

Research Article

# Implementation of Artificial Intelligence-Based Learning Media and Its Implications for Student Learning Motivation in Islamic Religious Education (PAI) Subjects

Nur Fais Zalillah

Sunan Giri University, Indonesia

\*Corresponding Author: [nurfaiszalillah0117@gmail.com](mailto:nurfaiszalillah0117@gmail.com)

**Abstract:** This study aims to analyze the implementation of Artificial Intelligence (AI)-based learning media and its implications for student learning motivation in Islamic Religious Education (PAI). This study uses a systematic literature review approach by examining various reputable scientific articles discussing the integration of AI in education and the dynamics of learning motivation in the context of PAI. The results of the study indicate that the use of AI through adaptive learning systems, educational chatbots, gamification, and learning analytics can increase the effectiveness, personalization, and interactivity of learning. This implementation has a positive impact on cognitive motivation through increased conceptual understanding, affective motivation through active participation and emotional engagement, and spiritual motivation through strengthening reflection and internalization of Islamic values. However, ethical challenges, the risk of depersonalization of the teacher's role, and inequality in digital access are crucial issues that require policy attention and human-centered pedagogical design. Theoretically, this study offers an integrative conceptual framework that combines technological innovation with Islamic educational epistemology. Practically, the results of this study provide recommendations for teachers, schools, and policymakers to develop AI-based PAI learning models that are adaptive, ethical, and oriented towards character building.

**Keywords:** Artificial Intelligence; Digital Transformation; Gamification; Islamic Religious Education; Learning Motivation.

## 1. Introduction

In the rapidly evolving digital era, technology has become an inseparable part of everyday life. Education is one aspect of life that continues to adapt and adjust to the ever-changing presence of technology (Dito & Pujiastuti, 2021). One technology that is increasingly attracting the attention of various groups is the emergence of artificial intelligence (AI). AI has the ability to generate information and produce output that can support various human activities, particularly during teaching and learning activities in schools (Hikmawati *et al.*, 2023). Using AI provides the ability to transform teaching and learning activities in the classroom to be more responsive, flexible, and tailored to the needs of each individual student.

In the realm of Islamic Religious Education (PAI), this dynamic presents both challenges and opportunities. PAI, a subject steeped in values, spirituality, and character building, is often associated with conventional approaches centered on lectures, memorization, and cognitive evaluation alone. Meanwhile, today's digital generation is growing up in an interactive technology ecosystem that demands active engagement, rapid feedback, and personalized and contextual learning experiences. The misalignment between traditional pedagogical approaches and the characteristics of digital learners has the potential to decrease learning motivation, diminish engagement, and foster the perception that PAI is less relevant to the realities of modern life.

Learning motivation is defined by Saikhudin and Yeli (2026) as the intrinsic and extrinsic forces that drive a person to engage in learning activities with full awareness, clear direction, and high consistency. Motivation increases awareness of learning goals, thereby encouraging

Received : 10 December 2025

Revised : 11 January 2026

Received : 14 February 2026

Online Available : 16 March 2026

Current version : 16 March 2026



Copyright: © 2025 by the author.  
Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY SA) license (<https://creativecommons.org/licenses/by-sa/4.0/>)

students to study harder (Mawaddah & El-Yunusi, 2024). This definition suggests that motivation stems not only from external factors such as learning methods and media, but also from intrinsic drives related to meaning, values, and spiritual awareness. This is in line with the opinion of Marfu'ah *et al.* (2024), who define learning motivation as the intrinsic and extrinsic drives that guide individuals in carrying out academic activities to understand and master the learning material provided. This statement reinforces the fact that AI-based learning media has the potential to act as an external factor that can drive student motivation.

