PERSPEKTIF
JOURNAL OF SOCIAL AND LIBRARY SCIENCE
ACADEMIC SOLUTION PUBLISHER

UTILIZATION OF ARTIFICIAL INTELLIGENCE TECHNOLOGY IN CLASSROOM MANAGEMENT: POTENTIAL AND CHALLENGES FROM A LITERATURE STUDY PERSPECTIVE

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Article history:

Received :
Accepted :
Published :
Available online
http://aspublisher.co.id/index.php/perspektif

E-ISSN: 3063-3494

How to cite:

ABSTRACT

Artificial intelligence (AI) technology has become a significant innovation in education, particularly in classroom management. This study aims to explore the potential and challenges of AI implementation through a literature review approach. Data were collected from various academic journals and credible research reports. The study results indicate that AI can assist teachers in reducing administrative burdens, providing interactive learning media, and supporting student learning independence. However, the use of AI also faces several obstacles, such as limited infrastructure, lack of teacher training, and the risk of technology dependency, which diminishes the humanistic dimension of learning. Therefore, AI implementation needs to be designed wisely to uphold the values of student-centered education.

Keywords: *Artificial Intelligence, Classroom Management, Education, Technology*

1. INTRODUCTION

Technology is currently developing rapidly. It has been applied in various sectors and has become an inseparable part of human life. Its use has brought significant changes in various areas of life, such as social, health, cultural, and educational fields. Technology, particularly Artificial Intelligence (AI), has become a hot topic in recent years. AI in education helps create a more effective, efficient, and enjoyable learning process. AI is now a tool for teachers and students in carrying out learning activities. Teachers are widely using AI to complete administrative tasks because it can save time. While administrative tasks typically require considerable time, with AI, these tasks can be completed in a shorter time, freeing teachers to focus on other tasks and students.

The presence of AI in the context of classroom management is certainly a breath of fresh air. Teachers can focus more on pedagogical aspects because the administrative burden can be reduced through automated systems. Furthermore, AI also has the potential to provide a more engaging learning approach tailored to individual student needs through the use of educational chatbots, learning style analysis, and real-time data-driven evaluation systems. However, this enormous potential also comes with a number of

challenges that cannot be ignored. Integrating AI into classroom management also presents challenges, such as limited technological facilities, the need for teacher training in using technology, and various issues related to data privacy and security, which remain obstacles to integrating AI into classroom management (Kusumawati, 2018).

Seeing the potential and challenges presented by AI, we were compelled to explore and explore more deeply how this technology can be effectively implemented in education. Therefore, we conducted a literature review to gather information, experiences, and research findings related to the use of AI in classroom management. This study is expected to provide an overview of the benefits and challenges faced, as well as provide recommendations for how AI can help improve the quality of education and learning in the future.

2. RESEARCH METHOD

This research uses a literature review approach as the primary method. This literature review was chosen because it aligns with the objective of comprehensively examining the various uses of artificial intelligence (AI) technology in classroom management, including the potential and challenges faced by educators, based on theoretical studies and previous research findings. Data collection was conducted through a search of various relevant scientific sources, including nationally and internationally indexed academic journals, articles on best practices in technology education, and research reports from educational institutions or research organizations. These sources were obtained from online databases such as Google Scholar and similar websites.

The analysis was conducted using a descriptive-qualitative approach, with the aim of describing and describing the findings of various studies to generate a more comprehensive understanding and serve as a foundation for developing technology-based education policies. Therefore, it is hoped that this paper can serve as a starting point for developing educational policies and practices that are adaptive to technological developments while still upholding human values in the learning process.

3. RESULT AND DISCUSSION

Definition of AI and its Role

Intelligence can be understood as our adaptive ability to continuously learn and find the most appropriate ways to solve problems, even in a world full of uncertainty and change. Then, the concept of Artificial Intelligence (AI) emerged. This term was first coined by Stanford Professor John McCarthy in 1955, who defined it as "the science and engineering of creating intelligent machines." In the past, much effort focused on how to program machines to perform "intelligent" tasks like playing chess. However, today, our focus has shifted: we want to create machines that can learn, much like humans learn from experience and the data they encounter.

Artificial Intelligence (AI) is a field of computer science in which computer programs are designed to mimic the workings of the human brain. These programs attempt to equip machines with abilities demonstrated by humans and considered intelligent. These systems combine hardware, uploaded data, and complex algorithms to produce artificial "intelligence." With these capabilities, AI can make decisions, identify patterns, and perform various tasks to ease human workloads. These tasks include learning from experience (machine learning), understanding natural language, recognizing patterns, solving problems, and making decisions. From self-driving cars to virtual personal assistants, AI is reshaping various aspects of our daily lives, and its significance continues

to grow. According to McLeod and Schell, AI is essentially the effort to equip machines, such as computers, with the capacity to exhibit behavior equivalent to human intelligence. In short, AI, or artificial intelligence, is a computer system programmed to think like humans, with the primary goal of simplifying tasks that typically require human reasoning and intelligence (Kusumawati, 2018).

