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Digital Transformation of Islamic Education through the Utilization of Artificial Intelligence Technology

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ABSTRACT

This research intends to examine how Islamic education is changing digitally with the integration of Artificial Intelligence (AI) technology, the influence it has on the efficiency of the educational experience, and the obstacles and possibilities for its application in advancing Islamiceducation during the digital age. The study used a qualitative approach with the Systematic Literature Review (SLR) method through the stages of identification, selection, evaluation, and synthesis of various national and international scientific journals published between 2021 and 2026. Data sources were obtained from academic databases such as Google Scholar, Scopus, ScienceDirect, and Garuda. Data analysis techniques used content analysis to identify relevant themes, concepts, and research findings. The results show that the use of Artificial Intelligence plays a significant role in supporting the digital transformation of Islamic education through adaptive learning, digital learning media, automated evaluation, educational chatbots, and technology-based learning systems. The use of AI has a positive impact on learning effectiveness by increasing interactivity, flexibility, personalization of learning, and digital literacy of students and teachers. However, the implementation of AI also faces challenges such as limited digital competence of educators, technological infrastructure, and ethical and spiritual issues in the use of technology. The contribution of this research is to provide a comprehensive synthesis of the implementation of AI in Islamic education and to serve as a conceptual reference for the development of digital technology-based Islamic education policies and learning innovations that remain based on Islamic values.

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1. INTRODUCTION

The development of digital technology in the 21st century has brought significant changes to various sectors of life, including education. The Industrial Revolution 4.0 and the development of Society 5.0 are pushing educational institutions to adapt to various technological innovations to improve the quality of learning. One rapidly developing technology is Artificial Intelligence (AI), which is capable of automatically processing data, providing learning recommendations, and creating a more adaptive and personalized education system. In the context of modern education, AI functions not only as a technological tool but also as part of the transformation of learning systems to become more effective, interactive, and data-driven (Zarkani, Pradipta, Bahari, & Bahri, 2024).

Digital transformation in education is essentially a process of changing the education system by utilizing digital technology to improve the quality of learning, educational management, and access to knowledge. In Islamic education, digital transformation is a crucial requirement so that educational institutions can adapt to current developments without abandoning the spiritual and moral values that are the main foundation of Islamic education (Sawaluddin, Koiy Sahbudin Harahap, Imran Rido, 2022). Islamic education is designed not merely to transfer knowledge but also to nurture learners' moral integrity, ethical awareness, and spiritual growth in accordance with Islamic principles and teachings. Therefore, the use of digital technology, including AI, needs to be integrated wisely to remain aligned with the goals of Islamic education (Mukarromah, R, & Manshur, 2025).

Artificial Intelligence offers numerous opportunities for the development of Islamic education. This technology can be used to create more personalized learning systems, provide data-driven learning analytics, and assist teachers in managing learning materials more effectively. Furthermore, AI also enables the development of various digital learning media, such as adaptive learning systems, educational chatbots, and automated learning evaluation analysis. By utilizing this technology, the Islamic education learning process can become more innovative, flexible, and tailored to the needs of students in the digital age (Salim & Aditya, 2025).

On the other hand, the use of AI in Islamic education also faces various challenges, both technically and pedagogically. One of the main challenges is ensuring that the use of technology does not diminish the spiritual, moral, and humanistic values that are the hallmarks of Islamic education (Sawaluddin, Koiy Syahbudin, Imran Rido, 2022). The adoption of Artificial Intelligence (AI) in Islamic education must not diminish the essential role of teachers as moral exemplars and spiritual guides. Instead, AI should be utilized as a complementary educational resource that supports teaching and learning activities, while educators continue to play a central role in fostering students' intellectual growth, ethical character, and spiritual values in accordance with Islamic principles (Agus Suryana, 2025).

Several previous studies have discussed the use of Artificial Intelligence in Islamic education. Research conducted by Zaharah and colleagues shows that the use of AI in Islamic religious education can improve the quality of students' learning experiences through a more personalized and interactive learning system. However, the study argues that AI should not be viewed as a replacement for teachers; rather, it should be positioned as a pedagogical support tool that enhances learning effectiveness while preserving the indispensable role of educators (Basyit, Husein, Fauzi, Arif, & Sina, 2024). Another study by Maskur and Othman examined the integration of Artificial Intelligence into Islamic education management. The results showed that AI has significant potential to improve the efficiency of education management, academic data management, and data-driven decision-making. However, the implementation of this technology still faces challenges such as limited human resources, institutional readiness, and the need for clear regulations regarding the use of AI technology in Islamic educational institutions (Salim & Aditya, 2025).

