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Transformation of Education Management in Junior High School to Improve Learning Effectiveness Through the Application of Artificial Intelligence Technology

Supadi Supadi [1]; **Muhammad Najib** [2]; **Nur Hamidah** [3]
[1;3] Univeristas Indraprasta PGRI Jakarta, Indonesia
[2] Universitas Pendidikan Indonesia Bandung, Indonesia
E-mail: supadi5565@gmail.com [1]; mn598368@gmail.com [2]; hamidahnur94@gmail.com [3]

Abstract
This study aims to examine the application of artificial intelligence technology in the transformation of education management in Junior High Schools to improve learning effectiveness. The research method used is a qualitative approach with a case study design, which involves observation, in-depth interviews with principals, teachers, and students, as well as analysis of documents related to the implementation of artificial intelligence-based digital learning. The data obtained was analyzed using thematic analysis techniques to identify the challenges, opportunities, and impacts of artificial intelligence technology in learning in junior high schools. The results of the study show that the application of artificial intelligence can increase the effectiveness of learning, especially in terms of personalization of learning and management of student learning time. The contribution of this research provides insight into the importance of artificial intelligence technology-based education management in improving the quality of learning at the junior high school level.

Keywords: Artificial Intelligence, Digital Learning, Education Management, Junior High School, Learning Effectiveness

1. INTRODUCTION

Education management is an important aspect of creating an efficient and quality education system, which focuses on managing resources, and curriculum and improving the competence of teachers and students. Strategies to enhance junior high school education quality involve training for educators. Adherence to professional principles by teachers enhances their effectiveness (Hartini et al., 2021). Cooperative Education Units (CEUs) are emerging as an innovative educational model for junior high schools in Indonesia, though their prevalence remains limited (Octoria et al., 2023). Effective education management is essential for developing a high-quality education system through strategic resource and competency management. This comprehensive strategy enables educational institutions to respond to evolving contexts and address learners' varied needs. Essential components for achieving educational objectives include quality management practices, curriculum development, and resource management.

In Indonesia, Junior High Schools play a key role in shaping the educational foundation for adolescents, with a focus on holistic learning and the development of basic skills". In Indonesia, Junior High Schools are crucial for creating a solid educational base for youth, focusing on comprehensive learning and skill acquisition. The existing educational model, notably Curriculum 2013, seeks to incorporate essential competencies that include academic, social, and spiritual dimensions for a balanced educational experience. High dropout rates during the transition from primary to junior high underscore the necessity for effective retention strategies (Pujiastuti et al., 2017). Bullying and social exclusion are

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significant concerns in junior high schools, adversely impacting students' mental health and academic success (Khasanah & Sirodj, 2019). Insufficient reproductive health education increases adolescents' susceptibility to risky behaviours, revealing a deficiency in holistic educational practices (Messakh et al., 2019).

One of the main goals in education is learning effectiveness, which is the achievement of educational goals efficiently, optimizing existing time and resources. Achieving educational effectiveness necessitates the optimal use of time and resources to fulfil educational objectives. This entails a comprehensive methodology that employs diverse strategies and instruments to improve student results and educational success. Key components contributing to this aim include the incorporation of technology, adaptive learning techniques, and focused interventions. The utilization of educational data mining and machine learning algorithms facilitates the prediction of student performance, enabling early detection of students at risk of underachievement. This evidence-based methodology enhances decision-making and customizes educational interventions (Yağcı, 2022). While these approaches illuminate avenues for attaining educational effectiveness, it is crucial to acknowledge the wider implications of educational success on societal outcomes. For example, elevated educational attainment correlates with decreased mortality rates, highlighting the enduring advantages of effective education beyond immediate scholastic accomplishments (Byhoff et al., 2017).

