

Implementation Of Artificial Intelligence in Islamic Religious Education at Muhammadiyah Junior High School Kottabarat Surakarta

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DOI:

<https://doi.org/10.23917/iseedu.v10i1.16379>

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Received: 23-02-2026

Accepted: 09-04-2026

Published: 11-04-2026



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Abstract: *Advances in Artificial Intelligence (AI) technology present both benefits and challenges for Islamic Religious Education (IRE), given that this subject is not only focused on cognitive achievement but also encompasses the development of students' faith, moral character, and spiritual values. This study aims to examine the implementation of AI in Islamic Religious Education at the Muhammadiyah Junior High School in Kottabarat, Surakarta. This study employs a qualitative approach, with data collection conducted through interviews with IRE teachers and the distribution of questionnaires to students, which were subsequently analyzed using the Miles and Huberman model. The results indicate that the implementation of various AI-based platforms including Quizizz, Chatbot, Blooket, Canva, and educational videos has been systematically integrated into a single learning sequence, from planning to evaluation, and has been shown to significantly enhance student engagement, motivation, and the effectiveness of IRE instruction. This study implies that the integration of AI in IRE has proven effective in increasing student engagement and learning effectiveness, thereby highlighting the need for an update to IRE learning theories and approaches that incorporate technology without neglecting*

spiritual values.

Keywords: Artificial Intelligence, AI, Learning, Islamic Religious Education, and Learning Innovation.

Abstrak: *Perkembangan teknologi Artificial Intelligence (AI) menghadirkan baik manfaat maupun tantangan bagi Pendidikan Agama Islam, mengingat mata pelajaran ini tidak hanya berorientasi pada pencapaian kognitif tetapi juga mencakup pembentukan keimanan, ahlak, dan nilai spiritual peserta didik. Penelitian ini bertujuan untuk mengkaji implementasi AI dalam pembelajaran Pendidikan Agama Islam (PAI) di SMP Muhammadiyah Program Khusus Kottabarat Surakarta. Penelitian ini menggunakan pendekatan kualitatif dengan pengumpulan data yang dilakukan melalui wawancara dengan guru PAI, dan penyebaran kuesioner kepada peserta didik, yang selanjutnya dianalisis menggunakan model Miles dan Huberman. Hasil penelitian menunjukkan bahwa implementasi berbagai platform berbasis AI, antara lain Quizizz, Chatbot, Blooket, Canva, dan Video pembelajaran, telah diintegrasikan secara terstruktur dalam satu alur pembelajaran, mulai dari perencanaan hingga evaluasi, terbukti meningkatkan keterlibatan, motivasi, dan efektivitas pembelajaran PAI secara signifikan. Penelitian ini mengimplikasikan bahwa integrasi AI dalam PAI terbukti efektif meningkatkan keterlibatan dan efektivitas belajar peserta didik, sehingga mendorong perlunya pembaharuan teori dan pendekatan pembelajaran PAI yang memadukan teknologi tanpa mengabaikan nilai spiritual. Namun, temuan mengenai risiko ketergantungan teknologi, penurunan berpikir kritis, dan ketidakakuratan konten AI mengimplementasikan bahwa guru agama harus meningkatkan literasi digital sekaligus mempertahankan perannya sebagai pembimbing nilai spiritual yang tidak tergantikan oleh mesin.*

Kata Kunci: Kecerdasan Buatan, AI, pembelajaran, Pendidikan Agama Islam, dan Inovasi Pembelajaran

Introduction

The development of digital technology has brought about fundamental changes in various aspects of life, including the world of education. This transformation is not limited to the use of computers and the internet but has extended to the emergence of Artificial Intelligence (AI), which continues to evolve rapidly. In the context of contemporary learning, various AI-based applications are increasingly being used to support the teaching and learning process (Ali et al., 2023). AI is essentially a technology designed to replicate human thinking through machine systems, with capabilities that include perception, knowledge management, and even creativity (Arly et al., 2023).

The strength of Artificial Intelligence lies in its ability to adapt to the characteristics and needs of each learner through machine learning, natural language processing, and big data, thereby opening up opportunities to enhance the effectiveness of learning (Russel, S., 2021). The combination of artificial intelligence and human capabilities is believed to maximize individual potential, expand the scope of information, and foster independent learning (Arly et al., 2023). Additionally, AI's speed and accuracy in processing data enable it to contribute to personalized learning, expanded access to education, and the streamlining of administrative processes (Sapura, 2024). With all its capabilities, AI is driving a paradigm shift in learning from a conventional teacher-centered model toward a more personalized, learner-centered approach (Holmes et al., 2019).