Learning media is a strategic tool capable of increasing student enthusiasm in the learning process (Rahmatin *et al.*, 2021). Therefore, its use is closely related to the concept of learning as a dynamic interaction process between educators, students, and learning resources (Antula *et al.*, 2024). Learning media is a tool or tool that can be used as an intermediary between teachers as educators who provide information and students as recipients of information (Yusril *et al.*, 2022). Learning media is a strategic instrument that functions to stimulate student enthusiasm and cognition to create an effective learning process (Shomad & Rahayu, 2022). Rowntree explains that one of the functions of learning media is to stimulate learning motivation, where students who were previously bored with monotonous learning can become interested because of the learning media (Fadilah *et al.*, 2023). Another opinion from (Mas'udet *et al.*, 2023), that learning media is a tool for educators in conveying material to students so that it can be understood more efficiently and smoothly.

AI-based learning media has become a crucial tool in supporting a more effective, efficient, and personalized teaching and learning process. With the ability to analyze student behavior data, provide instant feedback, and adapt materials to students' abilities, AI technology is believed to be able to address the limitations of traditional learning approaches. Technologies such as *intelligent tutoring systems*, educational chatbots, and *learning analytics platforms* have become a global trend, beginning to be adopted by various educational institutions worldwide (Ahmad *et al.*, 2023). Research by Lin and Chen (2024) confirms that AI can improve learning motivation and academic achievement through personalized content and interactions that adapt to student development.

Rivai (2009), put forward five main indicators in measuring the effectiveness of the use of learning media in the classroom, which include: 1) relevance, 2) teacher ability, 3) ease of operation, 4) availability of facilities, and 5) usefulness value. The implementation of media that is aligned with the instructional process such as the use of audiovisual media, teaching aids, and guidebooks has been proven to be closely related to increasing active student participation, both in the form of discussions, practicals, and the courage to express opinions (Masnawati *et al.*, 2023). Meanwhile, according to Zubairi (2023), indicators of learning motivation include: 1) The desire and desire to succeed, 2) The drive and need for learning, 3) The hope and aspirations for the future, 4) The appreciation for learning, 5) The presence of interesting activities in learning 6) The presence of a conducive learning environment.

Marfu'ah *et al.* (2024) demonstrated that learning motivation plays a central role in students' academic success in Islamic Religious Education (PAI) because it influences affective, cognitive, and psychomotor engagement. When AI is able to create interactive, adaptive, and personalized learning experiences, the potential for increasing students' intrinsic and extrinsic motivation increases. This increased motivation must remain linked to spiritual goals to avoid becoming trapped in mere performative achievement. Although various studies have discussed the integration of AI in PAI and the importance of learning motivation, a significant research gap remains. Some studies focus on the technical aspects of AI implementation, while others emphasize the concept of motivation in PAI in general. There are still few studies that comprehensively examine the relationship between the implementation of AI-based learning media and student learning motivation in an integrated manner across intrinsic, extrinsic, and spiritual dimensions. This gap opens up scientific space for deeper and more integrative conceptual integration.

## 2. Literature Review

### Artificial Intelligence in Education

Artificial Intelligence (AI) has become one of the most transformative technologies in modern education. AI refers to computer systems that are capable of performing tasks that

normally require human intelligence, such as learning, reasoning, decision making, and language processing. In the educational context, AI enables the development of intelligent systems that can assist teachers and students in the learning process through automation, data analysis, and adaptive learning mechanisms.

The integration of AI in education has led to the emergence of several technological innovations, such as intelligent tutoring systems, adaptive learning platforms, educational chatbots, and learning analytics. According to Ahmad et al. (2023), AI-based systems are capable of analyzing students' learning patterns and providing personalized feedback that helps learners improve their understanding of learning materials. This capability allows learning to become more individualized and responsive to students' needs.

Furthermore, AI can enhance teaching effectiveness by assisting teachers in monitoring student progress, identifying learning difficulties, and designing appropriate learning interventions. Lin and Chen (2024) explain that AI-supported learning environments allow teachers to shift their role from information transmitters to learning facilitators who guide students in a more interactive and student-centered learning process.

However, the integration of AI in education also raises several concerns. Issues such as data privacy, ethical considerations, and the potential reduction of human interaction in learning environments remain important challenges. Therefore, the implementation of AI in education requires a balanced approach that integrates technological innovation with pedagogical and ethical considerations.