The application of artificial intelligence in the world of education is growing, providing an opportunity to change the way of learning through technology that can adapt materials according to individual student needs. The utilization of artificial intelligence (AI) in education is progressing swiftly, promising to customize learning experiences to meet individual student requirements. AI technologies are being incorporated into educational frameworks to improve learning via adaptive content, interactive instruments, and tailored learning trajectories. This incorporation is transforming conventional educational models by utilizing AI's potential to deliver personalized educational experiences. The integration of smartphones and applications in secondary school AI education introduces fundamental AI concepts through engaging activities, thereby enhancing accessibility and student involvement (Guerreiro-Santalla et al., 2021). Generative AI tools, particularly in higher education contexts, present innovative methods for content creation and student engagement, though their implementation differs among educational environments (Hashmi & Bal, 2024). Notwithstanding the potential advantages, the application of AI in education entails challenges, including the necessity for ethical considerations and the possibility of bias in AI systems (Blikstein et al., 2022).

Therefore, digital learning based on artificial intelligence in junior high schools can be a strategic step in the transformation of education management to increase learning effectiveness, provide a more personalized learning experience, and optimize educational outcomes for each student. Digital learning utilizing artificial intelligence (AI) in junior high schools signifies a revolutionary educational management strategy focused on enhancing learning effectiveness and personalizing student experiences. AI technologies enhance personalized learning by aligning educational content with individual learning styles, thereby fostering engagement and comprehension. This methodology capitalizes on AI's capacity for large dataset analysis to customize educational encounters, thereby promoting efficient

learning. AI systems can individualize learning trajectories by evaluating student competencies and suggesting relevant materials, coupled with personalized long-term curriculum design (Maghsudi et al., 2021; Sayed et al., 2020). AI-driven platforms can elevate educational achievements by furnishing tailored feedback and assessments, enabling students to progress according to their unique pace and learning style (Sayed et al., 2020). The integration of technology in junior high education has been demonstrated to boost student motivation and performance, equipping them for the challenges of the Fourth Industrial Revolution (Boholano et al., 2021). AI technologies, including reinforcement learning, can adjust to students' learning preferences, thereby enhancing engagement through more pertinent learning experiences (Sayed et al., 2020). Furthermore, the effectiveness of AI in education hinges on overcoming existing challenges and ensuring that AI serves to augment rather than supplant essential human teaching qualities, such as empathy and adaptability (Sakalle et al., 2021).

Educational management includes not only the management of human and material resources but also the integration of technology in the learning process to improve the quality and efficiency of education. Educational management entails the systematic coordination of human, material, and technological resources aimed at augmenting the quality and efficiency of educational systems. The incorporation of technology into educational management is crucial, as it enables the enhancement of learning processes and administrative efficacy. This incorporation is realized through diverse methodologies and instruments that underpin educational goals and quality assurance. Contemporary educational management strategies concentrate on elevating the quality of educational services by aligning with economic and social imperatives. This necessitates the institutionalization of management practices that correspond with the prevailing educational demands (Ali Al-Ababneh & A .S. Alrhaimi, 2020).

At the Junior High School (SMP) level, many schools have not fully utilized advanced technology to optimize how to manage and deliver learning materials to students. Many Junior High Schools (SMP) have not completely harnessed advanced technological innovations to enhance the management and dissemination of educational materials, predominantly due to systemic impediments and a deficiency in comprehensive integration strategies. Notwithstanding the prospective advantages of technology in the educational domain, including augmented student engagement and improved academic outcomes, numerous obstacles obstruct its effective execution. These obstacles encompass restricted access to technology, inadequate training for educators, and deficient infrastructure. Furthermore, there exists a low level of cognizance and administration of technological resources among school leaders, which further constrains the efficacious application of technology within educational environments (Ukpabio et al., 2020).