Furthermore, research conducted by Suryana and Mustaqim revealed that AI-based innovations can drive the transformation of the Islamic education system through the development of digital learning, automated evaluation systems, and more accurate learning data analysis. The study also highlighted the importance of ethical considerations in the use of AI to ensure that its implementation remains consistent with Islamic values and principles (Agus Suryana, 2025).Another study by Safwandi

and colleagues showed that the use of Artificial Intelligence in Islamic religious higher education institutions (PTKI) can enhance learning innovation, expand access to digital learning resources, and facilitate more effective learning analysis. However, the study also emphasized that the success of AI implementation depends heavily on the readiness of the technological infrastructure and the digital literacy of educators (Maskur & Othman, 2025).

Based on these various studies, it can be concluded that Artificial Intelligence has significant potential to drive the digital transformation of Islamic education. However, most research still focuses on aspects of technology implementation or user perception, while studies specifically addressing the transformation of the Islamic education system through the comprehensive use of AI are still relatively limited (Nurhasnawati, Sawaluddin, 2025b). Therefore, this research is essential to examine how the integration of Artificial Intelligence (AI) can facilitate a more systematic and sustainable digital transformation of Islamic education while preserving its fundamental values and principles (Safwandi, et.al, 2025). Furthermore, this study is expected to contribute to the advancement of the theoretical and practical discourse on AI-driven digital transformation in Islamic education by providing strategic insights and recommendations for Islamic educational institutions to adopt and utilize AI technologies in an effective, responsible, and ethically grounded manner.

2. METHODS

This research uses a qualitative approach using the Systematic Literature Review (SLR) method. A Systematic Literature Review is a research method conducted systematically, structured, and comprehensively to identify, evaluate, and synthesize various previous research findings relevant to the research topic. This method is used to gain a deep understanding of the digital transformation of Islamic education through the use of Artificial Intelligence (AI) technology based on various theoretical perspectives and previous research findings. The SLR approach allows researchers to conduct an objective and transparent literature review, resulting in a more accurate and academically accountable analysis (Sahir, 2022).

The use of the Systematic Literature Review method in this study is based on the consideration that the topic of digital transformation of Islamic education and the use of Artificial Intelligence is a rapidly developing issue and has been widely studied in various national and international scientific publications. Therefore, this study does not focus on direct field data collection, but rather on the search, selection, and critical analysis of various relevant scientific literature sources. Through this approach, researchers can more comprehensively identify concepts, theories, implementation models, opportunities, challenges, and research developments regarding the use of Artificial Intelligence technology in Islamic education (Rasyid, 2022).

The research stages in the Systematic Literature Review method are carried out through several systematic steps. The first stage is formulating a research question related to the digital transformation of Islamic education based on Artificial Intelligence. The second stage is developing a literature search strategy by determining relevant keywords, such as "Digital Transformation in Islamic Education," "Artificial Intelligence in Education," "AI-based Learning," and "Islamic Education Technology." These keywords are used in the literature search process in various scientific databases such as Google Scholar, Scopus, Garuda, ScienceDirect, and Springer (Yama P. Sumbodo, et.al, 2024).

The next stage is the literature selection process using inclusion and exclusion criteria. The inclusion criteria for this study include: (1) scientific articles discussing the digital transformation of Islamic education and Artificial Intelligence; (2) articles published between 2020 and 2026; (3) articles available in full text; and (4) articles from reputable national and international journals. Meanwhile, exclusion criteria include articles irrelevant to the research focus, duplicate articles, and articles lacking clear methodological information. The selection process is carried out in stages through identification, screening, eligibility, and determination of final articles (included studies) in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) procedure (Marjes.Tumurang, 2024).

The data sources in this study consisted of both primary and secondary data. Primary data were derived from peer-reviewed scientific journal articles that specifically examined the implementation of Artificial Intelligence (AI) in education, with particular emphasis on Islamic education. Secondary data were obtained from scholarly books, conference proceedings, research reports, theses, dissertations, and other academic publications relevant to the digital transformation of Islamic education. All literature sources were selected based on their relevance to the research objectives, academic credibility, publication quality, and contribution to the study focus (Hikmawati, 2020).