### **Learning Media in the Teaching and Learning Process**

Learning media plays a crucial role in facilitating effective knowledge transfer between teachers and students. Learning media refers to any tool, technology, or material used to convey information and support the learning process. The use of appropriate learning media can enhance students' understanding, engagement, and motivation during learning activities.

According to Rahmatin et al. (2021), learning media serves as a communication bridge between educators and learners by presenting information in a more structured, attractive, and understandable manner. Similarly, Yusril et al. (2022) state that learning media functions as an intermediary that helps simplify complex information so that it can be easily understood by students.

Rowntree emphasizes that one of the primary functions of learning media is to stimulate student motivation. When learning materials are presented using engaging media formats such as visual, audio, and interactive content, students tend to become more interested and actively involved in the learning process (Fadilah et al., 2023). This indicates that learning media does not only function as a tool for delivering information but also as a means of encouraging student participation.

Rivai (2009) further explains that the effectiveness of learning media can be measured through several indicators, including relevance to learning objectives, teacher competence in using the media, ease of operation, availability of supporting facilities, and the usefulness of the media in improving learning outcomes. These indicators highlight the importance of selecting appropriate learning media to support successful learning experiences.

With the advancement of digital technology, learning media has evolved from traditional tools into more sophisticated digital and AI-based systems. These developments provide new opportunities for educators to create innovative learning environments that support interactive and personalized learning.

### **Learning Motivation in Islamic Religious Education (PAI)**

Learning motivation is one of the key factors influencing students' academic success. Motivation can be defined as the internal and external forces that drive individuals to engage in learning activities and persist in achieving educational goals. In the context of Islamic Religious Education (PAI), motivation is not only related to cognitive achievement but also to the development of spiritual awareness and moral character.

Saikhudin and Yeli (2026) define learning motivation as the intrinsic and extrinsic drives that encourage individuals to participate actively in learning activities with clear direction and strong commitment. Similarly, Mawaddah and El-Yunusi (2024) explain that motivation increases students' awareness of learning goals and encourages them to engage more deeply in the learning process.

In Islamic education, learning motivation also has a spiritual dimension. Students are expected not only to understand religious concepts intellectually but also to internalize Islamic values and apply them in their daily lives. Marfu'ah et al. (2024) emphasize that motivation in PAI learning includes cognitive motivation (understanding religious knowledge), affective motivation (developing attitudes and values), and spiritual motivation (strengthening faith and moral awareness).

Indicators of learning motivation include the desire to succeed, the need for learning, future aspirations, appreciation of learning activities, engaging learning experiences, and a supportive learning environment (Zubairi, 2023). When these elements are present, students are more likely to develop a strong commitment to learning and actively participate in educational activities.

Therefore, enhancing learning motivation in PAI requires innovative teaching strategies that combine cognitive engagement with emotional and spiritual development.

### **Integration of Artificial Intelligence in Islamic Religious Education**

The integration of Artificial Intelligence in Islamic Religious Education represents a new approach to improving the effectiveness and relevance of PAI learning in the digital era. AI technology has the potential to transform traditional teaching methods into more interactive, adaptive, and personalized learning experiences.

AI-based learning tools such as educational chatbots can provide instant responses to students' questions related to religious concepts, while adaptive learning systems can adjust learning materials according to students' levels of understanding. Learning analytics can also help teachers identify students' strengths and weaknesses, allowing them to design more targeted instructional strategies.

In the context of PAI, the use of AI can support students in exploring religious knowledge through interactive simulations, digital Qur'an learning platforms, and personalized reflection activities. These technologies can enhance students' engagement and motivation while facilitating deeper understanding of Islamic teachings.

However, the implementation of AI in PAI must remain aligned with the fundamental values of Islamic education. Technology should serve as a supporting tool rather than replacing the essential role of teachers as moral guides and spiritual mentors. Human interaction, ethical guidance, and value-based education remain central elements in Islamic learning.

Consequently, the integration of AI in PAI should adopt a human-centered pedagogical approach that balances technological innovation with the principles of Islamic educational philosophy. Such an approach ensures that AI contributes not only to academic achievement but also to character development and spiritual growth.

