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IN-SERVICE TEACHERS' VOICES ON AI UTILIZATION IN EDUCATION

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ABSTRACT

Developing personalized instructional content is critical for satisfying the different needs of students, particularly in the context of education. This study aimed to identify the perspectives of in-service teachers in utilizing Artificial intelligence (AI) in education. It also focuses on Generation Z characteristics. The study uses a mixed-methods approach. There are 20 in-service teachers who participated in surveys and interviews. Regarding the use of AI in the educational setting, the findings revealed that in-service teachers have several significant opinions. The use of AI in education has both benefits and challenges. The employment of AI is causing in-service teachers to become more aware. AI has the ability to provide educational resources and enhance teaching methods. However, there are still barriers like a lack of technological know-how and issues with equity. Consequently, maximizing AI's potential in classroom practice requires ongoing teacher training programs, the development of ethical standards and best practices, equitable access to AI resources, and long-term studies on the effects of AI on learning outcomes.

Keywords: AI, education, in-service teachers

ABSTRAK

Pengembangan konten pendidikan yang disesuaikan sangat penting untuk memenuhi kebutuhan siswa yang beragam, terutama dalam konteks pendidikan. Penelitian ini bertujuan untuk mengidentifikasi perspektif guru dalam jabatan dalam memanfaatkan kecerdasan buatan (AI) dalam pendidikan. Penelitian ini juga berfokus pada karakteristik Generasi Z. Penelitian ini menggunakan pendekatan metode campuran. Terdapat 20 guru dalam jabatan yang berpartisipasi dalam survei dan wawancara. Mengenai penggunaan AI dalam lingkungan pendidikan, temuan menunjukkan bahwa guru yang sedang mengajar memiliki beberapa pendapat yang signifikan. Penggunaan AI dalam pendidikan memiliki manfaat dan tantangan. Penggunaan AI membuat guru yang sedang bertugas menjadi lebih sadar. AI memiliki kemampuan untuk menyediakan sumber daya pendidikan dan meningkatkan metode pengajaran. Namun, masih ada hambatan seperti kurangnya pengetahuan teknologi dan masalah pemerataan. Oleh karena itu, untuk memaksimalkan potensi AI dalam praktik di kelas, diperlukan program pelatihan guru yang berkelanjutan, pengembangan standar etika dan praktik terbaik, akses yang adil ke sumber daya AI, dan studi jangka panjang mengenai efek AI terhadap hasil pembelajaran.

***Kata kunci**: kecerdasan buatan, pendidikan, guru dalam jabatan*

INTRODUCTION

Teachers' current situation in the fields of artificial intelligence (AI) and education is marked by both great problems and hope. As AI becomes more prevalent in educational settings, teachers must modify their teaching strategies and improve their AI literacy. A fundamental change in the way teachers view their duties and responsibilities in the classroom. An important thing is the development of pedagogical content is essential to address the students' needs (Pramerta, 2024).

Insufficient professional growth and training in AI education is one of the main issues teachers face. According to research, many in-service instructors believe they are not ready to successfully integrate AI into their lesson plans. According to a study, various characteristics, including gender,

educational background, and worries about data security and privacy, affect how prepared instructors are to employ AI in the classroom (Alshorman, 2024).

Additionally, research demonstrates a relationship between teachers' awareness of AI and their opinions toward its implementation in classrooms, underscoring the necessity of continual professional development (Aghaziarati, Nejatifar, & Abedi, 2023). This implies that teachers might find it difficult to successfully incorporate AI into their curricula in the absence of specialized training programs.

AI literacy encompasses not only the technical skills required to use AI tools but also an understanding of the ethical implications and the potential impact of AI on teaching and learning processes (Rütti-Joy, Winder, & Biedermann, 2023). As AI continues to evolve, teachers must engage critically and ethically, ensuring that they can leverage AI to enhance outcomes while safeguarding student interests.

The current condition of teachers in AI and education reflects a landscape filled with both opportunities and challenges. While there is a growing recognition of the need for AI literacy and professional development, significant gaps remain. Research indicates teachers' challenges to engage with AI tools effectively (Mustopa et al., 2024) and to understand ethical implications of AI in education (Abulibdeh, Zaidan, & Abulibdeh, 2024).

For in-service teachers, it is currently an urgency to have knowledge and skills in utilizing AI for teaching Generation Z (Gen Z). AI can facilitate personalized learning experiences, automate administrative tasks, and provide data-driven insights into student performance (Ding & Su, 2024). It leads to improved student engagement and learning outcomes (Lérias, Guerra, & Ferreira 2024).

