

The Use of Artificial Intelligence in PAI Learning

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ARTICLE INFO

Volume: 4
ISSN: 2963-5489

KEYWORD

Artificial Intelligence, Islamic
Religious Education,
Independent Curriculum

ABSTRACT

This study aims to analyze the use of artificial intelligence (AI) in Islamic Religious Education (PAI) learning and evaluate its potential, challenges, and implications for the quality of the teaching and learning process. The research design uses a literature review approach with a systematic review method. Data were obtained from Sinta-accredited national journal articles, proceedings, and reputable online sources published in the 2020–2025 period. Appropriate articles were reviewed based on the themes of the use of AI-based learning media, the role of chatbots and intelligent tutoring systems, the impact on student motivation and learning independence, and issues of ethics and academic integrity.

Research shows that AI contributes positively to Islamic Religious Education (PAI) learning by increasing motivation to learn, expanding access to digital resources, facilitating adaptive learning, and supporting student independence. Furthermore, AI also assists teachers through administrative efficiencies such as automated assessments and learning outcome analysis. However, AI implementation still faces significant obstacles, including limited infrastructure, inadequate teacher digital literacy, and ethical challenges involving data privacy, algorithmic bias, and religious affiliation.

In conclusion, the use of AI in Islamic Religious Education (PAI) has the potential to enrich the learning experience if integrated with a hybrid approach that maintains the primary focus on teachers and religious scholars. This research emphasizes the need for a phased adoption strategy, strengthening teacher capacity, curating content in accordance with Islamic values, and implementing ethical policies to ensure AI implementation supports the goals of religious education comprehensively and responsibly.

1. Introduction

In today's digital era, the use of Artificial Intelligence (AI) in various fields is becoming an increasingly important topic, including in the education sector. AI offers diverse potential to improve the quality and efficiency of teaching and learning processes. AI has significant potential to personalize learning, increase administrative efficiency, and provide innovative teaching tools. The application of AI in education has attracted the attention of many researchers and practitioners due to its potential to improve the quality and expand the affordability of education. (Hafiz et al., 2024)

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As the use of digital technology expands, artificial intelligence (AI) offers concrete opportunities to enrich the teaching and learning process. AI can personalize learning to suit each student's needs (e.g., adaptive learning systems and intelligent tutors), expedite administrative tasks (e.g., automated grading, progress analytics), and provide innovative teaching tools such as adaptive quizzes, automated summaries, and real-time feedback. Several peer-reviewed studies have shown that AI has improved learning effectiveness and expanded access to education when implemented correctly.(Peng & Li, 2025)

However, the implementation of AI is not without its challenges. Key challenges that often arise are limited infrastructure and connectivity (the digital divide), the need to build teacher capacity to utilize AI tools pedagogically, and ethical issues including data privacy, algorithmic bias, and fidelity to traditional sources when processing religious texts automatically. Organizations and policy reviews emphasize that governance policies, teacher training, and risk mitigation mechanisms must be part of AI adoption strategies in education.(Nuryadin, 2023)

Therefore, to maximize the benefits of AI in education, including in Islamic schools or manuscript review programs, a phased approach is recommended, combining small pilots (proof of concept), ongoing training for educators, collaboration with digital libraries/archives, and ethical and privacy policies. With these steps, AI can become an empowering tool that enhances the quality of learning, expands educational affordability, and helps preserve religious heritage responsibly.(Cardona et al., 2023)

2. Literature Review

The rapid development of artificial intelligence (AI) technology during 2020–2025 has transformed the landscape of educational practice, including in Islamic Religious Education (PAI), with applications ranging from intelligent tutoring systems (ITS), learning chatbots, automated assessment systems, to large language model (LLM)-based learning material generators. Various systematic reviews and scoping reviews have shown a sharp increase in the number of AIEd research since 2021, especially after the emergence of generative models such as ChatBoot, with a primary focus on learning personalization, content adaptation, and real-time feedback support for learners, while highlighting ethical and technical challenges such as academic integrity, model bias, and teacher and infrastructure readiness.(Garzón et al., 2025)

In the context of religious learning, some early research and practice reports demonstrate the potential of AI to enrich religio-pedagogical experiences: AI can facilitate interactive materials (e.g., contextual quizzes, ethical case simulations, chatbots that guide discussions of religious texts), help differentiate according to student ability, and ease the administrative burden on teachers, but actual applications in Islamic Religious Education (PAI) are still relatively few and face typical obstacles including the need for “value filters” to ensure AI output aligns with religious values, limited local resources, and wariness of misinterpretations of theology.(Papakostas, 2025)