### **3. Method**

The approach applied in this research is the literature study method. This technique focuses on data collection through an in-depth review of literary sources, both printed and digital, including journals, encyclopedias, and reference books directly related to the research object. This aligns with Nazir's (2015) view, which states that literature study is a data collection technique through the review of books, notes, and reports relevant to the research problem. In line with this, Arikunto (2002) emphasized that literature study aims to develop a theoretical foundation by extracting information from various references such as books, magazines, and other literary documents.

The method used in this study was to determine the Implementation of Artificial Intelligence- Based Learning Media and its Implications for Student Learning Motivation in Islamic Religious Education (PAI). Through this approach, the study is expected to provide better insights related to the Application of Artificial Intelligence -Based Learning Media on Student Learning Motivation in Islamic Religious Education (PAI). The output of this study is expected to serve as reference material for educators and policymakers in developing learning models that are more effective and relevant to student characteristics. More broadly, these findings are projected to be able to make a real contribution to efforts to continuously improve the quality of education.

### **4. Results and Discussion**

#### **Conceptual Artificial Intelligence in Modern Education**

Major changes in the world of artificial intelligence (AI) in schools today rely heavily on advances in computers, big data processing, and the internet that connects everyone, all of which have created a new way of digital learning in the 21st century. Previously, educational technology consisted of simple computer programs focused solely on practice problems. However, now, the presence of AI has transformed everything into adaptive, responsive, and personalized systems. This transformation presents learning that is no longer uniform, but rather tailored to the characteristics, needs, and learning styles of each student. In Islamic Religious Education (PAI), the development of AI offers strategic opportunities to increase the effectiveness and efficiency of learning. As emphasized by Fitriani (2023), Islamic Religious Education (PAI) is an integral part of the curriculum, and AI (Artificial Intelligence) technology has offered various potentials to increase the effectiveness and efficiency of PAI learning. This statement shows that AI is not merely an additional tool separate from the curriculum, but rather a tool that can help students deepen and believe in the internalization of religious values through a more contextual pedagogical approach.

Conceptually, the implementation of AI in modern education can be mapped into three main components: adaptive learning systems, educational chatbots, and learning analytics. First, adaptive learning systems work by analyzing student learning patterns and then automatically adjusting the material, difficulty level, and feedback. In Islamic Religious Education (PAI) learning, this system can be used to adjust students' understanding of Islamic jurisprudence (fikih), creed (aqidah), or interpretation (tafsir) based on their individual cognitive abilities. Second, AI-based educational chatbots function as virtual assistants capable of answering students' questions in real time. In practice, as explained in Fitriani's (2023) study, the use of AI technology in PAI includes the use of chatbots to answer student questions, voice recognition systems, and sentiment analysis of students' perceptions of learning materials. The presence of these chatbots allows students to obtain conceptual clarification without having to wait for face-to-face interactions, thereby increasing learning independence.

Third, learning analytics allows educators to analyze student participation data, levels of understanding, and interaction patterns. This data serves as the basis for designing more targeted actions or teaching methods. This change is a sign that our learning methods have shifted, from being based solely on intuition or guesswork to learning based on real facts and figures (data-driven education). Specifically, in Islamic Religious Education (PAI), Fuad and Fakhruddin (2025) state that the use of Artificial Intelligence in Islamic religious education requires attention to policy, innovation, and its implications. This statement demonstrates that AI integration should not be done haphazardly or only once, but must be carried out carefully through clear regulations, new and creative methods, and paying attention to the values of truth and responsibility. Furthermore, their research explains that AI in Islamic Religious Education (PAI) is applied through digital tools such as Concordance-Based Word Search, a Quran index application, a Quran translation question and answer system, and the Muslim Pro and ChatGPT applications to improve the quality of learning. This integration enriches learning resources while opening broader access to Islamic literature.