The effectiveness of learning in junior high schools is often hampered by the limitations of conventional teaching methods that cannot fully accommodate differences in students' learning styles, so a more adaptive approach is needed. The efficacy of junior high school education can be markedly improved through the implementation of adaptive teaching methods that accommodate varied learning modalities. Traditional pedagogical approaches frequently neglect individual variances, resulting in diminished engagement and inadequate learning results. Adaptive learning frameworks, which customize educational experiences to

meet specific student requirements, have demonstrated the potential to enhance both engagement and overall learning efficacy. This methodology is corroborated by numerous studies that emphasize the advantages of tailored learning strategies. Adaptive e-learning systems have proven to significantly bolster student engagement through the personalization of instruction aligned with learning preferences. This strategy not only fosters increased participation and interaction but also elevates performance and emotional involvement, as evidenced by research indicating that the experimental cohort surpassed the control group in these metrics (El-Sabagh, 2021).

The application of artificial intelligence in education, especially in junior high schools, can create a learning system that is more responsive to the individual needs of students by providing materials that are tailored to their respective levels of ability and learning speed. The utilization of artificial intelligence (AI) in junior high education can foster a tailored and adaptive learning environment. AI is capable of customizing educational content to align with students' abilities and learning paces, thus improving the educational experience. This strategy capitalizes on AI's proficiency in processing extensive data to personalize learning trajectories for individual learners. Subsequent sections will examine the fundamental elements of AI's contribution to personalized education. AI-based platforms can promote inquiry-driven learning, which has been demonstrated to enhance critical thinking in junior high students (Ramdani, 2020). Artificial Intelligence (AI) systems possess the capability to customize educational experiences according to the distinct requirements of individual students, thereby augmenting their engagement and motivation (Anuyahong et al., 2023). Such personalization has the potential to result in enhanced learning outcomes and superior academic performance (YU, 2023).

Digital learning supported by artificial intelligence has the potential to be a solution for the transformation of education management in junior high schools, enabling a more effective and efficient learning process, and providing a more engaging and interactive learning experience for students. Digital learning augmented by artificial intelligence (AI) possesses considerable potential to revolutionize educational management in junior high schools. AI improves the learning experience by enhancing effectiveness, efficiency, and student engagement. This change is achieved through tailored learning experiences, streamlined administrative functions, and the adoption of advanced educational technologies. AI facilitates the development of customized curricula that address individual student requirements, thereby increasing motivation and decreasing dropout rates (Khan et al., 2022). AI technologies, including robotic aids for auditory learning, have demonstrated an increase in student motivation and confidence in acquiring new skills (Hu & Hu, 2020). Despite the numerous advantages AI presents for educational management transformation, challenges persist. Effective integration of AI in education necessitates tackling issues like the digital divide, guaranteeing equitable technology access, and ensuring educators receive sufficient training to utilize AI tools proficiently.

In the context of rapid technological development, the transformation of education management in Junior High Schools (SMP) is very important to increase the effectiveness of learning, so the application of artificial intelligence (AI) technology and digital learning is an urgent need to face the challenges of education globalization. The evolution of education management in Junior High Schools through AI and digital learning is essential for tackling

globalization challenges. The incorporation of AI and digital tools can significantly improve learning by offering tailored educational experiences, optimizing resource management, and creating a more engaging learning atmosphere. This change involves not just technology adoption but also a reevaluation of educational strategies to effectively equip students for a globalized environment. AI can streamline administrative functions, enabling educators to prioritize instruction over administrative duties (Giró Gràcia & Sancho-Gil, 2021). The "Didactics 2.0" framework highlights the importance of student engagement in the learning process, leveraging digital resources for knowledge creation and comprehension (PAOLO DI SIA, 2020). Despite the advantages of integrating AI and digital learning into education management, challenges remain. Issues related to data privacy, the digital divide, and excessive dependence on technology must be resolved to achieve fair and successful educational outcomes.