In the field of Islamic Religious Education (IRE), the trend toward digitalization presents two aspects that must be considered simultaneously: unique opportunities and challenges. IRE must adapt to the changing times to remain relevant to students. However, IRE has characteristics that are not merely oriented toward cognitive achievement but also encompass the cultivation of faith, piety, and noble character. The spiritual, moral, and affective dimensions that are deeply embedded in IRE demand caution when integrating technology into it. Therefore, the application of AI in IRE learning must take Islamic values into account comprehensively, positioning technology as a support for the internalization of Islamic values, not as a substitute for the essence of religious education itself (Muhaimin, 2012).

The potential of AI to support Islamic Education is substantial. This technology can help teachers deliver content in a more engaging, contextual, and interactive manner. For example, AI enables the use of digital simulations in teaching fiqh, making the learning experience more realistic and meaningful for students (Holmes et al., 2019). In terms of assessment, AI can automatically evaluate and objectively analyze learning outcomes in real time, allowing teachers to focus more on character development, spiritual guidance, and reinforcing students' values. This underscores that AI has the potential to be an effective tool for improving the quality of Islamic Religious education.

Nonetheless, research regarding artificial intelligence in education primarily centers on broad topics like math, science, and languages. There is a limited number of studies that specifically explore the use of AI in Islamic Religious Education. Nevertheless, the profound ethical and spiritual elements of Islamic Religious Education require a different approach from other subjects. The absence of thorough investigations in this domain may lead to a disconnect between progress in educational technology and the genuine requirements of religious education in academic institutions.

Existing studies generally focus more on improving the overall efficiency and quality of learning. (Rizwar & Fikri, 2024) concluded in their study that technological advancements open up new opportunities for Islamic Education, particularly through AI, although its use must be monitored to prevent distortions in the delivery of religious content. This finding underscores that while AI

offers various practical conveniences, its implementation still requires in-depth study because its algorithmic systems may not necessarily be able to fully accommodate ethical and spiritual dimensions.

Additionally, multiple areas of research still require attention. To begin with, investigations into the usage of artificial intelligence in Islamic Education for Junior High School students are limited, despite this stage being vital for developing character and religious identity. Moreover, current studies often concentrate on particular AI applications, neglecting a holistic view of the topic. Lastly, there has been a lack of substantial research that concentrates specifically on Islamic schools of excellence utilizing technology, which merge adherence to Islamic principles with advancements in digital innovation. These three gaps highlight the importance of conducting this research.

Based on the above context, this study was conducted at Junior High School Muhammadiyah Program Khusus Kottabarat Surakarta, a leading Islamic educational institution that prioritizes an integrated educational model grounded in Islamic values and the principles of Muhammadiyah. This school has a progressive and innovative educational orientation, with a clear commitment to integrating information technology into the learning process, making it an appropriate and relevant location to examine the implementation of AI in Islamic Religious Education (IRE) instruction. This study aims to analyze the implementation of Artificial Intelligence (AI) in Islamic Religious Education (IRE) instruction.

Research Methods

This study applies a descriptive qualitative method and field research. Data collection techniques were carried out through interviews and questionnaires. The data sources in this study were classified into two categories, namely primary data obtained through in-depth interviews with one Islamic education teacher to comprehensively explore the perceptions, experiences, and understanding of informants directly involved in the learning process (Sugiyono, 2011). In addition, questionnaires were given to students to obtain an overview of their views on the research object. The secondary data was sourced from documentary studies of various written materials, including books and journal articles relevant to this study. All collected data were analyzed using qualitative data analysis techniques sourced from Miles and Huberman, which involved three stages of analysis: data reduction (selecting relevant information), descriptive data presentation, and conclusion drawing (Sustiyo Wandu, Tri Nurharsono, 2013).