The dynamics of AI use in Islamic Religious Education (PAI) also present challenges. In a study by Rofiati et al. (2025), the application of AI at the high school level was able to increase student interaction and independence, but also raises the risk of limited religious data and technological dependence. The development of AI in education is not just a matter of sophisticated tools or technology. More than that, it also involves our readiness to understand how knowledge is obtained and the moral responsibility in its use. Fundamentally, the presence of AI has transformed digital learning from merely conveying information to interactive and reflective learning. In Islamic Religious Education (PAI) learning, this transformation opens up space for integration between the cognitive and spiritual dimensions through more contextual media for the digital generation. AI is not just a tool, but a medium that reshapes the relationship between teachers, students, and religious knowledge in a dynamic digital environment.

### **Characteristics Islamic Religious Education Learning in the Digital Era**

Islamic Religious Education (PAI) has unique characteristics as a values-based education that aims to shape students' faith, morals, and spiritual awareness. PAI not only transfers religious knowledge but also internalizes the values of monotheism, morality, and social responsibility. PAI learning requires an integrative approach between cognitive, affective, and

psychomotor aspects. In the digital era, these characteristics face complex challenges. Generation Z grew up in a technology-rich, fast-paced, visual, and interactive environment. Meanwhile, the PAI learning approach in many schools still often uses old methods, namely lectures and textual memorization. This gap has the potential to reduce students' learning motivation, because traditional approaches are less aligned with their characteristics as children who have been exposed to technology since birth.

The implementation of AI in Islamic Religious Education (PAI) has the potential to bridge this gap. Fitriani (2023) emphasized that AI offers the potential to increase the effectiveness of Islamic Religious Education (PAI) learning. PAI's characteristics as a values education are not in conflict with technology but can be strengthened through appropriate digital innovation. For example, the use of an AI-based question-and-answer system allows students to explore the meaning of Quranic verses in greater depth and context. Fuad and Fakhruddin (2025) emphasized the importance of considering policies and implications in the use of AI in Islamic Religious Education (PAI). This means that technology integration must maintain the spiritual essence and authority of Islamic scholarship. PAI as a values education cannot be completely left to algorithms; the role of teachers as spiritual guides remains central. Research by Rofiati *et al.* (2025) found that the use of AI increases student interaction and independence. This is relevant to the characteristics of Generation Z, who tend to prefer technology-based independent learning. However, the risk of technological dependence is also an important consideration, as PAI emphasizes character building and depth of reflection, not simply speed of information access.

#### **AI-Based Learning Media Implementation Model in Islamic Education**

The implementation of Artificial Intelligence (AI)-based learning media in Islamic Religious Education (PAI) cannot be separated from the transformation of the digital learning paradigm that positions students as active subjects. AI functions as a driver or accelerator of the emergence of new, creative teaching methods that enable more personalized, interactive, and reflective learning. AI implementation models in PAI can be classified into several strategic approaches: AI chatbots for discussions of faith (aqidah) and fiqh (jurisprudence), personalized systems for learning tajwid (recitation) and memorization (memorization), AI-based gamification, and *learning analytics* for mapping students' spiritual-cognitive development. First, the use of AI chatbots in discussions of faith (aqidah) and fiqh creates a responsive and contextual digital dialogue space. Chatbots can be designed to answer students' questions related to the concept of monotheism, the laws of worship, and contemporary issues of fiqh based on validated reference sources. This model strengthens *the student-centered learning approach* that encourages independent exploration. According to Amin (2024), learning is no longer solely teacher-centered but oriented toward active student involvement through various digital platforms such as *Learning Management Systems* (LMS), educational social media, Islamic preaching videos, and Quranic learning apps. The integration of chatbots into LMSs or Quranic learning apps expands discussion space and fosters students' courage in asking questions that might be difficult to address in person.

Second, an AI-based personalized tajwid and memorization learning system enables automatic pronunciation evaluation through speech recognition technology. This system can detect errors in pronunciation and length of recitation, then provide instant feedback. With an adaptive approach, the difficulty level of memorization material can be adjusted to student achievement. This model not only improves the technical accuracy of recitation but also strengthens students' confidence in the process of learning the Quran. Third, AI-based gamification presents educational game elements designed to increase *engagement*. The system can award points, badges, or achievement levels for each successful understanding of material on morals, Islamic history, or hadith. Robbi and Syafi'uddin (2025) stated that the use of digital media and interactive techniques can increase student enthusiasm.