This research offers novelty by exploring the integration of artificial intelligence in education management in junior high schools, which is expected to make a significant contribution to improving learning effectiveness through more personalized and adaptive digital learning. Scholars frequently initiate their inquiries by pinpointing the principal challenges within the domain of educational administration and the potential avenues for the incorporation of artificial intelligence (Siminto et al., 2023). The incorporation of artificial intelligence (AI) in educational administration, especially in junior high schools, can markedly improve learning outcomes through customized digital learning experiences. This methodology utilizes AI to customize educational interactions to suit each student's requirements, thereby enhancing engagement and academic performance. The study emphasizes various critical elements of this integration, concentrating on the advantages and obstacles associated with the deployment of AI-enhanced personalized learning frameworks. AI facilitates personalized education by adjusting instructional material to align with each student's unique learning pace and style. This is accomplished through platforms like eTutor, which modify teaching strategies based on student input and performance, thus maximizing learning efficiency and minimizing attrition rates. The tailored adaptation of educational settings can assess students' existing competencies and suggest suitable learning resources, thereby establishing individualized learning pathways that address varied student requirements.

The purpose of this study is to analyze how the application of artificial intelligence technology in education management in junior high schools can improve learning effectiveness and support the development of more efficient and innovative digital learning. The incorporation of AI in junior high education management presents considerable opportunities for improving learning efficacy and creating innovative digital learning settings. AI can enhance educational results by optimizing administrative processes, individualizing learning, and offering real-time assessments. The use of AI in education encompasses diverse technologies and approaches that can be customized for the unique requirements of students and teachers. The following outlines essential elements of AI's application in educational management to fulfil these objectives. Despite the advantages of AI, it is crucial to address the potential obstacles and ethical considerations tied to its implementation in education. Issues regarding data security, educational inequality, and the necessity for educators to acquire new skills for AI integration must be acknowledged. Furthermore, although AI can facilitate task

automation, the indispensable human component in education remains, as teachers render emotional and social support beyond AI's capabilities (Flogie & Aberšek, 2022).

2. METHODS

This study uses a qualitative approach with a case study design to understand the transformation of education management in Junior High Schools in improving learning effectiveness through the application of artificial intelligence (AI) technology and digital learning. This investigation utilizes a qualitative methodology characterized by a case study framework to examine the evolution of educational management within Junior High Schools (SMP) with the objective of augmenting learning efficacy. The emphasis of the inquiry lies in elucidating how the incorporation of artificial intelligence (AI) technologies and digital pedagogical instruments has transformed instructional methodologies, administrative functions, and student involvement. Through a detailed analysis of particular instances of AI deployment, the research aspires to comprehend the function of digital innovation in enhancing educational outcomes and cultivating a more effective, adaptable learning milieu in SMPs.

The population in this study is all junior high schools that apply artificial intelligence technology in digital learning, while the research sample consists of 3 junior high schools that have integrated AI technology into their learning management in Jakarta. The demographic encompassed within this investigation consists of all junior high educational institutions that have adopted artificial intelligence (AI) technologies within their digital pedagogical frameworks. For the research sample, a triad of junior high schools was meticulously chosen, each of which has effectively assimilated AI technology into their educational management systems. These institutions function as prototypical cases to examine the implications and efficacy of AI-enhanced methodologies in augmenting the quality and efficiency of educational practices, thereby yielding significant insights into the extensive integration of such technologies in junior high school environments.

The instruments used in this study include in-depth interviews with school principals, teachers, and administrative staff, as well as questionnaires designed to measure the level of understanding and application of artificial intelligence in learning. The methodological instruments utilized in this research encompass comprehensive interviews conducted with school leaders, educators, and administrative personnel to attain a nuanced understanding of their viewpoints regarding the incorporation of artificial intelligence into educational frameworks. Furthermore, structured questionnaires were employed to evaluate the extent of comprehension and implementation of AI technologies in the pedagogical practices observed within the selected educational institutions. These methodological tools were meticulously crafted to elicit both qualitative and quantitative data, thereby facilitating a holistic understanding of how AI is being assimilated and operationalized within the educational milieu.