Results and Discussion

The Concept of *Artificial Intelligence (AI)* in Education

Artificial Intelligence (AI) is described as a technology that allows computer system to imitate human intellectual abilities, including reasoning, decision making, language understanding, and autonomous learning (Suharmawan, 2023). This technology is developing rapidly and operates through various techniques and approaches used to develop intelligent systems, including machine learning, natural language processing, computer vision, reasoning logic, and artificial neural networks (Gunawan et al., 2023b). This combination results in systems that are adaptive and continuously evolving based on the data processed, making AI a major driver of digital transformation in various sectors, including education (Domingos, 2015).

The ability of Artificial Intelligence (AI) to mimic human cognitive processes is fundamentally transforming the way technology interacts with the world of education. Unlike conventional learning technologies, which are passive and static, AI is dynamic and capable of responding to user needs in real time. In the context of Islamic Education at Junior High School Muhammadiyah Program Khusus Kottabarat Surakarta, these adaptive characteristics of AI are relevant to learning needs that are not only cognitive but also involve affective and spiritual dimensions. This aligns with the Technological Pedagogical Content Knowledge (TPACK) framework (Koehler, 2006), which emphasizes the importance of integrating technological knowledge, pedagogy, and content in a cohesive manner. Islamic Education teachers who effectively utilize AI require not only technological literacy but also a deep understanding of how such technology can holistically reinforce the goals of religious education.

TPACK explains that the effectiveness of technology use in learning is largely determined by teachers' ability to integrate three domains of knowledge: technological knowledge, pedagogical knowledge, and content knowledge. In the context of this study, the findings indicate that Islamic Education teachers at the school do not merely use AI as a technical tool, but are also able to integrate it into pedagogical strategies aligned with the characteristics of Islamic studies content. This aligns with the TPACK principle, which emphasizes that technology including AI with capabilities such as machine learning, natural language processing, and intelligent tutoring systems will only be effective if used contextually and tailored to specific learning objectives (Koehler, 2006). Thus, teachers' competence in selecting and guiding the use of AI is a determining factor in the successful implementation of technology in Islamic Education instruction.

Furthermore, research findings also show that AI plays a significant role in supporting personalized learning, where AI systems analyze data on students' learning activities and achievements to provide materials, exercises, and feedback tailored to individual needs (Zawacki-Richter et al., 2019). This aligns with the Pedagogical Knowledge dimension within the TPACK framework, which emphasizes the importance of tailoring instructional approaches to the needs and characteristics of students. In Islamic Education instruction, this personalization is highly relevant given the differences in students' religious backgrounds and understanding. AI frees teachers from the burden of manual assessment tasks, as the AI system can analyze evaluation results and provide feedback quickly and accurately (Gunawan et al., 2023a). This situation allows Islamic Education teachers to focus more on the roles that technology cannot replace namely, instilling values, providing spiritual guidance, and shaping students' character which constitute the core of Content Knowledge in Islamic Education, as emphasized in the TPACK framework.

On the other hand, the findings of this study can also be understood through the perspective of Constructivism, a theory proposed by Vygotsky and Piaget. Piaget emphasized that knowledge is actively constructed by individuals through the processes of assimilation and accommodation of new experiences (Piaget, 1972), while Vygotsky reinforced this idea with the concept of the Zone of Proximal Development (ZPD) the gap between a learner's current abilities and their potential abilities, which can be achieved with the assistance of a more competent individual (Vygotsky, 1978). In this study, AI serves as a digital scaffold that helps students bridge their ZPD in understanding Islamic studies material. An AI-based intelligent tutoring system acts as a virtual learning companion that adaptively adjusts the difficulty level of the material to the students' abilities, ensuring that the

process of constructing religious knowledge occurs gradually and meaningfully. This demonstrates that the use of AI in Islamic Religious Education is not passive-receptive but rather encourages students to actively construct their own understanding of Islamic values (Amina et al., 2025).

Implementation of *Artificial Intelligence (AI)* In Islamic Religious Education

The swift advancement of digital technology has led to transformations across many aspects of life, including the field of education. In this context, Artificial Intelligence (AI) has emerged as an innovation with the potential to enhance the effectiveness and efficiency of the learning process. The implementation of Artificial Intelligence (AI) technology at SMP Muhammadiyah Program Khusus Kottabarat Surakarta shows a progressive step in responding to educational challenges in the digital era. As an institution based on character and academic strengthening, Islamic Religious Education (IRE) subjects are the main focus of this study. The use of AI in IRE subjects is a breakthrough in presenting spiritual and ethical content with more interactive methods, while also serving as a tool for teachers in developing materials and evaluating students' understanding of religious values in a more in-depth and adaptive manner.

