this study lies in addressing the critical issues identified above by providing an empirical overview of teachers' perceptions and profiles in the use of AI in mathematics learning. Such insights are expected to inform recommendations for the development of appropriate and context-sensitive AI-based learning models that align with the needs of both teachers and students.

II.   RESEARCH METHOD

2.1 Type and Design of the Study
This study is a descriptive exploratory survey with a qualitative approach, aimed at describing the perceptions and competencies of mathematics teachers in implementing AI in mathematics learning. In this study, the researcher serves as the primary instrument [9]

2.2 Research Subjects
The subjects of this study were 30 teachers who are members of the Mathematics Teachers' Association (MGMP) in Buleleng Regency, spread across 9 sub-districts. The MGMP has 190 active members and operates in public junior high schools (SMP) with its leadership structure determined by the Decree of the Head of the Buleleng Regency Education and Sports Office Number 800/10415/GTK SMP/XII/2021. The distribution of MGMP Mathematics teachers across the sub-districts is as follows: Banjar (19), Buleleng (62), Busungbiu (11), Gerokgak (20), Kubutambahan (21), Sawan (17), Seririt (19), Sukasada (5), and Tejakula (16). Teacher distribution by age is: (1) 32% under 30 years old, (2) 23% aged 30–<40 years, (3) 14% aged 40–<50 years, and (4) 32% aged 50–<60 years.

2.3 Data Collection Methods
Two data collection methods were applied: (a) open-ended questionnaires to measure teachers' perceptions, followed by (b) focused interviews to explore teachers' performance profiles in implementing AI in learning [9]

2.4 Data Analysis
The collected data were analyzed in three stages following the interactive model of qualitative data analysis: data reduction, data display, and conclusion drawing [10].

2.5 Data Reduction
Data reduction involves summarizing and simplifying the collected data to identify patterns, themes, and key categories from complex information [10]. The reduction process includes: (a) Reading and reviewing the data repeatedly to understand its meaning, (b) Making field notes by recording ideas, thoughts, and observations during the review, (c) Coding the data by assigning labels or categories to important parts, (d) Creating theme or categories by grouping data with similar characteristics and (e) Developing a matrix by arranging data in tables to observe patterns and relationships among categories.

2.6 Data Presentation
Data presentation is the process of communicating research findings clearly and concisely. The reduced data are presented in ways that are easy to understand, using textual descriptions, tables, graphs, or visual aids such as photos or videos.

2.7. Conclusion Drawing
Conclusion drawing involves interpreting research findings and deriving meaning from the data.
Conclusions are based on the reduced and presented data and include: (a) Formulating concise research findings, (b) Explaining the meaning and implications of the findings, (c) Relating findings to existing theory or concepts in the literature; and (d) Recommending directions for future.

III.   RESEARCH RESULTS AND DISCUSSION

3.1 Research Results
3.1.1   Current Practices and Experiences of Teachers in Using Artificial Intelligence in Schools
The data indicate that 31.03% (9 teachers) have already used AI in mathematics instruction, while the remaining 68.97% (20 teachers) have not yet used AI. Among the teachers who reported using AI, the most

frequently used tools were Canva, ChatGPT, Gemini AI, Microsoft Copilot, GeoGebra, and Excel. The reported uses of AI included: (a) developing teaching modules (4 teachers), (b) creating supplementary mathematics learning materials (3 teachers), and (c) developing mathematics assessments (2 teachers). Regarding teachers' perceptions of students' use of AI, teachers expressed three main positions: (i) not allowing students to use AI at all (6.7%), (ii) not allowing AI use at school but permitting its use at home (13.3%), and (iii) allowing AI use provided that it is applied in an evaluative and reflective manner (80%).

3.1.2 Teachers' Perspectives on Artificial Intelligence in Schools: Use, Barriers, Motivations, Expectations, and Recommendations

The open-ended questionnaire of 29 Teachers yielded qualitative data in the form of meaningful statement as presented in the following table:

No.	Statements	Modus
1.	Teachers' views on AI use in schools	15
2.	Barriers to AI implementation	14
3.	Teachers' motivations and expectation of using AI,	16
4.	Teacher suggestions for the further development of AI in mathematics learning	7

Using thematic analysis, aiming not to quantify responses but to identify recurring meanings, patterns, and themes that reflect both shared and divergent perspectives on AI use in schools the following important theme are developed per statement category:

Teachers' Views on AI Use in Schools

1. AI is very important for assisting teachers with administrative tasks, enabling them to be more productive in developing their competencies.
2. I do not yet fully understand AI; I am still a beginner in its use.
3. AI is excellent to use because of the rapid technological advancements in today's era.
4. AI is very helpful for searching for any information related to learning while still referencing relevant book sources.
5. AI is very helpful when preparing teaching tools or media on short notice.
6. AI is extremely helpful in completing tasks as a teacher.
7. Given the current technological developments, the use of AI cannot be stopped. What is needed next is to focus on the quality and alignment of the results obtained.
8. I cannot fully create teaching materials using AI due to my busy teaching schedule.
9. In my view, AI can make tasks easier but can also hinder work if misused.
10. Integrating AI into learning has the potential to enrich the learning process, providing better experiences and outcomes. AI helps teachers provide interesting materials, and it can already function as an interactive learning medium that gives direct feedback. However, so far, AI use in my school is still limited due to insufficient tools and teacher skills.
11. AI use in the current situation has both positive and negative impacts, like a double-edged sword. If used correctly, it is highly beneficial in any situation, but misuse can be very dangerous, especially regarding ethics, data privacy, and dependency on technology.
12. The use of AI in the era of globalization is necessary, but it must be synchronized with local culture and context to ensure meaningful learning aligned with the students' surrounding environment.
13. I have never used AI in school, so I do not know what benefits it may provide. I want to use AI in learning, but I have not attended any training or accessed relevant references. Therefore, my view on AI is still unclear: it can be very helpful, but on the other hand, it may make us "dependent."
14. In our school, AI is already used by teachers and students, although not 100%.
15. I believe that AI can help teachers design more engaging classroom lessons, and students are usually very enthusiastic when learning is designed to be as interesting as possible.

Theme	Description	Related Statements
Perceived Benefits of AI	AI supports administrative tasks, enhances teacher productivity, assists in preparing teaching materials quickly, and enriches learning experiences through interactive materials.	1, 5, 6, 10, 15
Teachers' Readiness and AI Literacy	Some teachers are beginners or lack sufficient knowledge and training on AI.	2, 8, 13
Pedagogical Potential of AI	AI can make lessons more engaging, interactive, and informative, aligning with modern teaching needs.	3, 4, 10, 15

Concerns and Cautions	AI has potential risks if misused, including ethical issues, data privacy, dependency, and possible work hindrance.	9, 11
Contextual and Cultural Considerations	AI should be integrated thoughtfully within local cultural and contextual frameworks to ensure meaningful learning.	12
Current Limitations in Schools	AI implementation is currently limited by teacher skills, tools, and partial adoption; busy teaching schedules can hinder full utilization.	8, 10, 14

The analysis of teachers' statements reveals that AI is perceived as a valuable tool in schools, particularly for supporting administrative tasks, enhancing productivity, and enriching learning experiences through interactive and engaging teaching materials. However, teachers' readiness and AI literacy vary, with some educators lacking sufficient knowledge, training, or time to fully utilize AI in their teaching. While AI has significant pedagogical potential, there are concerns regarding ethical issues, data privacy, dependency, and the risk of hindering work if misused. Teachers also emphasize that AI should be thoughtfully integrated within local cultural and contextual frameworks to ensure meaningful learning. Current limitations in schools include partial adoption, insufficient tools, and constraints from busy teaching schedules. Overall, AI presents both opportunities and challenges, highlighting the need for professional development, adequate infrastructure, and strategic implementation to maximize its benefits in education.

Teachers' Views on Barriers to AI implementation.
1. Lack of knowledge on how to utilize AI correctly, for example using effective prompts.
2. Adjusting AI to fit classroom learning activities.
3. Students' insufficient understanding and digital literacy.
4. Copying and pasting AI-generated answers without reflection or further evaluation of the data.
5. The use of AI often gives students immediate answers, which can lead to shallow understanding in solving math problems and a tendency to just copy the answers.
6. The desire to further develop interactive and innovative teaching modules that can motivate students to learn.
7. At my school, a major barrier is unstable internet connectivity.
8. There is no expert fully proficient in AI to provide specialized training.
9. Limitations in facilities and infrastructure.
10. Lack of facilities and teacher skills to maximize AI use in learning.
11. Internet connectivity issues.
12. Limited knowledge and skills in using rapidly advancing AI, inadequate technological infrastructure, high implementation costs, and difficulties integrating AI into the curriculum.
13. From a facilities perspective, barriers include devices and network availability; from classroom management, barriers include ensuring students use AI correctly without becoming overly dependent.
14. Limited IT skills among some teachers and students.