The research procedure began with the selection of junior high schools that have applied AI technology, followed by data collection through classroom observations, interviews with related parties, and analysis of documents related to education management policies and the application of digital technology. The research methodology was initiated

with the identification of junior high educational institutions that have effectively integrated artificial intelligence (AI) technologies into their pedagogical frameworks. The data acquisition process employed a methodical strategy, encompassing classroom observations to assess the utilization of AI in authentic instructional contexts, interviews with pertinent stakeholders including school administrators, educators, and support personnel, as well as the examination of documentation pertinent to educational governance and the assimilation of digital technologies. This exhaustive approach facilitated a comprehensive comprehension of the application and administration of AI within these educational establishments, yielding significant insights into its influence on academic outcomes.

The collected data was analyzed using thematic analysis techniques to identify important patterns in the application of artificial intelligence and digital learning and their impact on learning effectiveness in junior high schools that were sampled. The accumulated data were subjected to thematic analysis methodologies to discern principal patterns and motifs pertinent to the utilization of artificial intelligence and digital learning within the selected junior high educational institutions. This methodological framework facilitated the investigator's systematic scrutiny of the data, accentuating notable trends and revelations concerning the integration of AI technologies into the pedagogical process. The examination also concentrated on elucidating the ramifications of these technologies on educational efficacy, revealing both the advantages and obstacles linked to their deployment in the academic sphere.

3. RESULTS

Based on interviews with principals and teachers, most of the respondents revealed that the application of artificial intelligence in digital learning in junior high schools has increased the effectiveness of learning, especially in providing more interactive and personalized materials for students. According to qualitative research conducted through interviews with school principals and educators, a predominant number of participants expressed the view that the incorporation of artificial intelligence within digital learning environments has markedly augmented the efficacy of educational processes in junior high schools. They emphasized that AI-driven technologies have enhanced the provision of more interactive and customized learning resources, thereby facilitating educational experiences that are more closely aligned with the distinct requirements of individual learners. This tailored pedagogical strategy has not only bolstered student engagement but has also contributed to improved overall educational outcomes by fostering more adaptive and responsive instructional methodologies.

The results of observations on the implementation of learning in the classroom show that the use of artificial intelligence-based applications has helped students understand difficult concepts more easily because the system can provide real-time feedback. The findings derived from classroom observations indicate that the implementation of artificial intelligence-driven applications has significantly facilitated students' comprehension of challenging concepts. The capability of the AI system to deliver instantaneous feedback enables students to obtain immediate clarification and direction, thereby assisting them in surmounting educational obstacles and consolidating their understanding. This interactive engagement enriches the educational experience by providing tailored support, empowering

students to advance at their own pace and effectively assimilate intricate material.

Documentation obtained from schools that apply artificial intelligence technology shows an increase in the use of AI-based educational software, as well as regular training for teachers to maximize the use of the technology in the learning process. Documentation acquired from educational institutions that are employing artificial intelligence technology indicates a significant rise in the utilization of AI-driven educational software. This phenomenon is further corroborated by systematic professional development sessions conducted for educators, which are designed to optimize the proficient incorporation of AI resources into the pedagogical framework. Such initiatives guarantee that instructors possess the requisite competencies and understanding to comprehensively leverage the technology, thus elevating the calibre of instruction and enhancing the overall academic experience for learners.

Interviews with students revealed that they felt more interested and motivated to learn because digital learning based on artificial intelligence allows them to learn according to their respective learning pace and style. Interviews conducted with students indicated that they experienced heightened levels of engagement and motivation toward their learning endeavours, attributable to the individualized characteristics of digital education facilitated by artificial intelligence. The AI-driven framework permits students to progress at their own pace and in manners that align with their distinct learning preferences, thereby augmenting their comprehensive interest and enthusiasm for the subject matter. This customized methodology not only cultivates a more favourable educational experience but also empowers students to assume responsibility for their academic trajectories, consequently enhancing both their self-efficacy and scholarly performance.

