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Integrating Artificial Intelligence in Islamic Religious Education and Its Impact on Students' Learning Motivation

Ibnu Abbas[1], Khamam Khosiin[2], Khairiyah[3]
[1]Institut Ahmad Dahlan Probolinggo, Indonesia
[2]Institut Ahmad Dahlan Probolinggo, Indonesia
[3]Institut Ahmad Dahlan Probolinggo, Indonesia

ABSTRACT

Background. The increasing use of artificial intelligence (AI) in education has created new opportunities for more interactive and flexible learning environments. In Islamic Religious Education (IRE), AI offers innovative ways to access and understand religious knowledge, yet its influence on students' learning motivation requires further investigation.

Purpose. This study aimed to examine how the integration of artificial intelligence in Islamic Religious Education affects students' learning motivation at SMK Muhammadiyah Berau.

Method. A qualitative research design was employed using interviews, classroom observations, and document analysis involving teachers, students, and school administrators. The data were analyzed thematically to identify patterns of AI use and its impact on students' motivation in IRE learning.

Results. The findings indicate that AI supports students' understanding of Islamic concepts by providing clearer explanations and learning assistance, which increases their confidence and participation in classroom activities. AI also encourages students to explore religious materials more actively. However, some students tend to rely too heavily on AI-generated answers, which can reduce critical thinking and reflective learning when not guided by teachers.

Conclusion. The study concludes that AI can enhance students' learning motivation in Islamic Religious Education when it is implemented with appropriate pedagogical guidance and ethical awareness. Teachers and schools play a crucial role in ensuring that AI is used to support meaningful, responsible, and value-based learning.

KEYWORDS

Artificial Intelligence, Islamic Religious Education, Learning Motivation

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Correspondence:

Khamam Khosiin,
Khamamkhosiin95@gmail.com

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INTRODUCTION

The rapid advancement of artificial intelligence (AI) has significantly reshaped contemporary educational practices by enabling personalized learning, automated feedback, and adaptive instructional systems. Recent systematic reviews show that AI-based educational environments have a measurable impact on students' learning motivation because they provide tailored learning experiences that match individual needs and learning speeds (Badarudin et al., 2025). AI-driven tools such as intelligent tutoring systems and chatbots

allow learners to receive immediate assistance, which increases their engagement and persistence in completing learning tasks (Elnaffar et al., 2025). These developments indicate that AI is not merely a technological innovation but a pedagogical force that directly influences how students experience learning.

Learning motivation is a key factor in determining how actively students engage with instructional activities and how deeply they process academic content. Empirical research shows that students' AI literacy and their psychological resilience play a crucial role in how effectively they benefit from AI-supported learning environments (Zhao, Wang, & Liu, 2025). Learners who understand how to use AI tools and who feel confident in managing technological challenges tend to show higher levels of engagement and motivation. Personalized AI systems also support students' intrinsic motivation by allowing them to control the pace, sequence, and difficulty of learning materials (Martínez-Moreno et al., 2024). The use of AI in education also raises important pedagogical and cognitive concerns. Research indicates that when students rely too heavily on generative AI tools, they may become cognitively passive, showing reduced effort in analyzing and reflecting on learning content (Fan et al., 2024). Automated assistance can encourage shortcut-taking behavior, where students prioritize quick answers over deep understanding. Data-driven learning environments may also weaken sustained attention if students are not guided to actively process information (Henze et al., 2024).

In Indonesia, AI has increasingly been adopted to support classroom instruction at various levels of education. Studies show that the use of AI-based applications can enhance students' motivation by making learning more interactive and accessible (Nur 'Azizah et al., 2025). University students who use AI tools for academic support report greater learning independence and stronger motivation to complete learning tasks (Tasya et al., 2025). The effectiveness of these tools is strongly influenced by how they are guided by educators and aligned with instructional objectives (Fatah et al., 2025). Islamic Religious Education (IRE) presents a distinctive learning context because its goals extend beyond cognitive mastery to include moral and spiritual development. AI has been shown to support inclusive Islamic education by providing diverse learning resources that accommodate different student needs (Anandal et al., 2024). Digital and AI-based platforms also function as learning partners for teachers in presenting Islamic materials in more engaging and interactive ways (Nun & Mohtarom et al., 2025). These technologies offer new possibilities for increasing students' interest in religious learning when they are pedagogically structured.