A critical evaluation perspective, the 2020–2025 literature highlights two key needs for further research in PAI: (1) stronger quantitative and qualitative empirical evidence regarding the impact of AI on PAI learning achievement and character formation, and (2) interventional experimental designs or case studies that explore how AI can be personalized to be consistent with local religious values and pedagogical practices—issues relevant to secondary schools and madrasahs seeking to contextually implement the Merdeka Curriculum.(Crompton & Burke, 2023)

3. Methodology

This research method uses a systematic literature review approach to analyze research results related to the use of artificial intelligence in Islamic Religious Education (PAI) learning. Data sources were obtained from Sinta-accredited journals, proceedings, institutional repositories, and online databases such as Google Scholar and ResearchGate. The search focused on articles published between 2020 and 2025 using keywords such as "Artificial Intelligence in Islamic Education" and "AI-based learning in Religious Education".

The analysis was conducted by grouping the findings into key themes, such as AI-based learning media, the use of chatbots or tutoring systems, the impact of AI on motivation and learning outcomes, and ethical issues. Validity was maintained by documenting the research trail. With this approach, the research is expected to provide a comprehensive overview of the use of AI in Islamic Religious Education (PAI) learning while also identifying research gaps for further development.

4. Results and Discussion

Literature analysis from recent research shows that the use of artificial intelligence (AI) in Islamic Religious Education (PAI) learning in Indonesia has a positive effect, especially on motivation and learning independence. For example, the study "PAI Learning Innovation: Application of Artificial Intelligence to Increase Student Motivation" by Luthfi Aulia Hidayat et al. (UPI) found that AI (chatbots, recommendation systems, adaptive platforms) can increase student motivation thanks to personalized materials and broader access to learning resources. (Luthfi Aulia Hidayat, 2024)

In addition, the study Implementing AI in Islamic Religious Education Learning Media to Improve Student Learning Independence in the Society 5.0 Era also shows that the use of ChatGPT as a learning medium helps students become more independent in searching, learning, and reviewing material without always relying on teachers or textbooks. (Tri Sutrisno, 2025) Supporting factors frequently mentioned in the literature are teacher readiness and technological infrastructure. Research on Islamic Religious Education Teachers' Perceptions of the Implementation of Artificial Intelligence (AI) in the Learning Process reports that Islamic Religious Education teachers generally have a positive attitude towards AI, but feel they lack sufficient digital literacy as well as training and supporting resources. (Kumalasari et al., 2025)

Meanwhile, from an infrastructure perspective, the article " Utilizing Artificial Intelligence in Islamic Religious Education Learning" highlights that policy support, network infrastructure, device access, and internet connections remain significant obstacles, particularly in areas with limited resources. (Fuad et al., 2024) Regarding ethics and integrity, recent research also emphasizes the need for content filtering and moral assessment. The study " Optimizing Artificial Intelligence-Based Chatbots in Islamic Education Learning in the Digital Era" states that although chatbots and other AI technologies can increase participation and motivation, there are concerns about the accuracy of responses, their conformity to religious values, and how teachers and religious scholars can monitor and ensure that the technology does not mislead. (Afiyati et al., 2025) Furthermore, the article "Opportunities and Challenges of Integrating Artificial Intelligence in the Evaluation of Islamic Religious Education Learning" also shows that the use of AI in evaluation (automated assessment) requires careful attention to aspects of fairness, transparency, and data integrity. (Fauzi et al., 2025)

Overall, the literature supports that AI has great potential to enrich Islamic Religious Education (PAI) learning: increasing motivation, expanding access to learning resources, accelerating the development of teaching materials, and supporting independent learning. However, this success is not automatic: it requires teacher mentoring, content curation, technical and cultural readiness, and further research focused on deeper religious aspects and the internalization of moral values. To this end, many studies recommend hybrid models that combine AI with human interaction (teachers, religious scholars), longer-term evaluative studies, and policies that ethically regulate the use of AI in religious education.

5. Conclusion

The use of artificial intelligence (AI) in Islamic Religious Education (PAI) learning has had a positive impact, particularly in increasing learning motivation and student independence, as well as expanding access to digital learning resources. AI has been proven to support personalized materials, provide rapid feedback, and assist teachers with administrative tasks. However, its implementation faces several challenges, such as limited infrastructure, low teacher digital literacy, and issues of ethics and alignment with religious values. Therefore, the use of AI in PAI needs to be implemented gradually, with teacher guidance, content curation that aligns with Islamic values, and clear policy support. Hybrid integration between AI technology and teacher interaction is an ideal solution to maintain effective learning while maintaining religious values.

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