

Integrating Artificial Intelligence to Enhance Learning Motivation among Junior High School Students

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Abstract

Purpose: This study aims to explore how the integration of Artificial Intelligence (AI) in classroom instruction enhances learning motivation among junior high school students. Although previous studies have shown that AI can support adaptive and engaging learning, most research has focused on higher education or fully online settings. Empirical evidence describing how AI influences student motivation in face-to-face junior high school classrooms in Indonesia remains limited. This study addresses that gap by examining students' and teachers' experiences using AI tools such as educational chatbots, learning analytics applications, and adaptive learning platforms.

Methodology: A descriptive qualitative design was employed. Data were collected through classroom observations, in-depth interviews, and documentation analysis. Participants included students, teachers, and school administrators involved in AI-supported learning activities. The data were analyzed using thematic analysis to identify recurring patterns related to students' motivational changes and their interaction with AI tools during the learning process.

Results: The findings show that AI integration enhances learning motivation in three key ways: (1) improving students' attention and interest through interactive and adaptive content; (2) increasing students' confidence via instant feedback and personalized guidance provided by AI systems; and (3) encouraging higher engagement through AI-based activities such as automated quizzes and digital simulations. Despite these benefits, challenges were also identified, including teacher readiness, limited availability of digital devices, and varied levels of students' digital literacy.

Applications/Originality/Value: This study offers contextualized insights into how AI enhances learning motivation among junior high school students within Indonesian classrooms. It contributes to the limited body of qualitative research on AI in basic education, highlights practical considerations for effective AI integration, and provides valuable implications for future research on intelligent technologies in schools.

Keywords: Artificial Intelligence, Learning Motivation, Digital Learning, Junior High School Students, Educational Technology

Introduction Section

The rapid advancement of Artificial Intelligence (AI) over the past decade has significantly transformed various sectors, including education. AI-driven technologies are increasingly embedded into learning platforms, enabling adaptive instruction, automated feedback, intelligent tutoring systems, and data-driven decision-making in classrooms (Kim et al., 2021; Liu et al., 2022). In many technologically advanced countries, the integration of AI has shifted the learning paradigm from teacher-centered instruction toward more personalized and student-centered learning approaches (Roll & Wylie, 2019). This global trend has encouraged Indonesian educational institutions to explore AI as part of ongoing efforts to improve teaching and learning quality in the 21st century.

At the junior high school level, this transformation is evident as teachers take on new roles as facilitators who guide students in navigating digital tools and AI-assisted learning resources. Students—who belong to a highly digital generation—tend to prefer interactive learning environments that provide visual engagement, immediate responses, and contextual relevance (Burns & Gottschalk, 2019). Consequently, schools are increasingly challenged to redesign learning environments that stimulate students' motivation through adaptive, innovative, and technology-rich approaches. AI, with its ability to personalize instruction and respond to learners' needs in real time, presents a promising opportunity to enhance students' learning motivation, which plays a crucial role in shaping engagement, persistence, and academic outcomes.

Learning motivation is a fundamental component that influences how students interact with learning materials. Motivated students typically demonstrate stronger attention, persistence, and willingness to participate (Sailer & Homner, 2020). However, several studies in Indonesia highlight that motivation among junior high school students remains relatively low due to monotonous teaching methods, limited use of interactive media, and varying levels of digital literacy among teachers and students (Rahman & Rosli, 2022). Many classrooms still rely on one-directional instruction with minimal opportunities for active student participation, leading to disengagement and lower learning outcomes.

AI integration offers promising solutions to these challenges. Tools such as educational chatbots, automated assessment systems, adaptive learning platforms, and gamified applications can create more dynamic, interactive, and engaging learning experiences (Wong

& Li, 2020). Through AI, students may receive immediate feedback, monitor their learning progress, and access content tailored to their individual pace and preferences. For teachers, AI reduces administrative workload and provides actionable insight into student performance, allowing educators to focus more on meaningful instructional interactions.

Although AI-related practices have begun to emerge in Indonesian junior high schools—as teachers experiment with AI-based quizzes, simulations, and instructional assistance—implementation remains inconsistent. Schools continue to face practical barriers such as limited infrastructure, teacher readiness, and unequal access to devices or internet connectivity (Liu et al., 2022). These conditions underscore the importance of examining how AI can be effectively integrated within real classroom contexts and how such integration influences students' motivation.