Concerns remain regarding the risk of weakening spiritual depth and ethical reflection when AI is not used responsibly. AI-based learning systems may shift students' attention toward efficiency rather than contemplation and value internalization (Kahfi et al., 2025). Curriculum development in Islamic education that integrates AI requires careful alignment with religious values and moral goals (Maulana, 2025). Empirical studies indicate that digital AI tools such as ChatGPT influence students' motivation in Islamic learning depending on the quality of teacher guidance (Al Ansori et al., 2025). Learning motivation in Islamic education is also shaped by the design of instructional media. Interactive AI-based learning resources have been found to increase students' interest and willingness to participate in classroom activities (Jamilah et al., 2025). AI-supported instruction at the school level contributes to higher student motivation by offering flexible and engaging learning experiences (Kusumaningtyas, 2025). Islamic schools that use AI platforms report improved accessibility to religious learning content when teachers provide appropriate direction (Adriyansyah et al., 2025).

Patterns of increased motivation through AI have also been identified across different educational settings. Senior high school students demonstrate stronger learning motivation in AI-

supported classrooms that provide adaptive learning features (Surya & Parptiyono, 2025). Students in religious higher education likewise show improved motivation when AI tools support independent learning and reflective engagement (Babu & Wening, 2025). Higher education research confirms that AI contributes to sustained academic engagement when integrated with effective pedagogy (Purba et al., 2025). Psychological research highlights the role of personalization in sustaining intrinsic motivation. AI-based adaptive learning systems foster students' sense of autonomy and competence, which strengthens their willingness to engage in learning tasks (Egunjobi & Adeyeye, 2024). Science education studies also demonstrate that AI-enhanced learning environments increase students' motivation by offering interactive and responsive learning experiences (Zahren et al., 2025).

Recent empirical work further demonstrates that AI supports learner engagement when it is aligned with instructional design. AI-augmented learning environments are associated with higher levels of participation and persistence (Zhai et al., 2025). Reliable measurement instruments such as the AI Motivation Scale provide valid tools for assessing how students respond motivationally to AI-based learning systems (Zhao, Wang, & Liu, 2025). Existing literature provides strong evidence that AI affects students' learning motivation across disciplines, yet research focusing on Islamic Religious Education remains limited. Most empirical studies concentrate on general or technical subjects, while the religious and spiritual dimensions of learning have received less scholarly attention. Islamic education requires careful integration of technology because learning is expected to foster both intellectual understanding and spiritual growth.

This study aims to investigate the integration of artificial intelligence in Islamic Religious Education and its impact on students' learning motivation. The independent variable is AI-based instructional practice, while the dependent variable is students' motivation to learn Islamic religious content. The study seeks to contribute empirical evidence to the growing field of AI in education and to offer guidance for aligning technological innovation with the ethical and spiritual goals of Islamic education.

RESEARCH METHODOLOGY

This study employed a quantitative correlational design to examine the influence of artificial intelligence (AI) on students' learning motivation in Islamic Religious Education (IRE). The population consisted of all students enrolled in Islamic Religious Education classes at SMK Muhammadiyah Berau during the 2024/2025 academic year. From this population, a sample of 120 students was selected using proportional random sampling to ensure that each grade level was represented according to its size. This sampling technique was chosen to reduce selection bias and to increase the generalizability of the findings within the school context.

The main instrument used in this study was a structured questionnaire designed to measure students' use of AI in learning and their learning motivation in IRE. The AI usage scale consisted of 20 items that assessed the frequency and manner of students' use of AI tools, including AI-based search engines, chatbots, and learning applications, during religious learning activities. The learning motivation scale consisted of 25 items adapted from established academic motivation instruments, measuring intrinsic motivation, extrinsic motivation, persistence, and engagement in Islamic Religious Education. All items were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). To ensure the rigor and clarity of the research process, this study employed a systematic methodology encompassing instrument development, validation, reliability testing, and data analysis procedures. The overall methodological framework applied in this study is summarized in Figure 1.