Fourth, *learning analytics* is a crucial tool for mapping students' spiritual-cognitive development. Through data analysis of learning activities, teachers can identify patterns of student engagement, memorization consistency, and responses to specific material. This data helps teachers design more personalized coaching interventions. However, AI implementation also faces challenges related to digital literacy and teacher preparedness. According to Robbi and Syafi'uddin (2025), while the use of digital media and interactive methods does increase student motivation and participation, barriers remain in the form of the digital divide and low

technological literacy among teachers. The AI implementation model in Islamic Religious Education (PAI) is not simply the integration of technological devices, but rather the reconstruction of learning strategies that balance interactivity, personalization, and spiritual values. AI acts as a facilitator, expanding access, improving learning accuracy, and encouraging active student participation in understanding Islamic teachings contextually.

### **Implications for Students' Intrinsic and Extrinsic Motivation**

The implementation of AI-based learning media in Islamic Religious Education (PAI) has significant implications for students' intrinsic and extrinsic motivation. Intrinsic motivation relates to internal drives such as curiosity, satisfaction from understanding the material, and spiritual awareness. Meanwhile, extrinsic motivation relates to external factors such as rewards, recognition, or academic evaluation. The use of AI in education has the power to impact both related aspects simultaneously. From an intrinsic motivation perspective, a system that adapts lessons to individual needs and provides rapid feedback or assessments makes students feel in control of their own learning and feel capable or expert in their field. When students can learn Tajweed at their own pace and receive immediate evaluation from the AI system, an experience of success emerges that strengthens self-confidence. This principle aligns with *Self-Determination Theory*, which explains that the main key to someone having internal motivation is feeling in control of their choices, feeling capable of carrying out their tasks, and feeling a good relationship with others and their environment. Humanistically designed AI can support these psychological needs by providing an adaptive and supportive learning environment.

Furthermore, chatbot-based learning and gamification increase interactivity, which leads to active participation. According to Robbi and Syafi'uddin (2025), the use of digital media and interactive methods increases student motivation and participation, despite technological literacy challenges. When students feel actively engaged, their intrinsic motivation grows through a sense of ownership of the learning process. Extrinsic motivation is also strengthened through digital reward systems, level achievements, and data-driven feedback. AI-based gamification provides symbolic recognition that can stimulate learning enthusiasm. However, it is important to ensure that external rewards do not displace the spiritual orientation of Islamic Religious Education. Teachers need to balance achievement-based motivation with religious awareness.

The transformation towards *student-centered learning*, as discussed by Amin (2024), also contributes to increased motivation. The article explains that learning models based on various digital platforms open up opportunities for broader engagement, but require teacher training and the judicious management of sensitive material issues. The relationship between AI and *self-determination theory* becomes increasingly relevant when learning is designed to meet three basic student needs: autonomy (the freedom to choose a learning rhythm), competence (feedback that reinforces abilities), and connectedness (digital interactions that remain humanistic). When these three aspects are met, intrinsic motivation will develop sustainably, while extrinsic motivation serves as an additional reinforcement.

### **Critical Analysis and Implementation Challenges**

While the implementation of AI-based learning media in Islamic Religious Education (PAI) offers numerous innovative opportunities, several critical challenges require in-depth analysis. These challenges include the ethical aspects of AI use, the risk of depersonalizing the teacher's role as a *murabbi (leader)*, inequality in digital access, and the need for comprehensive problem-solving plans and regulations. Ethically, the use of AI in religious education requires extra caution. Unverified algorithms can provide erroneous explanations or interpretations of verses or sacred religious texts. The development of AI systems in Islamic Religious Education (PAI) must involve Islamic experts to ensure content validity. This principle of caution aligns with the concept of *human-centered AI*, where technology is designed to support human values and spirituality.