While global research indicates that AI has strong potential to enhance student motivation (Kim et al., 2021), empirical studies focusing on Indonesian junior high school settings remain scarce. Much of the existing literature tends to emphasize technology acceptance, digital literacy, or learning outcomes rather than exploring students' and teachers' lived experiences with AI-based learning environments (Zawacki-Richter et al., 2019). This highlights a clear research gap. There is a need for qualitative explorations that capture not only the technological components of AI-based learning but also students' emotional, behavioral, and cognitive engagement.

This study addresses this gap by investigating the integration of AI in junior high school classrooms and examining how it contributes to students' learning motivation. Using a descriptive qualitative approach, this study explores students' personal experiences with AI-assisted learning, their perceptions of its usefulness, and the challenges encountered in its implementation. The study also includes teachers' perspectives on the pedagogical value of AI, the constraints they face, and how they ensure that AI complements—rather than replaces—the learning process.

This research is important for three reasons. First, it provides practical insights for teachers and school leaders who are adapting to more technology-enhanced learning environments. Second, it contributes to the growing body of literature on AI in education, particularly within developing countries where contextual challenges differ significantly from those in developed regions. Third, it offers empirical evidence that may inform policy directions, teacher professional development, and the design of AI-enhanced instructional frameworks.

Overall, this study aims to describe and analyze how AI technologies are integrated into junior high school learning settings and how such integration influences students' learning motivation. By examining technological, pedagogical, psychological, and socio-cultural dimensions, this research provides a comprehensive and context-specific understanding of the opportunities and challenges associated with leveraging AI to enhance student motivation in Indonesian junior high schools.

Sub Section Title

The integration of Artificial Intelligence (AI) into junior high school learning environments has significantly transformed the ways in which students interact with instructional materials. AI supports more adaptive and personalized learning by providing supplementary explanations, digital simulations, and content recommendations tailored to individual learner needs (Kim et al., 2021). At the secondary school level, such personalized support helps students deepen their understanding of complex concepts by adjusting instructional pathways to their pace and learning preferences. In addition to content delivery, AI systems capture students' learning patterns and generate rapid, specific feedback, enabling learners to monitor their progress and fostering a sense of competence that contributes to increased motivation (Liu et al., 2022).

In today's technology-driven educational landscape, student motivation plays a vital role in determining engagement and academic achievement. Motivation is influenced not only by internal factors but also by the learning environment, particularly when learners interact with enjoyable, interactive, and meaningful digital experiences. AI assists in shaping such environments by enabling personalized learning trajectories that prevent students from feeling overwhelmed or disengaged. Features such as gamification, automated quizzes, adaptive exercises, and AI-based simulations encourage students to participate actively and enthusiastically in their learning (Sailer & Homner, 2020). These features also create positive reinforcement cycles in which immediate feedback strengthens students' confidence and supports intrinsic motivation. Nevertheless, technological tools alone cannot sustain motivation; teachers continue to play a crucial role in providing emotional support, guidance, and pedagogical scaffolding, especially for junior high school students who still rely heavily on interpersonal interaction (Rahman & Rosli, 2022).

Despite AI's substantial potential, its implementation in junior high schools is not without challenges. Unequal access to digital devices, unstable internet connectivity, and differences in digital literacy among teachers and students often hinder the effective integration of AI in classroom instruction. Some teachers express hesitancy toward adopting AI tools due to limited professional training or concerns about inappropriate use (Wong & Li, 2020). However, these challenges also present opportunities for schools to strengthen their digital readiness, improve infrastructure, and develop professional development programs that equip teachers with the skills needed to integrate AI effectively. With adequate institutional support and responsible implementation, AI has the potential to enhance instructional quality and increase students' motivation to learn. Ultimately, effective integration requires not only technological adaptation but also a commitment to designing meaningful and contextually relevant learning experiences that support students' cognitive, emotional, and social development.

Methodology

This study employed a descriptive qualitative research design to obtain an in-depth understanding of how Artificial Intelligence (AI) is integrated into junior high school learning and how such integration contributes to students' learning motivation. A qualitative approach was deemed appropriate because it enables the exploration of participants' lived experiences, perceptions, and interactions with AI within a natural classroom setting, without manipulating variables (Creswell & Poth, 2018). This approach allows the researcher to generate a contextual and holistic explanation of the phenomenon as it occurs in real instructional environments.