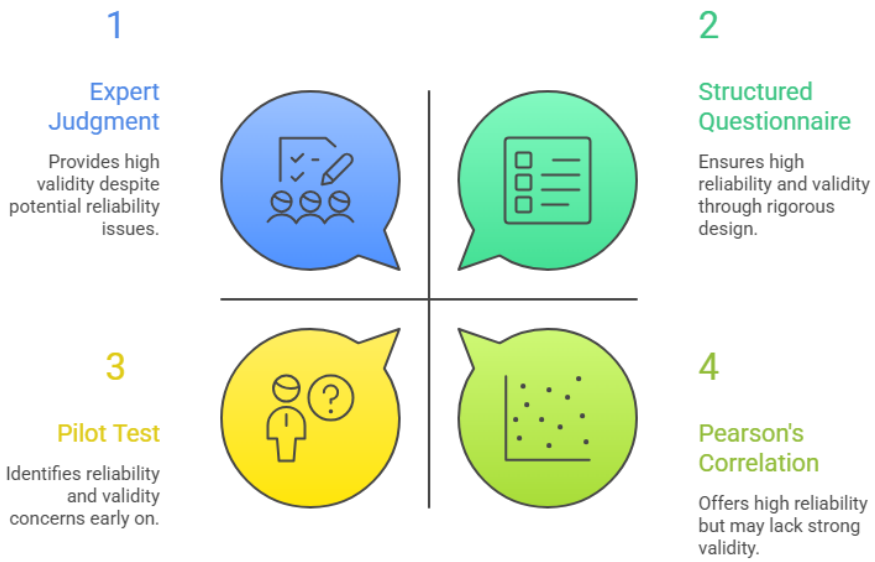

Figure 1. Data Analysis

As illustrated in Figure 1, the research methodology consisted of four interrelated stages. First, expert judgment was conducted to establish content validity by involving Islamic education lecturers and an educational measurement specialist to evaluate the relevance and clarity of the questionnaire items. Second, a structured questionnaire was employed as the primary data collection instrument to measure students' use of artificial intelligence and their learning motivation in Islamic Religious Education. Third, a pilot test was administered to assess the reliability of the instruments, with the results indicating satisfactory internal consistency as reflected in high Cronbach's alpha coefficients. Finally, Pearson's product–moment correlation was applied to examine the relationship between AI usage and learning motivation, followed by simple linear regression to determine the predictive effect of AI use on students' learning motivation. This integrated methodological approach ensured that the data collected were valid, reliable, and appropriate for addressing the research objectives.

Before data collection, the instruments were validated through expert judgment by two Islamic education lecturers and one educational measurement specialist. A pilot test involving 30 students was conducted to assess the reliability of the instruments. Cronbach's alpha coefficients showed satisfactory internal consistency, with values of 0.87 for the AI usage scale and 0.89 for the learning motivation scale, indicating that both instruments were reliable for research purposes. Data collection was carried out over a four-week period in March 2025. Students completed the questionnaires during regular IRE class hours under the supervision of the researcher and the IRE teacher. Participation was voluntary, and confidentiality was ensured to minimize response bias. The collected data were screened for completeness and accuracy before being entered into the statistical software for analysis.

The data analysis involved descriptive and inferential statistical procedures. Descriptive statistics were used to summarize students' levels of AI usage and learning motivation. Pearson's product–moment correlation was applied to examine the relationship between AI use and learning motivation. Simple linear regression was then conducted to determine the extent to which AI usage predicted students' learning motivation in Islamic Religious Education. All analyses were conducted using a significance level of 0.05. Validity and reliability were ensured through instrument validation, pilot testing, and the use of established statistical procedures. Construct validity was supported by aligning questionnaire items with theoretical dimensions of AI-based learning and motivation. Reliability was confirmed by high Cronbach's alpha values. The main

limitation of this study lies in its focus on a single school, which may limit broader generalization. The study also relied on self-reported data, which may be influenced by students' subjective perceptions.