Observations of teacher-student interactions show that learning using artificial intelligence provides space for teachers to focus more on instructional activities, while technology handles administrative and more technical aspects of teaching. Observational studies concerning teacher-student interactions reveal that the incorporation of artificial intelligence within educational frameworks fosters a more effective pedagogical atmosphere by enabling educators to concentrate more significantly on instructional endeavours. As AI technology assumes responsibility for administrative functions and addresses more technical dimensions of pedagogy, such as assessment and monitoring student advancement, educators are allowed to allocate increased time and focus towards engaging with learners, facilitating dialogues, and offering tailored assistance. This transformation not only elevates the calibre of instruction but also enriches the comprehensive educational experience for students, as educators are empowered to prioritize the cultivation of critical thinking and creativity.

4. DISCUSSION

Education management at the Junior High School (SMP) level must adapt to technological developments to ensure higher learning effectiveness through the use of artificial intelligence (AI) in curricula and teaching methods. The incorporation of artificial intelligence (AI) in Junior High School (SMP) education management is vital for technological adaptation and improved learning outcomes. AI possesses the capacity to revolutionize education by facilitating personalized learning, automating administrative

functions, and aiding teachers in effective instructional delivery. Successful integration necessitates a thorough comprehension of AI's functionalities alongside the establishment of supportive infrastructure in educational contexts. AI can produce tailored textbooks and learning resources, fostering a personalized educational approach attuned to various learning styles and preferences (Kaur et al., 2020). AI substantially alleviates teachers' workloads by automating repetitive duties like grading, attendance monitoring, and feedback generation. The application of AI in the administration of educational data and resources enhances efficiency and reduces time expenditure (Chaudhry & Kazim, 2021). AI can facilitate innovative pedagogical techniques, including virtual courses and self- assessments, enriching the curriculum with dynamic and interactive learning experiences (Kaur et al., 2020). The evolution of AI in education mandates a robust technological framework and an ecosystem that fosters innovation and adaptability across local, national, and international spheres (Kaur et al., 2020). Addressing ethical implications is paramount when integrating AI into educational management to ensure the creation of equitable and inclusive learning environments.

In the context of junior high school, the application of artificial intelligence technology in education management has the potential to increase learning effectiveness by providing more personalized and adaptive learning solutions according to the needs of each student. The integration of artificial intelligence (AI) in junior high education management has considerable potential to enhance learning through personalized, adaptive solutions. AI can customize educational experiences, thereby increasing student engagement and improving outcomes. This method utilizes intelligent systems and adaptive environments to create tailored educational pathways, which is particularly advantageous in the heterogeneous learning context of junior high schools. The subsequent sections investigate significant facets of AI's involvement in educational management. AI can aid educators in delivering content engagingly, employing methods such as video presentations and interactive materials to enhance student focus and learning effectiveness (Rajeswari & Purushothaman, 2023). AI systems can optimize data management and safeguard information via automated processes. This ensures effective handling of personal information within educational settings, enabling the creation and dissemination of verified documents (Ledesma et al., 2019). Despite the promising benefits of AI in personalized education, challenges and considerations must be addressed. The incorporation of AI in education necessitates strategic planning and alignment with IT infrastructure to effectively support these innovations (Hutson et al., 2022). Furthermore, it is imperative to dispel misconceptions and resistance to AI adoption among educators, who may be concerned about the obsolescence of their teaching methods (Hutson et al., 2022). Achieving a balance between the advantages of AI and these challenges is essential for effective implementation in junior high schools.