The urgency for in-service teachers to utilize AI in teaching Gen Z is increasingly critical due to the unique characteristics and learning preferences of the Gen Z. Gen Z is known for its preference for interactive and multimedia-rich content, which can be effectively delivered through AI applications (Almakaty, 2024). In-service teachers play a crucial role and are responsible for imparting knowledge and skills that align with the demands.

As AI technologies become more prevalent, teachers must be prepared to navigate the information bias (Nur et al., 2021) and ethical aspects toward AI adoption (Nuangchalerm et al., 2022). In conclusion, researching in-service teachers' perceptions of AI and the use in teaching-learning context is not merely an academic exercise, but a critical imperative for shaping the future of education.

In conclusion, investigating how in-service teachers view AI is not only a theoretical endeavor; rather, it is crucial to determining how education will develop in the future. Thus, this study seeks to find the in-service teachers’ perception on AI utilization in teaching-learning process.

RESEARCH METHODS

The present study reviews the existing condition of the in-service teachers toward AI in education context. To gain insights into teachers' perceptions and use of AI in education, a survey was conducted to capture a comprehensive view of AI integration in educational settings

There are 20 teachers participated in the survey. They have different educational background: 3 with Master's degrees (15%), 16 with Bachelor's degrees (80%), and 1 with a Diploma (5%). All participants

had more than 5 years of teaching experience. The data was collected with the use of Google Form and interview.

Then, the data was analyzed to identify perception among teachers. Mixed-method approach was used by combining quantitative data with qualitative insights. It provides a nuanced understanding of the current state of AI in education from the perspective of in-service teachers.

RESULT AND DISCUSSION

There were 20 in-service teachers participated in this study. They have more than five years teaching experience. All of the teachers use mobile phone. There are 15 people (70%) use Android and five people (30%) use IOS. This shows that the in-service teachers have varied operating systems for their devices.

Another important finding is on their knowledge about Artificial Intelligence (AI). There are 16 people (80%) who know about AI and 4 people (20%) do not know about AI. A systematic review highlighted that many in-service teachers reported having no or inadequate understanding of AI concepts and tools (Velander et al., 2024). It makes them struggle to mobilize their knowledge and integrate AI into their pedagogical practices (Saricoban & Kirmizi, 2021).

The following table shows the purposes of using the devices. The teachers can choose more than one statements to represent themselves.

Table 1. Purpose of Using Smartphone

Usage	Percentage (%)
Tools for communication	85
Tools for teaching students	70
Tools for entertainment and watching	60
Tools for self-actualization through social media	55
Tools for developing self-competence	80
Tools for administration and financial transactions	5
Tools for work	5

The data shows that teachers are becoming more aware of the potential advantages can provide in improving learning, smartphone integration in the classroom has grown in popularity. With the use of social media and messaging apps, smartphones facilitate immediate contact, enabling teachers to give students immediate feedback and assistance (Dai et al., 2019).

Additionally, smartphones are effective instruments for improving learning. It can help to achieve learning goals and give students access to get information (Jain et al., 2018) and support simulations and hands-on learning experiences, which help students better grasp difficult ideas. Similar to this, it can be used to maintain student interest during lessons (Lellis-Santos & Halpin, 2018).

The following table shows the frequency of using AI to support the learning process.

Table 2. Frequency of Using AI

Frequency	Percentage (%)
Ever	55
Rarely	20
Never	25

Table 2 shows that there 55% of the respondents are ever using AI to support the learning process and the rest are rarely and never use it. It is interesting to see teachers who never use AI in this era.

A major factor preventing teachers from implementing AI in the classroom is the lack of proper training and opportunity for professional growth. According to research, a lack of knowledge and abilities makes many teachers feel unprepared to include AI into their teaching techniques. Teachers may be reluctant to embrace new technologies in the absence of formal training programs that emphasize AI literacy out of concern that they will not be able to use them efficiently or that they would interfere with conventional teaching techniques (Sharifuddin & Hashim, 2024).

Table 3. Challenge in Integrating AI

Challenge in Integrating AI	Percentage (%)
Lack of technical knowledge about AI	60
Limited access to appropriate AI tools	10
Difficulty in designing lessons that integrate AI	5
Concerns about plagiarism or academic fraud	20
Network constraints	5

Table 3 shows the challenge in integrating AI into teaching and learning process. The highest percentage for the challenge in integrating AI is lack of technical knowledge about AI (60%). A major factor preventing teachers from implementing AI in the classroom is the lack of proper training and opportunity for professional growth.

According to research, lack of knowledge and abilities makes them feel unprepared to include AI into their teaching practice. Teachers may be reluctant to embrace new technologies in the absence of formal training programs that emphasize AI literacy out of concern that they will not be able to use efficiently or they would interfere with conventional teaching (Sharifuddin & Hashim, 2024).