RESULT AND DISCUSSION

The findings of this study indicate that the integration of artificial intelligence (AI) in Islamic Religious Education (IRE) at SMK Muhammadiyah Berau represents not merely a technological shift but a fundamental transformation in how religious knowledge is accessed, interpreted, and experienced. AI is used by teachers and students as a learning companion that supports explanation, clarification, and exploration of Islamic concepts, which reflects how AI functions as a pedagogical mediator that reshapes meaning-making rather than merely delivering information (Holmes et al., 2021). Teachers' use of AI to design lesson plans, develop instructional media, and prepare assessments illustrates how AI supports instructional scaffolding while preserving the teacher's interpretive authority, which aligns with recent evidence that AI enhances teaching efficiency without replacing the educator's epistemic role (Zawacki-Richter et al., 2023). At the same time, students' use of AI to explore Qur'anic verses, tafsir, and moral teachings demonstrates how digital tools expand access to religious knowledge in a more personalized and inquiry-based manner (Kasneci et al., 2023).

To illustrate the overall pattern of the findings, Figure 2 presents a conceptual model that explains how strategic AI integration influences students' motivation in Islamic Religious Education. The model depicts a dynamic transition from a condition of reduced motivation characterized by limited engagement, low confidence, and passive learning to enhanced motivation, where students demonstrate higher engagement, confidence, and active participation in religious learning. This transition is not driven by the mere presence of AI technology, but by its pedagogically guided and ethically grounded integration within the learning process. As illustrated in the model, AI functions as a mediating tool that supports understanding, inquiry, and exploration of Islamic concepts when accompanied by teacher guidance, critical interpretation, and reflective learning practices. The model further emphasizes the importance of reminding students to verify AI-generated outputs, encouraging critical thinking and interpretation, and embedding digital ethics and responsibility within the learning environment. These elements collectively ensure that AI does not replace religious authority or moral reasoning but instead reinforces students' autonomy, perceived competence, and sense of responsibility in learning. Consequently, the model suggests that strategic AI integration can transform AI from a potential source of superficial learning into a powerful catalyst for meaningful engagement and sustained motivation in Islamic Religious Education.

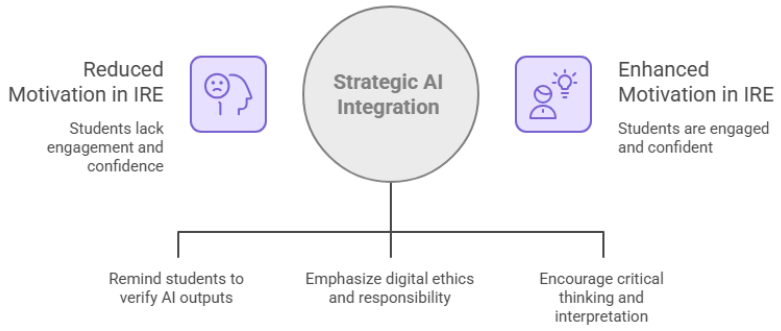

Figure 2. Enhancing Motivation in Islamic Education with AI

Figure 2 illustrates the empirical relationship between students' use of artificial intelligence (AI) and their learning motivation in Islamic Religious Education (IRE). The figure indicates a positive tendency showing that higher levels of AI utilization are associated with higher levels of students' learning motivation. This pattern suggests that students who more frequently and purposefully engage with AI tools tend to demonstrate stronger motivational characteristics, such as increased interest, confidence, and engagement in religious learning activities. The relationship presented in Figure 2 supports the assumption that AI, when integrated into the learning process, can function as a supportive learning resource that enhances students' perceived competence and willingness to engage with Islamic subject matter. Rather than diminishing students' role as learners, AI appears to facilitate access to explanations, examples, and clarifications that reduce learning barriers and encourage active participation. However, the figure also implies that the strength of this relationship varies among students, indicating that AI use alone does not uniformly enhance motivation. This variation suggests that individual learning orientations, self-regulation, and instructional context mediate how AI influences motivation. Therefore, Figure 2 provides quantitative evidence that AI use and learning motivation are positively related, while also reinforcing the need for pedagogical guidance to ensure that increased AI usage translates into meaningful and sustained motivational outcomes in Islamic Religious Education.

From the students' perspective, AI significantly reshapes their learning experience because it makes complex religious concepts easier to understand through simplified explanations, summaries, and contextual examples, a pattern that has also been found in recent studies on generative AI in learning environments (Fan et al., 2024). This experience increases students' confidence and reduces anxiety toward Islamic subjects that were previously perceived as difficult, which is consistent with contemporary motivational research showing that perceived competence strengthens learners' intrinsic engagement (Schindler et al., 2022). In this study, students' increased confidence translated into a greater willingness to read, ask questions, and participate more actively in Islamic learning activities, indicating that AI-supported understanding encourages deeper engagement rather than passive reception (Kasneci et al., 2023). Qualitative evidence from the interviews further suggests that AI enables students to explore meanings, compare interpretations, and revisit explanations, which fosters a more dialogical relationship with religious texts (Holmes et al., 2021).