The danger of losing the human aspect or personal closeness in the teacher-student relationship is a matter of great concern. In Islamic educational tradition, teachers are not merely instructors, but *also guides* who guide students' morals and spirituality. If AI is used excessively without pedagogical control, there is the potential for a reduction in emotional interaction and role models. Rusdiana and Ramli (2024) emphasize that AI-based *e-learning*

*models* increase interactivity and personalization, but do not replace the role of humans. Teachers remain central to fostering values and character. Inequality in digital access is also a real challenge. Not all schools have adequate infrastructure or sufficient technological literacy. The use of technology must be accompanied by policies for equitable access and teacher training. Research by Dzar *et al.* (2025) found a positive relationship between the use of learning technology and student learning motivation. However, this success is highly dependent on the availability of facilities and the competence of educators. Aziz and Taqwa (2024) found that digital media such as Quizizz are effective in increasing motivation because they are interactive and tailored to the characteristics of the digital generation. However, this effectiveness requires technical and pedagogical readiness. Without adequate training, teachers may experience difficulties in managing technology, so that learning objectives are not achieved optimally.

## 5. Conclusion

Based on the conclusions of the literature review above, the implementation of Artificial Intelligence (AI)-based learning media in Islamic Religious Education (PAI) shows transformative potential in reconstructing the learning paradigm towards a more adaptive, interactive, and student-oriented model. AI functions not only as a technological aid, but also as a platform or intermediary for teaching methods that can adapt lessons to the needs of each student, expand access to Islamic resources, and provide data-based feedback that supports continuous learning development. The integration of AI has been proven to have implications for increasing student learning motivation in the cognitive dimension through deeper understanding, the affective dimension through increased participation and active involvement, and the spiritual dimension through strengthening reflection, intention, and awareness of learning as part of worship. Theoretically, these findings enrich the development of technology-based PAI learning models that emphasize *human-centered* and *student-centered learning* approaches within the framework of Islamic values. Practically, teachers and schools need to improve digital literacy, design learning designs that are responsible and appropriate to students' real lives. In addition, schools must ensure that sophisticated technology remains in line with the formation of morals or personality.

## Reference

- Ahmad, M., Rahman, M., & Sulaiman, N. (2023). Artificial Intelligence in education: Enhancing learning outcomes through adaptive technology. *Journal of Educational Technology & Society*, 26(1), 15-26.
- Amin, A. (2024). Innovative efforts of Islamic Religious Education teachers in the digital era. *Journal of Education Research*, 5(4), 5409-5417. <https://doi.org/10.37985/jer.v5i4.1828>
- Antula, N. S., Bouty, A. A., Suhada, S., & Amali, L. N. (2024). Development of 4D model-based cartoon animation media to improve understanding of sorting algorithms. 6(2), 121-134.
- Arikunto, S. (2002). *Research procedures: A practical approach*. Jakarta: Rineka Cipta.
- Aziz, I., & Taqwa, H. (2024). The effectiveness of using digital learning media in motivating student learning in Islamic Religious Education material. *Idarab Tarbawiyah: Journal of Management in Islamic Education*, 6(5), 522-528. <https://doi.org/10.32832/itjmie.v6i5.20015>
- Dito, S. B., & Pujiastuti, H. (2021). The impact of the Industrial Revolution 4.0 on the education sector: A literature review of digital learning in primary and secondary education. *Journal of Science and Science Education*, 4(2), 59-65.
- Dzar, A., Sulaeman, S., & Ya'kub, Y. (2025). The influence of the use of learning technology on student learning motivation in Islamic Religious Education subjects at SMA Muhammadiyah Lempangang. *Journal of Scientific Publication*, 2(2), 222-234.
- Fadilah, A., Nurzakiah, K. R., Kanya, N. A., Hidayat, S. P., & Setiawan, U. (2023). Understanding media, goals, functions, benefits and urgency of learning media. *Journal of Student Research (JSR)*, 1(2), 1-17.
- Fitriani, A. D. (2023). Implementation of AI (Artificial Intelligence) technology in Islamic Religious Education learning. *Wildan: Journal of Education and Teaching*, 3(2), 70-84. <https://doi.org/10.54125/wildan.v3i2.47>
- Fuad, A. J., & Fakhruddin, F. M. (2025). Utilization of Artificial Intelligence in Islamic Religious Education learning. *Sosaintek: Journal of Social Sciences, Science and Technology*, 2(1), 1-12.
- Hikmawati, N., Sufiyanto, M. I., & Jamilah, J. (2023). Concept and implementation of Artificial Intelligence in elementary school/Islamic elementary school curriculum management. *Abuya: Journal of Elementary Education*, 1(1), 1-16.