Furthermore, teachers may be discouraged from using AI if they believe it to be a complicated and frightening technology. They can be sceptical about AI's usefulness and applicability in the classroom since they do not fully comprehend how it can be used. This mistrust is exacerbated by worries that AI might take the place of conventional teaching positions, which may lead to opposition to incorporating AI into teaching methods (Alam, 2021).

Additionally, the absence of empirical data demonstrating AI's efficacy in educational environments may impede its uptake. Teachers frequently look for proof of student learning results prior to introducing new technology or curriculum. In the absence of verified AI applications that provide evident advantages for student

learning, teachers might be hesitant to devote time and money to incorporating AI into their teaching practice (Zhang, 2024).

Then, the following table shows the in-service teachers' effort to get the latest information and development of AI literacy to support the teaching and learning process.

Table 4. Ways for AI Literacy

Ways for AI Literacy	Percentage (%)
Participate in webinars or online trainings	25
Reading related articles and journals	10
Discussing with fellow teachers	20
Following social media accounts that focus on AI in education	35
Information from lecturers	5
Attending a training or workshop, then trying it out and following the instructions	5

The data shows interesting finding about the teachers' way for AI literacy. There are 35% responds that they follow social media accounts that focus on AI in education and 25% participate in webinars or online trainings. Social media platforms serve as a repository for articles, tutorials, webinars, and discussions that can deepen teachers' knowledge of AI applications in education (Zammit et al., 2022).

Moreover, social media fosters collaboration and networking among teachers to share experiences, challenges, and best practices related to AI in education (Walter, 2024). This awareness is essential for teachers to navigate the complexities of AI integration in their classrooms. They can guide their students in using these technologies responsibly.

After having the data on ways they use AI, the following table shows the main concerns regarding the use of AI in the classroom for the in-service teachers.

Table 5. Concerns for the Use of AI

Concerns for the Use of AI	Percentage (%)
Students' dependence on AI to complete tasks	60
Difficulty in monitoring students using AI outside of class	0
Potential decrease in students' critical thinking skills	20
Digital divide between students who have access to AI and those who do not	20

The highest percentage for the concern in using AI is mainly on students' dependence on AI to complete tasks. There are 60% of respondents chose this item. On the other hand, 0% for the second statement: difficult monitoring in monitoring students using AI outside of class. None of the respondents have concerns on this issue.

Teachers are increasingly concerned about students' dependence on Artificial Intelligence (AI) to complete tasks, as this reliance can hinder the development of critical thinking and problem-solving skills. It may also encourage passivity among students, who might opt for AI-generated solutions rather than engaging in critical analysis and creative problem-solving (da

Silva, 2024). It also lead to disparities in learning experiences (Dai & Ke, 2022).

Hence, there must be positive integration on using AI for classroom practice. Regarding on the notion, the following table shows the AI integration into the lesson.

Table 6. AI Integration into Lesson

AI Integration into Lesson	Percentage (%)
Using AI to create learning materials	65
Leveraging AI to personalize learning	20
Teaching students about AI	5
No AI integration	10

There are 65% of the respondents chooses for using AI to create learning materials. This is in line with the results of Table 1. It shows the purpose of using AI is to support the teaching practice and create learning materials.

One of the primary advantages of using AI in creating learning materials is its ability to provide personalized feedback and adaptive learning experiences. AI technologies can analyze student data and learning patterns, enabling teachers to tailor educational content to meet individual student needs (Akavova, Temirkhanova, & Lorsanova, 2023).

Additionally, AI-driven is emerging as a powerful method for creating engaging learning materials. Hands-on experiences can reshape teachers' attitudes towards technology, increasing their confidence in using AI tools for language education (Belda-Medina & Kokošková, 2024). This innovative approach does not only enrich the learning experience but also encourages students to engage with the content in a meaningful way.

Further on, there is needs to know the effect of using AI. The following table shows the way to evaluate the effectiveness of using AI in classroom context.

Table 7. Ways of Evaluating AI Use in Classroom Context

Ways of Evaluating AI Use in Classroom Context	Percentage (%)
Through comparison tests with and without the use of AI	20
Through survey feedback from students	15
Through direct observation on students' engagement	40
No Evaluation	25

It can be seen that, direct observation on students' engagement is the highest (40%). Direct observation is important to know the effect of AI usage for learning. This method allows teachers to assess how AI tools impact students' interactions, attentiveness, and overall learning experiences. Several studies have highlighted the importance of observing student engagement as a critical factor in evaluating the effectiveness of AI in educational settings.