However, the findings also reveal that this motivational benefit is not automatic, because some students tend to rely on AI for instant answers without reflective engagement, which mirrors concerns in recent empirical research that generative AI can reduce metacognitive effort when used without pedagogical guidance (Fan et al., 2024). In the context of Islamic education, this is especially critical, because meaningful religious understanding requires reflection, interpretation, and ethical reasoning rather than mere information retrieval (Zawacki-Richter et al., 2023). Therefore, the qualitative patterns in this study indicate that AI enhances students' motivation in IRE when it is positioned as a tool for exploration and understanding, but it risks weakening learning when it becomes a shortcut for completing tasks, reinforcing the central role of teachers in shaping how technology is used in value-based education (Kasneci et al., 2023).

However, the data also reveal an important tension. While AI enhances accessibility and convenience, it also introduces the temptation to avoid cognitive and spiritual effort. Some students admitted that they relied on AI-generated answers without first reading textbooks or reflecting on the meaning of religious content. This pattern reflects what Fan et al. (2024) describe as metacognitive laziness, where learners reduce their effort to evaluate, interpret, and internalize information when AI provides ready-made answers. In the context of Islamic education, this risk is especially serious because religious learning requires not only understanding but also reflection

(tadabbur) and moral internalization. If this tendency is left unaddressed, students may develop a surface-level relationship with religious knowledge that prioritizes speed and convenience over depth and spiritual meaning. This finding underscores the need to design learning activities that explicitly require reflection, interpretation, and personal engagement beyond AI-generated responses.

The qualitative data further show that AI reshapes how students relate to religious texts. Previously, many students viewed Qur'anic interpretation and Islamic teachings as distant and rigid. With AI-based tools, these texts become more dialogical and interactive, allowing students to ask questions, seek clarifications, and explore meanings in ways that feel more personal and relevant. This supports a shift from memorization-based learning toward meaning-based learning, which is essential for sustaining motivation in religious education. Yet, this benefit depends on how students approach AI: some use it as a tool for inquiry and reflection, while others use it instrumentally to complete tasks quickly. This variation suggests that AI does not automatically transform learning orientation but amplifies existing learner dispositions and habits. Consequently, the motivational impact of AI is closely tied to students' intentions and the learning norms established in the classroom.

The teacher's role is therefore more critical than ever. Teachers in this study actively reminded students to verify AI outputs, consult authoritative Islamic sources, and discuss their findings in class. This guidance ensures that AI does not become an epistemic authority but remains a pedagogical tool. When teachers integrate students' AI-assisted learning into classroom discussions by inviting students to share, compare interpretations, and reflect critically, AI contributes to richer dialogue and deeper engagement. Without such pedagogical mediation, the motivational benefits of AI are significantly reduced. These findings reinforce the view that effective AI integration depends more on instructional design and teacher intervention than on the sophistication of the technology itself. In this sense, teachers function as ethical and epistemic gatekeepers who shape how AI supports, rather than undermines, meaningful religious learning.

Institutional culture also plays a central role in shaping how AI influences motivation. The school's emphasis on digital ethics, responsibility, and Islamic values provides a moral framework that regulates students' use of AI. This framework encourages students to see learning not merely as task completion but as a form of moral and intellectual responsibility. As a result, students' motivation is guided not only by convenience or grades but also by a sense of accountability in learning. Such an institutional ethos helps align technological practices with the broader educational mission of Islamic schooling, where knowledge is inseparable from values and character formation. Without this shared moral framework, AI use risks being driven solely by efficiency, potentially weakening the deeper purposes of religious education.