Theme	Description	Supporting Statements
Limited Knowledge and Skills	Teachers and students lack adequate knowledge, digital literacy, and AI skills, including creating effective prompts and using AI efficiently	1, 3, 4, 5, 10, 12, 14
Technological Infrastructure Constraints	Schools face limitations in internet connectivity, devices, and overall technological infrastructure	7, 9, 11, 12, 13 (partial)
Need for Expert Support and Training	Lack of qualified personnel to train teachers and provide guidance in AI integration	6, 8
Curriculum and Pedagogical Challenges	Difficulty aligning AI tools with curriculum objectives and managing student engagement to prevent over-dependence or superficial learning	2, 5, 6, 12, 13
Resource and Cost Constraints	Implementation of AI is limited by financial resources, facilities, and tools needed for effective use	9, 10, 12

Teachers perceive multiple barriers to effective AI integration in schools. The main challenges include limited AI knowledge and digital literacy among teachers and students, insufficient technological infrastructure such as unstable internet and lack of devices, and lack of expert personnel to provide training and guidance. Additionally, difficulties in aligning AI tools with curriculum goals, managing student use responsibly, and financial/resource constraints further hinder effective implementation. Overcoming these barriers requires targeted professional development, infrastructure improvement, curriculum alignment strategies, and adequate resourcing to maximize AI's potential in supporting teaching and learning.

Teachers' motivations and expectation of using AI

1. AI will become a learning companion for children, enhancing their literacy skills and ultimately helping them become critical thinkers.
2. To maximize the use of AI in performance and learning.
3. Learning will become more enjoyable.
4. Learning can be conducted more effectively and efficiently.
5. It eases teachers in preparing interactive media at school.
6. Hopefully AI can be used wisely and prudently.
7. AI can increase motivation and innovation in learning.
8. I hope students become more interested in learning and find it easier to understand the material.
9. I hope to gain more information and improve my abilities.
10. My motivation is that this is an opportunity to create an adaptive and enjoyable learning atmosphere. AI provides quick and accurate feedback, while administrative and data analysis tasks can be automated.
11. I hope AI can maximize its role in helping teachers understand students' potential and learning difficulties so that appropriate support can be given.
12. The best motivation and hope for using AI in schools are to create a more personalized and interactive learning experience. Students can receive fast feedback and learn at their own pace, while teachers can use AI to analyze student progress and adjust teaching methods. This allows us to fully explore each individual's potential and create a more inclusive learning environment.
13. I have had interesting experiences, improvements in responsive learning, administrative efficiency, access to more resources, and better support.
14. My hope in using AI is to facilitate the preparation of teaching tools (assessments, lesson plans, learning media, etc.) as desired, and to make learning meaningful for students. I also hope learning with AI will be presented attractively to encourage students' interest in learning mathematics.
15. I hope AI can be maximally utilized to improve the learning process.
16. Learning at school will become more enjoyable and attract students' attention, thereby increasing students' motivation to learn, especially in mathematics.

Theme	Description	Supporting Statements
Enhancing Learning Engagement and Enjoyment	AI is expected to make learning more fun, engaging, and motivating for students.	3, 8, 15
Improving Teaching Efficiency and Preparation	AI helps teachers prepare teaching materials and interactive media, making administrative and pedagogical tasks easier.	2, 5, 10, 13, 14
Student Learning Outcomes and Skills	AI can enhance students' literacy, critical thinking, and understanding of the material.	1, 8, 13
Personalized and Adaptive Learning	AI allows learning to be tailored to individual student pace, providing quick feedback and adaptive teaching support.	10, 11
Motivation and Innovation in Learning	Teachers see AI as a tool to increase motivation and encourage innovative teaching methods.	6, 7, 12,16
Access to Resources and Support	AI provides better access to information, teaching resources, and administrative support.	9, 12

The analysis of teachers' statements shows that AI is perceived primarily as a supportive and empowering tool in schools. Teachers believe AI can enhance student engagement, motivation, and learning outcomes while also helping teachers prepare materials efficiently. Themes highlight enjoyable learning experiences, personalized instruction, and improved administrative and pedagogical support. Teachers also emphasize that AI fosters innovation, provides access to resources, and can help cultivate critical thinking skills in students. Overall, teachers' perspectives suggest optimism about the integration of AI into the classroom, provided it is used wisely and effectively.