The research was conducted at a junior high school that had begun implementing AI-supported digital learning tools. The school was selected purposively based on its readiness, availability of digital infrastructure, and teachers' willingness to utilize AI applications

such as educational chatbots, automated assessment platforms, and learning analytics-based media. The study took place over a four-week period to ensure adequate observation time and to capture stable learning patterns involving AI-based activities.

Participants in this study were selected using purposive sampling, focusing on individuals who could provide rich and relevant information about AI usage in the classroom. The participants consisted of 30 students from Grade VII, distributed across Class 7A (15 students) and Class 7B (15 students), all of whom had actively engaged in AI-assisted learning activities. Additional participants included **two teachers** who integrated AI into their instructional strategies and one school administrator responsible for overseeing the school's digital learning initiatives. The inclusion of students with varying academic performance and digital literacy levels allowed the researcher to gather diverse perspectives regarding learning motivation.

Data collection was carried out through in-depth interviews, classroom observations, and document analysis. Semi-structured interviews were conducted with students and teachers to explore their perceptions of AI, the perceived benefits and challenges, and the extent to which AI influenced learning motivation. Interviews lasted between 20 and 40 minutes and were audio-recorded for transcription. Classroom observations were conducted during AI-assisted lessons to capture real-time interactions between students, teachers, and AI tools, with particular attention to students' engagement, participation, and emotional responses. Document analysis included reviewing AI-generated feedback, students' digital assignments, learning records, and classroom artifacts that reflected the use of AI.

The collected data were analyzed using thematic analysis following the stages proposed by Braun and Clarke (2019). The process began with data familiarization, followed by generating initial codes to capture significant patterns related to AI use and motivation. Codes were then organized into broader themes such as increased engagement, confidence through feedback, technical barriers, and teacher mediation. These themes were refined to ensure conceptual clarity and alignment with the research objectives. The final themes were synthesized into a comprehensive narrative explaining the relationship between AI integration and students' learning motivation.

To enhance the trustworthiness of the study, several strategies were implemented. Data triangulation was conducted by cross-checking information gathered from interviews, observations, and document analysis. Member checking was carried out by asking selected participants to validate the accuracy of the researcher's interpretations. An audit trail documenting the research procedures, decisions, and analytical steps was maintained to ensure transparency and research rigor.

Ethical considerations were upheld throughout the research. Participants were informed about the study's purpose and procedures, and participation was voluntary. Written consent was obtained from teachers and parents of all student participants. Anonymity and confidentiality were ensured by using pseudonyms and secure data storage procedures. All information was used solely for academic and research purposes.

Overall, this methodological approach enabled a thorough and contextually grounded exploration of how AI is implemented in junior high school settings and how such integration influences students' learning motivation. The use of multiple data sources, systematic analysis, and rigorous validation procedures ensured that the findings are credible, comprehensive, and reflective of real classroom experiences.

Result and Discussion

The results of this study show that the integration of Artificial Intelligence (AI) in junior high school classrooms has a substantial influence on students' learning motivation, as evidenced through classroom observations, interviews, and documentation. Throughout multiple observed lessons, students demonstrated noticeably higher levels of attention and involvement when learning materials were supported by AI-based tools such as educational chatbots, automated quizzes, and adaptive digital media. Students frequently expressed excitement when interacting with AI-generated explanations or simulations, and teachers reported that AI helped diversify learning activities, resulting in a more dynamic and less monotonous classroom environment. These findings align with previous research showing that AI-supported learning environments tend to increase learners' engagement and attentiveness (Zawacki-Richter et al., 2019).

One of the most prominent findings is the improvement in students' intrinsic motivation. Interviews revealed that many students felt more confident when receiving AI-generated feedback immediately after completing exercises. This instant feedback allowed them to correct errors quickly, understand where improvements were needed, and track their progress over time. Several students explained that AI tools "made it easier to understand difficult material" and helped them feel "less afraid of making mistakes," which encouraged them to explore learning content independently at their own pace. AI's non-judgmental feedback mechanisms appeared to create a safe learning atmosphere, supporting the development of self-efficacy a key component of intrinsic motivation (Bandura, 1997). These findings suggest that AI can function as a form of personalized scaffolding that strengthens learners' autonomy and cognitive engagement.

In addition to intrinsic motivation, extrinsic motivation also increased due to the gamification elements embedded in several AI platforms. Features such as points, badges, progress levels, and competitive challenges stimulated students' enthusiasm and willingness to participate. Observations showed that students were motivated to achieve higher quiz scores, advance to the next task level, or outperform their classmates in AI-generated challenges. According to teachers, lessons that incorporated gamification features were livelier and often encouraged participation from students who were previously passive. This supports existing literature indicating that gamification can enhance students' motivation and engagement when applied meaningfully (Sailer & Homner, 2020).