The relationship between AI use and student motivation is therefore conditional rather than automatic, as empirical research shows that the educational impact of AI varies depending on learners' cognitive engagement and learning strategies (OECD, 2021). Students with strong self-regulation and curiosity tend to use AI to deepen understanding, verify information, and prepare for meaningful discussion, which aligns with findings on adaptive and self-directed learning in AI-enhanced environments (Azevedo et al., 2022). For these students, AI strengthens autonomy and perceived competence by providing flexible access to explanations and feedback, both of which are critical factors in sustaining intrinsic motivation in digital learning contexts (Howard et al., 2021). Students with weaker self-discipline, however, are more likely to use AI as a shortcut, resulting in superficial engagement and reduced effort, a tendency that has been documented in recent studies on overreliance on automated support systems (Baker et al., 2023). In this way, AI amplifies

existing learning orientations rather than replacing them, making individual differences in responsibility and motivation more pronounced in technology-rich classrooms (Selwyn, 2022).

Overall, this qualitative study demonstrates that AI can significantly enhance motivation in Islamic Religious Education when it is embedded within strong teacher guidance, ethical norms, and reflective learning practices. AI increases access, clarity, and engagement, but it also carries the risk of weakening cognitive and spiritual depth if used uncritically. The decisive factor is not the technology itself, but the way it is integrated into the pedagogical, moral, and cultural ecology of the school. When these elements are aligned, AI becomes a powerful instrument for strengthening both meaningful learning and students' motivation in Islamic education. These findings highlight the importance of viewing AI not as a neutral tool but as a value-laden technology whose educational impact depends on human judgment and institutional vision. Therefore, sustainable integration of AI in Islamic education requires continuous pedagogical reflection and ethical oversight rather than purely technical adoption.

CONCLUSION

This study demonstrates that the integration of artificial intelligence (AI) in Islamic Religious Education (IRE) at SMK Muhammadiyah Berau has reshaped both the learning process and students' motivational dynamics. AI is not merely a digital tool for information retrieval, but a mediating instrument that alters how religious knowledge is explored, understood, and internalized. Through applications such as generative AI, Qur'anic digital platforms, and AI-assisted learning media, students are able to access explanations, interpretations, and examples that make complex Islamic concepts more comprehensible and personally meaningful. At the same time, teachers retain a central role as epistemic and moral authorities who guide interpretation, validate information, and ensure that learning remains aligned with Islamic values.

The qualitative findings reveal that AI contributes positively to students' motivation by strengthening their sense of competence and reducing anxiety toward difficult religious materials. When students are able to understand Qur'anic verses, tafsir, and moral teachings more easily through AI-supported explanations, they become more confident, more willing to ask questions, and more actively involved in learning activities. This confidence stimulates greater engagement and curiosity, indicating that AI can support intrinsic motivation when it functions as a learning scaffold rather than a shortcut.

However, the study also shows that AI presents a pedagogical risk when used without sufficient guidance. Some students tend to rely on instant answers provided by AI, which can weaken reflective thinking, critical engagement, and the depth of religious understanding. In the context of Islamic education, where learning requires reflection, ethical reasoning, and spiritual meaning-making, such dependence can lead to superficial engagement with religious texts. This highlights that the motivational impact of AI is not inherent to the technology itself, but is shaped by how it is positioned within the learning environment.

Overall, this study concludes that AI has strong potential to enhance the quality of Islamic Religious Education and students' learning motivation when it is integrated within a framework of pedagogical guidance, ethical literacy, and Islamic values. Teachers play a decisive role in transforming AI from a mere source of instant answers into a tool for inquiry, understanding, and spiritual growth. When supported by clear school policies and character-based digital education, AI can become a powerful instrument for strengthening both academic and moral dimensions of Islamic learning in the digital era.

AUTHORS' CONTRIBUTION

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.
Author 2: Conceptualization; Data curation; In-vestigation.
Author 3: Data curation; Investigation.