Teacher suggestions for the further development of AI in mathematics learning

1. AI is expected to help teachers develop more exploratory and engaging media for mathematics learning.
2. AI awareness and socialization should be maximized, introducing its types and forms not only to teachers but also to the government, because AI has often been perceived negatively based on its portrayal in social media.
3. Suggestions for further development of AI use in mathematics learning include providing training to teachers on AI usage.
4. Reflection and evaluation must still be carried out in the use of AI in mathematics learning.

5. I suggest that AI can help teachers in both preparing administrative tasks and creating interactive media that foster students' interest in learning.
6. Similar activities can be conducted continuously to help teachers in this increasingly digital era.

Theme	Description	Supporting Statements
Exploratory and Interactive Learning	AI is expected to assist teachers in developing engaging and exploratory teaching media for math learning.	1, 5
Awareness and Training	Emphasis on socialization, education, and training about AI for teachers and authorities to ensure informed and effective use.	2, 3
Reflection and Evaluation	Continuous reflection and evaluation are necessary to optimize AI integration in teaching.	4
Sustainable Implementation	AI-related initiatives should be conducted continuously to support teachers in adapting to the digital era.	6

Teachers' suggestions highlight that AI should be integrated thoughtfully into mathematics education to enhance exploratory and interactive learning, while also supporting administrative tasks. They emphasize the importance of awareness, training, and proper guidance for teachers and authorities to mitigate negative perceptions. Additionally, reflection and evaluation are crucial for effective AI use, and continuous implementation is necessary to help teachers adapt to ongoing digital advancements. Overall, these recommendations provide a roadmap for sustainable, informed, and pedagogically meaningful AI integration in mathematics learning.

3.1.3 Interview Results with Three Mathematics Teachers, Members of the MGMP in Buleleng Regency

Based on the survey results, it was decided to interview three teachers: Eka, Dedi and Febiyanti who, in their questionnaire responses, indicated that they had previously used AI, including for creating teaching materials. The essence of the interviews of can be summarized as follows:

Eka:

1.1 "I see great potential in AI to support the teaching and learning process. AI can generate various types of materials, such as images, exercises, and even quite interactive simulations. However, we need to be cautious because not all AI outputs are accurate. For example, I once found a geometry image that was mathematically incorrect."

1.2 "Yes, I once asked AI to create an image of a cube. The result looked more like a rectangular block, which could lead to misconceptions among students."

1.3 "I often use AI to create practice exercises. AI can generate many variations of exercises in a short time. However, I need to review each one, because sometimes a question is too easy or too difficult for my class level."

1.4 "AI can answer simple math problems, but for complex problems or those requiring higher-order reasoning, AI still cannot provide satisfactory answers. Therefore, we cannot fully rely on AI to check students' work."

1.5 "I have tried using AI to create teaching modules. AI can organize materials systematically, but I need to add explanations and contextual examples to help students understand better."

Dedi:

1.6 "I find AI very helpful in creating teaching modules. AI assists me in organizing the structure, creating a clear outline, and presenting materials in a more engaging way. The image creation feature is also very useful, although complex images require patience in crafting the prompts. Overall, AI has become a very valuable tool in my work."

1.7 "I notice that AI seems to learn from our interactions. The more specific and detailed my questions, the better the results. This process makes me more critical in formulating what I want. So not only does AI learn, but I also learn to become a better AI user."

1.8 "Besides creating modules, I also use AI to make various practice exercises. AI can produce many exercises quickly, so I can give students more practice. However, I still manually check the exercises to ensure they align with the taught material."

1.9 "One of the biggest challenges is ensuring the accuracy of information generated by AI. We must always verify the outputs. Additionally, over-reliance on AI should be avoided. Teachers still need to play an active role in the learning process."

Febiyanti:

1.10 "Initially, I was quite hesitant to use AI in teaching. I was worried it would be difficult to operate. But out of curiosity, I started trying little by little. It turns out AI is not as difficult as I imagined."

1.11 "I was motivated to try AI after hearing many stories about its benefits. Moreover, my workload as a teacher is quite heavy, so I was looking for ways to be more efficient in preparing teaching materials."

1.12 "I often use AI to create quizzes. This feature is very helpful in making varied practice exercises. AI can even provide answers, which makes checking students' work easier."
1.13 "At first, I had some difficulty in formulating precise commands for AI. However, after a few tries, I became accustomed. AI is quite user-friendly, and there are many tutorials I can follow."
1.14 "I hope the school can organize special AI training for teachers. This way, we can better understand and utilize AI to its full potential. Additionally, I hope there will be a more integrated AI platform within the existing school learning system."