Based on an interview with Ms. Lintang, an Islamic Religious Education (PAI) teacher at SMP Muhammadiyah PK Kottabarat, several AI-based platforms that have been implemented in PAI learning can be identified. This implementation touches on two important aspects of learning planning: methods and media. The following is an in-depth discussion of each of the tools used:

1. Quizizz

Quizizz is sometimes used as a tool to conduct posttests in Islamic Education classes at SMP Muhammadiyah PK Kottabarat Surakarta. The use of this application provides a variety of evaluation models that are very different from conventional paper-based tests. Its main advantages lie in two aspects: first, from a practical standpoint, it supports the movement to minimize paper use and administrative efficiency because the entire process, from completion to collection and correction of answers, takes place digitally. Second, from a pedagogical perspective, its gamification features, such as real-time competitions with leaderboards and instant feedback, successfully create a more dynamic learning atmosphere. This triggers enthusiasm and intrinsic motivation among students to participate actively, transforming the often tense moment of evaluation into a challenging and enjoyable learning session.

2. Chatbot

A chatbot is a computer program designed to interact with users as if they were having a conversation with a human being. In the world of education, the presence of Artificial Intelligence (AI)-based chatbots has had a significant impact. Specifically in Islamic Religious Education learning, AI chatbots offer benefits such as increased efficiency, ease of access, and a more dynamic quality of learning interaction. This technology supports teachers and students in understanding basic Islamic teachings in a more in-depth and flexible manner, while also opening up the potential to enrich the learning experience and advance the quality of education in general. The use of AI chatbots has been implemented in practice by PAI teachers at SMP Muhammadiyah PK Kottabarat Surakarta. Based on interview results, teachers use chatbots to help create teaching modules or lesson plans (RPP). These chatbots serve to improve the structure of existing drafts, search for additional references, and obtain ideas or inspiration for innovative learning media.

3. Blooket Gameplay

The Blooket platform is an educational game that offers a variety of interesting game modes. Islamic Education teachers at SMP Muhammadiyah PK Kottabarat Surakarta creatively utilize the Blooket educational game platform to support learning. Among the various game modes available, the “Crypto Hack” game mode is the most popular among students and is often used by Islamic Education teachers as an effective medium for delivering and reviewing lesson material in an interactive format.

In its application, students are invited to compete in answering a series of questions designed by the teacher. Each correct answer will give them a number of “crypto coins,” as well as open up opportunities to “hack” and take coins from other players. This mechanism, inspired by the dynamics of the digital world, has succeeded in creating its own appeal for students. The elements of challenge, strategy, and healthy competition offered are able to stimulate enthusiasm for learning.

Based on the results of interviews, the application of this mode has been proven to be effective in increasing student engagement in learning, encouraging more active participation, and strengthening understanding of the material through repetition packaged in the form of a game. This makes the learning process more enjoyable and avoids monotony.

4. Canva

Based on the results of the study, Islamic Education teachers also use PowerPoint as the main medium for delivering material in class. The Canva platform in particular is a reliable tool for designing these presentations. With the support of a diverse template library, complete graphic elements, and artificial intelligence features such as Magic Design and AI Image Generator, teachers can create attractive, professional, and aesthetically pleasing visual learning media in a short time. This allows Islamic Education teachers, even without special design skills, to create slides that are not only clear in content but also more vivid in appearance, helping students to more easily understand Islamic Education material, which often consists of stories and theoretical explanations.

5. Video as a Learning Media

In addition to utilizing interactive platforms, Islamic Education teachers also use video content as part of their learning strategy. Videos often serve as “sparkers” or introductions at the beginning of a session, for example by showing the procedures for caring for the deceased in accordance with Islamic law. After watching, students are immediately asked to practice the steps shown in front of the class. This approach not only aims to attract attention and build context, but also to facilitate concrete simulation-based learning. Thus, videos not only touch on the affective and emotional aspects of students, but also link the material to real-world applications, making the learning process more lively, memorable, and meaningful.