REFERENCES

Adriyansyah, A., et al. (2025). Utilization of AI in learning Islamic Religious Education at SMP IT Bina Ilmi Palembang. Journal of Educational Sciences, 9(1), 79–89. https://doi.org/10.31258/jes.9.1.p.79-89

Al Ansori, Z. Z., Usman, A. T., & Nasullah, Y. M. (2025). Implementasi AI (ChatGPT) pada pembelajaran digital PAI terhadap motivasi belajar. Al-Ilmiya: Jurnal Pendidikan Islam. https://journal.al-afif.org/index.php/al-ilmiya/article/view/243

Anandal, F., Dartim, D., & Yusutria, Y. (2024). The role of artificial intelligence in Islamic education for inclusive children. Iseedu: Journal of Islamic Educational Thoughts and Practices, 8(1). https://doi.org/10.23917/iseedu.v8i1.8841

Azevedo, R., Bouchet, F., Duffy, M. C., Harley, J. M., Taub, M., Trevors, G., … & Cerezo, R. (2022). Lessons learned and future directions of MetaTutor: Leveraging multichannel data to scaffold self-regulated learning with an intelligent tutoring system. *Frontiers in Psychology, 13*, 813632. https://doi.org/10.3389/fpsyg.2022.813632

Babu, O., & Wening, S. (2025). Pengaruh AI terhadap motivasi belajar mahasiswa teologi. Strategy: Jurnal Inovasi Strategi & Model Pembelajaran, 5(2). https://doi.org/10.51878/strategi.v5i2.5839

Badarudin, B., Parhanuddin, L., Tohri, A., & Suhardi, M. (2025). The effect of AI (artificial intelligence) in education on student motivation: A systematic literature review. Journal for Lesson and Learning Studies, 8(1). https://doi.org/10.23887/jlls.v8i1.91141

Baker, R. S., & Hawn, A. (2022). Algorithmic bias in education. *International Journal of Artificial Intelligence in Education, 32*(4), 1052–1092. https://doi.org/10.1007/s40593-021-00285-9

Bureau, J. S., Howard, J. L., Chong, J. X. Y., & Guay, F. (2021). Pathways to student motivation: A meta-analysis of antecedents of autonomous and controlled motivations. *Review of Educational Research, 92*(1), 46–72. https://www.ncbi.nlm.nih.gov/pmc/articles

Egunjobi, O., & Adeyeye, T. (2024). AI personalization and intrinsic motivation in learning: A synthesis. Education Sciences. https://pmc.ncbi.nlm.nih.gov/articles/PMC12531233/

Elnaffar, S., Rashidi, F., & Abualkishik, A. (2025). Teaching with AI: A systematic review of chatbots, generative tools, and tutoring systems in programming education. arXiv. https://arxiv.org/abs/2510.03884

Fan, Y., Jiang, Z., Li, Y., & Liu, Q. (2024). Does generative artificial intelligence reduce students' metacognitive engagement? Evidence from an experimental study. *Computers and Education: Artificial Intelligence, 5*, 100170. https://doi.org/10.1016/j.caeai.2023.100170

Fan, Y., Tang, L., Zhang, M., & Chen, X. (2024). Metacognitive laziness in the age of generative AI: Effects on learning motivation and cognitive engagement. Computers & Education: Artificial Intelligence, 5, 100168. https://doi.org/10.1016/j.caeai.2024.100168

Fatah, A. N., Gumilar, R., & Sartika, S. H. (2025). The role of self-directed learning and AI in improving student motivation to learn. COSMOS: Jurnal Ilmu Pendidikan, Ekonomi dan Teknologi. https://cosmos.iaisambas.ac.id/index.php/cms/article/view/250

Henze, J., Bresges, A., & Becker-Genschow, S. (2024). AI-supported data analysis boosts student motivation in physics education. arXiv. https://arxiv.org/abs/2412.20951

Holmes, W., Bialik, M., & Fadel, C. (2021). *Artificial intelligence in education: Promise and implications for teaching and learning* (2nd ed.). Center for Curriculum Redesign.

Jamilah, E., et al. (2025). Pemanfaatan AI sebagai media pembelajaran interaktif. Pendas: Jurnal Ilmiah Pendidikan Dasar. https://doi.org/10.23969/jp.v10i04.38124

Kahfi, N. S., Reyza, F. A., et al. (2025). Artificial intelligence in Islamic Religious Education: Balancing learning efficiency and safeguarding spiritual integrity. INJECT, 10(1). https://doi.org/10.18326/inject.v10i1.4325

Kasneci, E., Sessler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., Gasser, U., Groh, G., Günnemann, S., Hüllermeier, E., Krusche, S., Kühl, N., Kühnberger, K.-U., Rudolph, J., Schmid, U., & Kasneci, G. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. *Learning and Individual Differences, 103*, 102274. https://doi.org/10.1016/j.lindif.2023.102274