Theme	Description	Supporting Statements
Perceived Benefits of AI	AI is valuable for creating teaching materials, practice exercises, quizzes, and interactive simulations efficiently.	Eka 1.1, 1.3, 1.5; Dedi 1.6, 1.8; Febiyanti 1.12
Challenges and Accuracy Concerns	AI outputs are not always accurate, especially for complex problems; manual verification is necessary to avoid misconceptions.	Eka 1.1, 1.2, 1.4; Dedi 1.9
User Experience and Adaptation	Teachers initially face difficulty in using AI, but familiarity and practice improve usability and confidence.	Febiyanti 1.10, 1.13
Pedagogical Potential	AI supports engaging and systematic teaching, enhances learning materials, and allows more varied practice exercises.	Eka 1.5; Dedi 1.6, 1.7, 1.8
Need for Training and Support	Professional development, tutorials, and integrated AI platforms are necessary for effective AI utilization.	Febiyanti 1.14
Teacher's Role	Despite AI assistance, teachers must actively guide learning and ensure proper use, preventing over-reliance.	Dedi 1.9; Eka 1.4

The interviews indicate that AI has significant potential to enhance teaching efficiency and student learning by generating diverse materials, exercises, and interactive modules. Teachers recognize the pedagogical benefits but also note the limitations and challenges, such as inaccuracies in AI outputs and difficulties with complex problem-solving. Successful implementation depends on teachers' adaptation and AI literacy, highlighting the importance of professional training and supportive platforms. Moreover, while AI can facilitate teaching, teachers remain central in guiding learning, verifying outputs, and preventing over-reliance, ensuring AI complements rather than replaces pedagogical judgment.

3.2 Discussion

The survey and interview results indicate that teachers' acceptance of AI use in mathematics teaching remains varied. While there is enthusiasm, many teachers still face challenges in adopting this technology. These findings align with previous research showing that technology adoption in education often progresses slowly [11] [12], [13]. The obstacles faced by teachers in adopting AI are similar to those reported in other studies. Lack of training, limited access to technology, and insufficient support from schools are the main inhibiting factors [14],[15],[16]. Additionally, concerns about the accuracy of data produced by AI are also a consideration for some teachers. This aligns with research by [14] which found that teachers often doubt AI's ability to understand complex learning contexts. The benefits reported by teachers who have used AI are also consistent with prior research. Teachers indicated that AI helps them increase efficiency in creating learning materials, provide faster feedback to students, and personalize learning. These findings are supported by research conducted by[17], which shows that AI use can enhance students' motivation and learning outcomes.The impact of AI on students' learning outcomes still requires further investigation. While some studies show improved learning results, other research remains inconsistent. This may be due to differences in research design, variables examined, and learning contexts. The findings of this study have significant implications for mathematics teaching practice. Schools need to provide comprehensive training for teachers so that they can fully utilize the potential of AI. Additionally, schools must offer adequate support in providing the necessary technological infrastructure**.**

IV. CONCLUSION AND RECOMMENDATION

Based on the research results, the conclusions can be summarized as follows: (1) Overall adoption of artificial intelligence among teachers remains relatively low, although a small number of teachers have begun to integrate AI into mathematics teaching and learning. (2) Teachers who use AI employ a variety of tools, ranging from general design applications such as Canva to mathematics-specific tools like GeoGebra, while fewer

teachers use large language models such as ChatGPT, Gemini AI, and Copilot. (3) The main reasons for not using AI include a perceived lack of need, limited opportunities to try AI, insufficient information, and uncertainty about its effectiveness. (4) Teachers who have adopted AI primarily use it to develop teaching modules, instructional materials, and assessments. (5) Most teachers allow students to use AI, provided that its use is guided, evaluative, and reflective. (6) Teachers' acceptance of AI varies; however, those with experience using AI generally perceive it as beneficial, particularly for improving efficiency, increasing the variety of learning materials, and supporting more personalized learning.

Several recommendations are proposed for educational researcher, schools, universities and education authorities. (1) Institutions should strengthen systematic outreach and awareness programs to help teachers better understand the pedagogical potential and benefits of AI in teaching and learning. (2) Comprehensive and continuous professional development should be provided to equip teachers with practical skills in using AI tools that are relevant to mathematics education, while also addressing pedagogical and ethical considerations. (3) It is recommended to establish and support professional learning communities focused on AI integration, enabling teachers to share experiences, exchange best practices, and collaboratively develop effective and contextually appropriate uses of AI in mathematics classrooms.

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