The different applications of AI discussed earlier are technology-driven tools that have been implemented within the Islamic education program at SMP Muhammadiyah PK Kottabarat located in Surakarta. This research highlights five AI tools that are utilized collaboratively in the Islamic Education sector at this institution, which include Quizizz, Chatbot, Blooket, Canva, and educational videos. These tools are applied in a systematic way, forming a unified process that encompasses planning, delivering content, and conducting evaluations. The unique pattern of this integration sets this research apart from earlier studies, such as the one conducted by Fikri, Muttaqien, and Noor

(2024), which merely recognized the abstract potential of AI in Islamic Education without specifying how these tools work together effectively. Observations made in the field also reveal a noteworthy finding: 80% of eighth-grade learners had no prior exposure to AI before starting junior high school, highlighting the institution's important role as a facilitator of digital literacy in religious contexts. Viewed through the lens of Piaget's constructivism (1972), this scenario carries significant educational implications, as students' encounters with AI-driven learning represent a novel cognitive experience; therefore, structured integration is crucial for fostering their active and meaningful development of comprehension regarding Islamic principles (Ulya, 2024).

The success of this integration is greatly influenced by the conviction and dedication of Islamic Religious Education teachers, who are the primary practitioners in this field. Based on findings from the interviews, teachers recognize that the presence of AI offers clear benefits in strengthening their role as educators, particularly in generating creative concepts and developing more diverse and innovative educational resources. It is this support from AI that facilitates the transition of teaching strategies from traditional and repetitive techniques to approaches that are more engaging, multimodal, and aligned with students' needs. This transition aligns with the TPACK framework (Koehler, 2006), which emphasizes that successful technology integration must simultaneously enhance both pedagogical and content aspects, rather than merely introducing new tools without meaningful adjustments to teaching methods. Increased student engagement during educational experiences provides evidence that AI acts not only as a technological resource but also as a catalyst for transformation, promoting more effective, relevant, and student-centered practices in Islamic education.

Based on the description above, in the Islamic Education learning process at SMP Muhammadiyah PK Muhammadiyah Kottabarat Surakarta, teachers give students the opportunity to use laptops. This school has a rule that prohibits the use of cell phones, but allows students to bring laptops. Therefore, when using AI-based learning media, Islamic Religious Education (IRE) teachers ask students to bring their laptops. However, students often complain that laptops are heavy to carry. As a solution to ensure that the activity can still be carried out, IRE teachers sometimes use the school's computer lab.

The AI based learning process begins with the presentation of a video as a stimulus to trigger students' curiosity, for example, on the subject of how to handle a corpse. After that, the process continues with the presentation of material using PowerPoint and a demonstration of the practice of shrouding the deceased. As an evaluation stage, teachers apply gamification platforms such as Blooket for post-tests, which serve to measure understanding and reinforce the material through interactive and competitive activities.

From the data obtained, eighth-grade students said that 80% of students were new to Artificial Intelligence (AI) technology when they entered junior high school. Based on the analysis collected, it can be concluded that most students view Artificial Intelligence (AI) positively in education, with an understanding of its risks. The majority of opinions highlight the benefits of AI as a very significant tool in facilitating and accelerating the learning process. AI is seen as a learning facilitator that can provide broad and fast access to information, help with tasks, and increase the knowledge and understanding of its users.

However, at the same time, almost all respondents who expressed support also expressed explicit concerns about its negative impacts. One child described AI as a double-edged sword that requires wisdom in its use. Three main challenges were identified: First, Dependence, where users become passive and lose the initiative to try; Second, Lazy Thinking, which can reduce the efficiency and cognitive depth of learning; Third, Misuse, such as relying on AI to do essays or homework completely without any learning process.

ChatGPT is the most widely used Artificial Intelligence (AI) application among eighth-grade students at SMP Muhammadiyah PK Kottabarat Surakarta, with a usage rate of 80%. According to (Faiz & Kurniawaty, 2023), ChatGPT is an AI-based chatbot that functions as an assistant to humans in completing various tasks through interaction. This application is popular because of its ease and speed, designed to resemble human conversation with very fast and accurate responses. ChatGPT also uses clear and easy-to-understand language structures, enabling it to present information on various topics. This ease of use makes students feel assisted, as they can interact with the chatbot as if they were communicating with a human being.