AI adapts to individual student needs and creates learner-centered environments that significantly boost student engagement (Nguyen et al., 2024). Moreover, AI tools not only personalize learning but also foster a more interactive and collaborative educational milieu (Ezeoguine & Eteng-Uket, 2024). By observing students in using AI tools, teachers can gather qualitative data on how AI influences them in learning activities.

Table 8. Portion of Using AI

Portion of Using AI	Percentage (%)
Using AI as a tool, not a replacement	55
Combining AI methods with traditional classroom discussions	20
Limiting the use of AI to specific tasks only	5
Still looking for the right balance	20

The next data is on the portion of using AI with traditional teaching methods. Using AI as a tool and not as a replacement gets the highest percentage (55%). More than half of respondents chose this option. AI is just a tool. AI must not be changing the teachers' roles in the classroom practice.

Using AI as a tool can enhance teachers' pedagogical competencies. Teachers should develop analytical, creative, and evaluative (ACE) skills when integrating technology into teaching (Sumakul & Hamied, 2023). AI should serve as an enhancement to traditional teaching methods rather than a replacement (Giannakos et al., 2024).

This notion will encourage teachers to design learning experiences that utilize AI to facilitate deeper engagement and understanding among students. By using AI to assist in lesson planning, grading, and providing personalized feedback, teachers can focus more on facilitating discussions and engaging with students. It can enrich the learning environment.

Table 9. Challenge in Preparing Students for AI

Challenge in Preparing Students for AI	Percentage (%)
Teaching skills that AI cannot replace	15
Helping students understand the strengths and limitations of AI	25
Encouraging creativity in the age of automation	60
Preparing students for future jobs	0

Teachers face challenges in using AI. Table 9 shows the data on the challenge in preparing students for an increasingly AI-dominated condition. 60% of the respondents choose the third challenge: encouraging creativity in the age of automation. This is because, AI-driven seems to weaken the students' creativity.

A significant concern is that students would grow disproportionately dependent on AI technologies to finish their homework, which would lower their interest in the educational process. It makes students more passive (da Silva, 2024). Because of this dependence, they may not acquire critical thinking and problem-solving skills.

Table 10. Support for In-Service Teachers in Using AI

Support for In-Service Teachers in Using AI	Percentage (%)
Technical training on the use of AI tools	25
Guidance on integrating AI in the curriculum	20
Ongoing technical support	25
Access to affordable AI resources	25
Equalizing the perception of all students, that technology is taking over human roles	5

Table 10 shows data on support that in-service teachers need most to overcome the challenges of using AI in the classroom. It shows that in-service teachers' adoption of AI is clearly supported in a practical and ongoing manner, with training, continuing technical assistance, and resource access garnering the most attention (25% each).

Remarkably, the least amount of attention was paid to students' views of the role of technology (5%), indicating that it is a secondary issue in comparison to technical and curriculum-focused requirements. The aforementioned may suggest that respondents give precedence to urgent technical skills and infrastructure above more comprehensive conversations regarding the ramifications for society.

For the respondents, the integration of AI is still relatively new. They may lack of necessary training to effectively utilize AI tools in their teaching practices. Thus, adequate training is essential for effective AI implementation (Uygun et al., 2024). It can enhance teachers' creativity and understanding of AI usage in education (Marrone, Taddeo, & Hil, 2022).

The study also finds qualitative data obtained from interview. The results are in line with the survey results. A teacher said that, “AI helps me speed up the completion of assignments and prepare teaching materials as well as find new ideas”. This statement confirms the survey result as its purposes for helping in-service teachers for improving their teaching practice and developing self-competence.

Then, one of the respondents also gives interesting statement related to the use of AI. It is stated that, “I never use AI because I use more books”. For a variety of reasons, including familiarity, perceived efficacy, and dependability of AI-generated content, teachers frequently favor employing traditional books.

One of the primary reasons teachers continue to rely on books is their established role in education as trusted sources of information. Books have long been the cornerstone of educational materials. However, research indicates that students often prefer reading physical books over digital formats, as they find them more engaging and easier to comprehend.

For this notion, it does not directly support the claim about teacher preferences, as it focuses on students’ preferences for the broader context of book versus AI preferences among teachers. It is because AI can be used to provide support in integrating conventional and AI-driven classroom practice.

CONCLUSION

There are a number of important points of view from the in-service teachers regarding on the AI utilization in education context. There are benefits and difficulties associated with integrating AI in education. In-service teachers are becoming more conscious on the use of AI. AI has potential to improve teaching practice and create learning material. Obstacles such a lack of technical expertise and equality challenges still exist. Continuous teacher training programs, creating best practices and ethical guidelines, ensuring fair access to AI resources, and carrying out long-term research on how AI affects learning outcomes are all crucial to maximizing AI's potential in classroom practice.

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