- Lin, H., & Chen, Q. (2024). Artificial Intelligence (AI) integrated educational applications and college students' creativity and academic emotions: Students and teachers' perceptions and attitudes. *BMC Psychology*, 12(1), 1-16. <https://doi.org/10.1186/s40359-024-01979-0>
- Marfu'ah, M., Rambe, R., Affandi, A., & Subhan, S. (2024). Learning motivation in Islamic Religious Education learning. *Journal of Education Research*, 5(4), 6001-6005. <https://doi.org/10.37985/jer.v5i4.1812>
- Masnawati, E., Kurniawan, Y., Djazilan, M. S., Hariani, M., & Darmawan, D. (2023). Optimizing academic performance through self-efficacy, academic motivation, and information and communication technology resources. *TIN: Terapan Informatika Nusantara*, 3(11), 463-471. <https://doi.org/10.47065/tin.v3i11.4134>
- Mas'ud, H., Rijal, B. S., Dwinanto, A., & Muthia, M. (2023). Development of Android-based graphic design learning media as a source of learning. In *Proceedings of Vocational Engineering International Conference, Vol. 5*, 277-28.
- Mawaddah, F., & El-Yunusi, M. Y. M. (2024). Implementation of portfolio-based assessment methods in improving student learning motivation at MI KH Abu Mansur. *Golden Age and Inclusive Education*, 1(2), 61-68.
- Nazir, M. (2013). *Research methods*. Bogor: Ghalia Indonesia.
- Rahmatin, U., Katili, M. R., Hadjaratie, L., & Suhada, S. (2021). Development of comic media for learning. *Jambura Journal of Informatics*, 3(1), 11-19. <https://doi.org/10.37905/jji.v3i1.10367>
- Rivai, N. S. (2009). *Teaching media*. Bandung: Sinar Baru Algesindo.
- Robbi, Z. F., & Syafi'uddin, S. (2025). Islamic Religious Education in the digital era: A review of literacy and its challenges. *Multidisciplinary Journal of Academic Sciences*, 2(3), 21-28.
- Rofiaty, A., Auwaliah, R., & Rohmad, M. A. (2025). Dynamics of the use of Artificial Intelligence (AI) in Islamic Religious Education learning in high school. *Atta'dib: Journal of Islamic Religious Education*, 6(2), 148-165.
- Rusdiana, R., & Ramli, M. (2024). Utilization of Artificial Intelligence (AI)-based E-learning models in Islamic Education. *ADDABANA: Journal of Islamic Religious Education*, 7(2), 69-84. <https://doi.org/10.47732/adb.v7i2.513>
- Saikhudin, M., & Yeli, S. (2026). Learning motivation in Islamic Religious Education: Integration of spiritual, moral, cognitive, and socio-emotional dimensions. *Al-Zayn: Journal of Social Sciences & Law*, 4(1), 3468-3475.
- Shomad, M. A., & Rahayu, S. (2022). The effectiveness of comics as a medium for learning mathematics. *Journal of Technology, Mathematics, and Social Science*, 2(2), 2829-3363.
- Yusril, Y., Jumardin, M., Hasaniah, D., Anini, S. A., Kontesa, E., Asmawati, N., & Saputra, H. N. (2022). Development of Android-based educational games using Smart Application Creator on visual media materials. *Decode: Journal of Information Technology Education*, 2(1), 36-44. <https://doi.org/10.51454/decode.v2i1.40>
- Zubairi, Z. (2023). Improving learning motivation in Islamic Religious Education. *Indramayu: Adab Publisher*.