However, despite the benefits offered, Islamic Education teachers highlight the negative impacts that need to be considered, especially regarding the excessive use of AI chatbots such as ChatGPT. The main concern lies in the potential reduction of critical thinking habits among students. There is a concern that they will tend to rely on instant solutions from AI, without conducting a process of analysis or in-depth understanding of the material. This can lead to plagiarism, where students simply copy and paste answers from chatbots without filtering their accuracy. Furthermore, teachers have observed that AI such as ChatGPT still has limitations in specific learning contexts, for example, in the creation of Arabic material for the topic of zharaf makan. Although it can generate answers, AI often produces grammatically incorrect structures.

The results mentioned above specifically tackle the second shortcoming found in existing research, which is the common practice of prior studies to focus solely on one AI application in a separate manner. In contrast to the work of (Zawacki-Richter et al., 2019), which examined artificial intelligence broadly within higher education, and the investigation by (Holmes et al., 2019) that concentrated on intelligent tutoring systems, this research unveils a diverse AI ecosystem functioning collaboratively in Islamic Religious Education at the junior high school level. Educators implemented chatbots to formulate teaching modules and investigate novel media concepts, which were then brought to life using Canva's Magic Design and AI Image Generator capabilities, and further reinforced through gamified evaluations using Quizizz and Blooket's Crypto Hack methods that have been shown to significantly boost student involvement. This cohesive educational cycle clearly illustrates the use of the TPACK framework (Koehler, 2006), wherein Islamic Education instructors adeptly combined Technological, Pedagogical, and Content Knowledge simultaneously; thus, the scholarly contribution of this study lies in providing empirical support that the efficacy of AI in Islamic Religious Education is influenced not by the complexity of an individual application but rather by the educator's capacity to effectively integrate multiple platforms in a pedagogical and contextual manner in relation to Islamic studies.

The third and most unique gap is tackled in this research by examining technology-oriented elite Islamic educational institutions that combine Islamic principles with advancements in technology, addressing an area that lacked attention in earlier studies, which mainly focused on public

schools without thoroughly exploring the aspect of religious values. An example of this can be observed in the utilization of simulation videos that illustrate the correct methods for managing the deceased in line with Islamic regulations, where students first view the video before engaging in hands-on practice in class. According to Vygotsky's (1978) viewpoint, these videos serve as scaffolding, connecting the Zone of Proximal Development with students' theoretical knowledge and hands-on abilities. The results highlighting ChatGPT's shortcomings in dealing with certain religious topics, like zharaf makan materials, support Muhaimin's (2012) assertion that technology has yet to adequately grasp theological subtleties and fiqh details, while also providing new empirical insights that prior research did not uncover. Consequently, AI in Islamic education should be regarded as an aid that enhances the role of teachers rather than replaces them, since the nurturing of values, contextual comprehension, and character formation are areas that necessitate the involvement of educators who are empathetic, faithful, and virtuous.

Based on these considerations, the implementation of Artificial Intelligence (AI) in Islamic Religious Education learning requires a prudent and balanced approach. The use of AI can serve as an effective tool to initiate discussions, introduce concepts, or provide initial examples, especially for general knowledge material. However, the essence of religious education, which focuses on instilling values, contextual understanding, and character building, cannot be completely replaced by this technology. Therefore, AI should be positioned as a learning support system, not as a substitute for teachers. The main role remains in the hands of teachers, who are tasked with guiding students, directing the proper use of technology, and instilling moral values and faith. In this way, it is hoped that the use of AI can be carried out responsibly and in accordance with the objectives of Islamic Religious Education.

Conclusion

This study demonstrates that the use of artificial intelligence (AI) on five platforms namely Quizizz, Chatbot, Blooket, Canva, and educational videos has been shown to enhance effectiveness, motivation, and student engagement in Islamic Religious Education classes at the Muhammadiyah Special Program Junior High School located in Kottabarat, Surakarta. Nevertheless, issues such as excessive reliance on technology, a decline in critical thinking skills, and the limitations of AI in understanding certain religious issues highlight the need for AI to be viewed as a tool, not a substitute for the educator's responsibilities, as essential tasks such as guiding students, instilling moral principles, and shaping students' religious identities remain the teacher's responsibility. Therefore, this study suggests that training for religious educators should include AI literacy framed within an Islamic context and recommends further research on the long-term impact of AI on students' character development to ensure that AI is integrated in a manner consistent with the goals of Islamic education.

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