Kusumaningtyas, W. (2025). Pemanfaatan AI untuk meningkatkan pembelajaran SMP. RIGGS: Journal of AI and Digital Business, 4(2). https://doi.org/10.31004/riggs.v4i2.827

Leny, L. (2025). Peningkatan motivasi belajar siswa melalui pemanfaatan AI. SENTIKJAR: Seminar Nasional IAIM. https://journal.uiad.ac.id/index.php/SENTIKJAR/article/view/3133

Martínez-Moreno, J., Zhou, X., & Petko, D. (2024). Personalized AI and student motivation: Evidence from adaptive learning environments. Higher Education, 89(2), 341–362. https://doi.org/10.1007/s10755-024-09747-z

Maulana, A. (2025). Implementation of artificial intelligence in Islamic Religious Education curriculum development: Adaptive learning model. Proceedings of ICIIS. https://jurnal.uindatokarama.ac.id/index.php/iciis/article/view/4473

Nun, L. I., Mohtarom, A., et al. (2025). The integration of AI as a teacher's partner in Islamic Religious Education learning. Journal of Islamic Education Research, 6(2). https://doi.org/10.35719/jier.v6i2.473

Nur 'Azizah, R., Roudloh, I., & Hidayani, S. (2025). The impact of AI on students' learning motivation in the digital era. Jurnal Ilmiah Nusantara. https://jicnusantara.com/index.php/jiic/article/view/5993

OECD. (2021). *OECD Digital Education Outlook 2021: Pushing the frontiers with artificial intelligence, blockchain and robots.* OECD Publishing. https://doi.org/10.1787/589b283f-en

Purba, S., et al. (2025). Pengaruh penggunaan teknologi AI terhadap motivasi belajar mahasiswa. JERKIN, 3(3). https://doi.org/10.31004/jerkin.v3i3.402

Schindler, L. A., Burkholder, G. J., Morad, O. A., & Marsh, C. (2022). Computers in education: A meta-analysis of motivational and engagement outcomes. *Computers & Education, 176*, 104351. https://doi.org/10.1016/j.compedu.2021.104351

Selwyn, N. (2022). *Education and technology: Key issues and debates* (3rd ed.). Bloomsbury Academic. URL https://dokumen.pub/education-and-technology

Surya, J. I., & Parptiyono, K. (2025). AI and learning motivation in SMA students. Edukasiana: Jurnal Inovasi Pendidikan, 4(3). https://doi.org/10.56916/ejip.v4i3.1479

Tasya, C. H., Sangka, K. B., & Octoria, D. (2025). Pengaruh pemanfaatan artificial intelligence terhadap motivasi belajar mahasiswa. Jurnal Pendidikan Ekonomi (JUPE). https://ojs.udb.ac.id/BISMAK/article/view/5146

Umar, U., Hendra, H., & Yusoof, M. H. B. (2019). Building Children's Character: Ethnographic Studuy of Maja Labo Dahu Culture at Bima Community. *Jurnal Iqra": Kajian Ilmu Pendidikan, 4*(2), 182-201.

Zahren, R., Yogica, R., & Fitri, R. (2025). Pembelajaran berbasis kecerdasan buatan terhadap motivasi belajar peserta didik dalam pembelajaran biologi: A systematic literature review. CAHAYA: Journal of Research on Science Education, 3(1). https://doi.org/10.70115/cahaya.v3i1.280

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2023). Systematic review of research on artificial intelligence applications in higher education—Where are the educators? *International Journal of Educational Technology in Higher Education, 20*(1), 14. https://doi.org/10.1186/s41239-023-00372-8

Zhai, X., He, P., & Liu, M. (2025). AI augmentation and learner engagement in education. Frontiers in Education. https://doi.org/10.3389/feduc.2025.1689205

Zhao, J., Wang, H., & Liu, Y. (2025). AI motivation scale (AIMS): Development and validation. Journal of Educational Psychology. https://doi.org/10.1080/15391523.2025.2478424

Zhao, J., Wang, H., & Liu, Y. (2025). The role of learners' AI literacy and resilience in boosting their engagement and motivation in AI-based settings. Learning and Motivation, 91, 102152. https://doi.org/10.1016/j.lmot.2025.102152