Despite these benefits, the study also uncovered several challenges that affect the optimal integration of AI in the classroom. A notable issue involves differences in students' digital literacy. Some students were unfamiliar with specific AI applications and required additional assistance, which occasionally slowed classroom activities. Technical limitations such as unstable internet connectivity, limited device availability, and occasional system errors further disrupted learning. During several observation sessions, disruptions such as slow-loading AI interfaces triggered frustration among students, temporarily reducing motivation. Teachers also expressed that preparing AI-based materials required additional time and effort, particularly when ensuring alignment between learning objectives and AI-supported media. These challenges echo findings from previous studies emphasizing that AI effectiveness is strongly influenced by infrastructure quality and teacher readiness (Holmes et al., 2022).

The results also highlight that AI alone is insufficient to guarantee sustained motivation. Although AI provides personalization and instant feedback, the teacher's role remains indispensable. Teachers must guide students in interpreting AI feedback, provide

emotional support, and ensure that AI is used as a pedagogical tool rather than a substitute for human interaction. This is consistent with constructivist learning theories, which stress that meaningful learning arises when learners actively construct knowledge with guidance from competent facilitators. In this study, teachers acted as mediators who monitored AI-assisted learning, clarified misconceptions, and ensured that technology supported—not overshadowed—the learning process.

Overall, the findings demonstrate that AI can significantly enhance learning motivation among junior high school students by promoting personalization, interactivity, and rapid feedback. However, successful implementation requires attention to several contextual factors, including digital infrastructure, teacher competencies, and students' technological readiness. The study underscores that AI integration represents not only a technological change but also a pedagogical transformation requiring strategic planning and continuous professional development. When supported by adequate resources and pedagogically informed practices, AI holds strong potential to shape more engaging, motivating, and meaningful learning experiences for students in the digital era.

Conclusion

This study concludes that the integration of Artificial Intelligence (AI) into junior high school learning environments contributes significantly to enhancing students' learning motivation. The use of AI-based tools—such as educational chatbots, automated quizzes, and adaptive digital learning platforms—creates learning experiences that are more interactive, personalized, and engaging. Observations and interviews demonstrate that students show higher levels of attention, confidence, and participation when AI is incorporated into lessons. Immediate and individualized feedback provided by AI plays a crucial role in strengthening intrinsic motivation by helping students recognize errors, monitor their progress, and develop greater learning independence. At the same time, gamification features such as badges, points, and progress levels foster extrinsic motivation by making learning more enjoyable and positively competitive.

Theoretically, these findings reinforce contemporary motivational and constructivist learning perspectives, which suggest that students learn more effectively when they receive timely feedback, experience autonomy, and engage actively with learning tasks supported by meaningful scaffolding. AI serves as a technological scaffold that enhances these psychological conditions, enabling students to construct knowledge more deeply and independently. The results also support previous studies indicating that AI can improve learner engagement when aligned with appropriate pedagogical strategies.

From a practical standpoint, this study highlights that AI can be a valuable instructional tool for teachers seeking to diversify teaching methods and create more dynamic classrooms. AI helps teachers reduce routine workloads, enrich instructional materials, and design adaptive learning experiences that accommodate individual student needs. However, the successful use of AI requires adequate preparation, including teacher training, curriculum alignment, and the availability of supportive school infrastructure. Schools must address disparities in digital literacy, ensure reliable internet connectivity, and provide sufficient digital devices to achieve equitable and meaningful AI integration.

This study also acknowledges several limitations. The research was conducted in a single school with a limited number of participants, which may influence the generalizability of the findings. In addition, the study focused on observable motivation indicators and self-reported perceptions, without measuring long-term motivational changes or academic outcomes. Future research should involve larger and more diverse samples, employ mixed-method or longitudinal designs, and further explore how AI influences other dimensions of learning, such as collaboration, problem-solving skills, and digital citizenship.

Overall, the findings emphasize that AI integration in education is not merely a technological innovation but a pedagogical transformation requiring strategic planning and collaborative effort. When implemented responsibly, supported by adequate resources, and guided by strong instructional leadership, AI has the potential to significantly enhance learning motivation and contribute to a more engaging and future-oriented educational environment for junior high school students.

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