Artificial intelligence (AI) in education plays a significant role in assisting both teachers and students in various aspects. For teachers, AI can help optimize and make time more efficient in helping complete administrative tasks and also help make the learning process more interesting, teachers can create learning media from AI such as using animated videos, power points, even learning games using AI, also for students, AI can help students in learning, namely by being an adaptive and personal learning companion for students, AI is also able to provide learning assistance for students so that it can encourage student independence (Afandi & Kurnia, 2023).

The Potential of Using AI in Classroom Management

The use of artificial intelligence (AI) technology is increasingly expanding into various sectors, including education. Specifically in classroom management, AI offers significant potential to help teachers improve their effectiveness. Some of these potential uses of AI include:

1. Optimizing Administrative Tasks
   One of the major advantages of utilizing AI in classroom management is its ability to improve administrative efficiency. Teachers are often bogged down in time-consuming administrative tasks, such as grading and communicating with parents. By using intelligent AI platforms, many of these tasks can be automated, allowing teachers to focus on direct interactions with students. For example, AI-based applications can track student progress and provide real-time feedback, allowing teachers to identify areas that require special attention. Furthermore, AI can also help optimize teachers' administrative tasks, such as creating attendance forms and managing student assessment data. This significantly reduces teachers' administrative burden, allowing them to focus more on learning and direct interaction with students (Lestari et al., 2024).
2. Role in Pedagogical Innovation
   AI not only assists teachers in administrative matters but also helps them provide more engaging and relevant learning media and tools, tailored to the characteristics of students in this digital era. This means that AI plays a crucial role in pedagogical innovation. Utilizing AI in this creative process makes it possible to make learning content more dynamic, personalized, and tailored to current and future demands, thereby increasing student engagement, understanding, and motivation. This allows teachers to be more proactive in addressing potential issues and designing learning strategies that are relevant to each individual. For example, if a student shows signs of lack of enthusiasm, the teacher can immediately adopt a more engaging or personalized approach.
3. Guiding Students' Independent Learning
   Artificial intelligence, with its ability to adapt and provide personalized support, has great potential to foster independent learning in students. AI acts as a personal guide that is always available. AI can provide instant, constructive feedback, helping students understand where they are going wrong without waiting for the teacher's turn. This allows them to quickly correct their understanding and move forward with confidence. Additionally, AI can adapt materials and challenges to suit each student's individual learning pace and style. If a student quickly grasps a concept, AI can present more challenging, advanced material; conversely, if someone struggles, AI will offer alternative explanations or additional practice

until understanding is fully established. This reduces reliance on sole guidance from teachers and empowers students to take control of their own learning journey. They learn to identify their learning needs, find solutions, and build confidence in facing academic challenges. Thus, AI is not just a tool, but a companion, empowering each student to become a proactive and empowered learner.

Challenges of AI Technology Implementation

In its implementation, although artificial intelligence (AI) offers significant potential for supporting more effective classroom management, its implementation in educational settings is not without its challenges. One major challenge is limited infrastructure, particularly in schools in remote areas. Inequality in access to technology, both hardware such as computers and internet connections, and AI-based software, remains a significant issue. This inequality has the potential to widen the digital divide between educational institutions and create inequities in the quality of teaching and learning services. In addition to technical barriers, human resources are also a crucial factor that requires attention. Teachers, as key actors in the learning process, are required to have the understanding and skills to operate and integrate AI technology into the teaching process. Without adequate training, AI will not function optimally and may even increase teachers' workload. Therefore, a comprehensive training program is needed that focuses not only on technical skills but also on how AI can be used pedagogically and ethically to support classroom learning interactions.

On the other hand, there are concerns about the risks of technology dependency. As AI begins to take over many aspects of decision-making and classroom management, teachers may become overly reliant on the system, reducing their sensitivity to students' emotional and social dynamics. This clearly contradicts the essence of education, which should be humanistic and student-centered. Therefore, teachers need to have the ability to manage and balance the use of technology with a contextual and empathetic interpersonal approach.

Furthermore, limited and unequal access to technology is a systemic challenge that requires attention from various stakeholders, including the government and educational institutions. Without fair and equitable policy support and technology investment, AI implementation will only benefit schools in urban areas or those with superior status, while other schools lag behind in adopting educational innovations. Based on literature studies, these challenges indicate that while AI has great potential to transform classroom management, its success depends heavily on infrastructure readiness, teacher competency, and ongoing training and supervision of technology implementation. If not addressed systematically, the use of AI in classroom management could create new disparities rather than becoming a solution for inclusive and equitable education.

4. CONCLUSION

Based on the results of the literature review, it can be concluded that artificial intelligence (AI) offers significant opportunities to improve the effectiveness of classroom management, from assisting teachers with administrative tasks to supporting more adaptive and personalized learning. However, the success of this technology's implementation is largely determined by infrastructure readiness, teacher training, and policy support that supports equitable access to technology. AI should not replace the role of teachers as humanistic educators, but rather serve as a tool that supports a better and more relevant learning process in the digital era. Therefore, comprehensive strategic

steps are needed so that the use of AI can truly strengthen the quality of education without sacrificing human values.

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