The transformation of education management in junior high schools can be achieved by integrating artificial intelligence and digital learning, which allows for teaching that is more responsive to classroom dynamics and maximizes student academic achievement. The incorporation of AI and digital learning in junior high schools can notably enhance educational management by fostering responsiveness to classroom dynamics and improving student success. AI-ALS and DLR facilitate personalized learning, accommodating individual student needs and paces to optimize academic results. This transformation

necessitates strategic oversight and collaboration among educational stakeholders for effective technology deployment and monitoring. AI- ALS personalizes learning experiences by adjusting to each student's pace and style, potentially enhancing academic performance (HOW, 2019). AI in education enables predictive analytics, aiding educators in identifying and addressing potential learning issues early (HOW, 2019). Successful implementation of AI and digital learning necessitates teacher training on these technologies, which can refine their teaching strategies and classroom management. Despite the benefits of AI and digital learning, challenges such as equitable access to technology and potential stress from AI systems must be addressed (HOW, 2019). While the integration of AI and digital learning in educational management presents significant potential, it is vital to contemplate the broader context of educational equity and technology-related stressors. Ensuring equitable access to these resources and adequate support for teachers is essential for maximizing the advantages of these educational innovations.

The use of artificial intelligence-based digital learning in education management in junior high schools not only increases the effectiveness of learning but also opens up opportunities for innovation in the development of curriculum and teaching strategies that are more relevant to the needs of the times. The incorporation of artificial intelligence (AI) in education management, especially in junior high schools, augments learning efficacy and encourages innovation in curricula and pedagogical strategies. AI tools, including intelligent tutoring systems and smart learning environments, deliver tailored educational experiences that address individual student requirements, thus enhancing engagement and retention (Ahmad et al., 2021; Monserrat et al., 2022). This tailored methodology not only elevates educational outcomes but also facilitates the creation of curricula that better reflect modern educational necessities. AI technologies provide personalized educational experiences by adjusting to students' unique learning speeds and styles, thus improving engagement and retention (Ahmad et al., 2021; Monserrat et al., 2022). The assimilation of AI within the curriculum fosters the innovation of teaching methodologies and the integration of digital literacy, equipping students for future challenges (Sharkov et al., 2022). Although AI presents considerable advantages in education, its application is accompanied by challenges. Notwithstanding these obstacles, the capacity for AI to revolutionize education by rendering it more adaptive and pertinent to contemporary demands is considerable.

The application of artificial intelligence technology in digital learning in junior high schools can accelerate the transformation of education management, by providing learning data analysis that helps in better decision-making to improve teaching effectiveness and student learning outcomes. The integration of artificial intelligence (AI) in junior high education presents considerable opportunities for enhancing educational management and outcomes. AI can process extensive educational data to inform tailored teaching approaches for diverse student needs. Research substantiates the impactful role of AI in the educational landscape. AI facilitates personalized learning by adjusting to individual student learning preferences, thereby optimizing educational results. The incorporation of AI enables schools to adopt innovative educational frameworks utilizing digital resources, fostering engaging learning atmospheres (Wang & Zhan, 2021). Nonetheless, the promising prospects of AI in education necessitate careful consideration of its challenges and constraints. The shift towards digital education demands substantial investment and expertise, with concerns regarding the

reinforcement of existing educational disparities (Etherington, 2019). Moreover, the deployment of AI in educational contexts must be judiciously orchestrated to enhance, rather than supplant, essential human pedagogical interactions.

5. CONCLUSION

This study aims to explore the application of artificial intelligence in education management in Junior High Schools to improve learning effectiveness. In addition, this study wants to identify how digital learning based on artificial intelligence technology can optimize the learning process in the classroom. This research also aims to understand the challenges and opportunities faced by schools in implementing artificial intelligence technology in education management. Overall, this research focuses on the transformation of education management that is more adaptive and responsive to technological developments. This research contributes to enriching the literature on the integration of artificial intelligence in education management, especially at the junior high school level. In addition, this research provides practical insights for policymakers in schools to design and implement effective digital learning systems. With these findings, it is hoped that it can encourage innovation in learning in junior high schools and provide an overview of how technology can improve the quality of education. The study was limited to the implementation of artificial intelligence in a select few junior high schools, so the results may not be fully representative of all schools in Indonesia. In addition, the study does not include an in-depth analysis of the economic and social aspects of the application of technology in education. Another limitation is the relatively short duration of the study, so it may not cover the long-term impact of using artificial intelligence in digital learning.

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