The data analysis process consisted of four stages: data reduction, data categorization, data presentation, and conclusion drawing. During the data reduction stage, only information directly relevant to the research objectives was selected and retained. In the categorization stage, research findings were grouped according to thematic similarities and conceptual relevance. The categorized data were then presented in the form of descriptive narratives and synthesized interpretations to provide a comprehensive understanding of AI-driven digital transformation in Islamic education. Finally, conclusions were drawn based on the integration and synthesis of findings from the reviewed literature, leading to a coherent interpretation of the opportunities, challenges, and implications of AI implementation within the context of Islamic education (Matthew B. Miles, A. Michael Huberman, 2014).

To ensure the validity and credibility of the research, the researcher used triangulation techniques for literature sources and evaluated the quality of scientific articles. Triangulation was carried out by comparing various research results from different sources to obtain a more objective and in-depth understanding of the research topic. Furthermore, the researcher critically assessed the quality of the selected literature based on several criteria, including the reputation and credibility of the publication sources, the rigor and transparency of the research methodologies employed, the relevance of the study content to the research objectives, and the extent of their contribution to the discourse on the digital transformation of Islamic education through Artificial Intelligence (AI). Through this rigorous evaluation process, the findings of this study are expected to demonstrate strong academic validity and reliability, while also providing meaningful theoretical insights and practical recommendations for the advancement of Islamic education in the digital era (Hardani, Andriani, Sukmana, & Fardani, 2020).

3. FINDINGS AND DISCUSSION

Implementation of Artificial Intelligence technology in the digital transformation of Islamic education

Digital transformation has brought about significant changes in the education system, including Islamic education. The development of digital technology, particularly Artificial Intelligence (AI), is driving a paradigm shift in learning from conventional models to technology-based learning that is more adaptive, interactive, and personalized. In the context of Islamic education, the implementation of Artificial Intelligence is seen not only as a technological innovation but also as part of an effort to improve the quality of learning while remaining grounded in Islamic values, ethics, and spirituality (Hasibuan, 2022). Various studies have shown that AI has significant potential to support the transformation of Islamic education through the development of digital learning media, personalized learning, automated evaluation, and increased effectiveness of educational management (Awalia Rina Rahmawati, Risfita Wulandari, Sadaruddin, Mustofa, & Chedimae, 2025).

The implementation of Artificial Intelligence (AI) in education can be theoretically understood through the lens of constructivist learning theory, as developed by Jean Piaget and Lev Vygotsky. Constructivism posits that learning is an active process in which learners construct knowledge through experience, reflection, and social interaction. According to Piaget (1954), knowledge is developed through cognitive processes that enable learners to interpret and organize information based on their experiences. Similarly, Vygotsky (1978) emphasized the importance of social interaction and collaborative learning in cognitive development. Within this framework, AI has the potential to create interactive, adaptive, and student-centered learning environments through intelligent tutoring

systems, educational chatbots, and data-driven learning platforms. These technologies enable learners to receive personalized learning experiences that are tailored to their individual needs, learning styles, and levels of understanding (Sawaluddin, et.al, 2024). Recent studies on digital transformation in education indicate that AI facilitates learner-centered educational practices by supporting personalized learning pathways, adaptive curricula, and automated feedback mechanisms that enhance student engagement and learning outcomes (Sawaluddin, et.al, 2024). Consequently, AI can be viewed as a technological tool that strengthens the principles of constructivist learning by promoting active knowledge construction and individualized learning experiences.

In addition to constructivist theory, the implementation of AI in Islamic education can also be examined through the Technology Acceptance Model (TAM), developed by Fred Davis. TAM explains that an individual's acceptance of technology is primarily influenced by two key factors: perceived usefulness and perceived ease of use (Amnas, et.al, 2023). Perceived usefulness refers to the degree to which users believe that a particular technology can enhance their performance, whereas perceived ease of use relates to the extent to which the technology is considered simple and effortless to operate.

Within the context of Islamic education, AI is increasingly accepted because it is perceived as capable of improving learning effectiveness, expanding access to Islamic knowledge and educational resources, and assisting educators in developing innovative digital learning materials. Empirical studies on the digital transformation of Islamic education demonstrate that both teachers and students tend to adopt AI-based technologies when they perceive tangible benefits in enhancing learning quality, increasing instructional efficiency, and facilitating academic activities (K. S. Harahap & Sawaluddin, 2025). Therefore, TAM provides a useful framework for understanding the factors that influence the adoption and utilization of AI technologies in Islamic educational institutions.

Based on various studies from 2021–2026, the implementation of Artificial Intelligence in Islamic education has shown significant progress. Research conducted in the article "Digital Transformation of Islamic Education: An Artificial Intelligence-Based Teaching Module Development Study" explains that AI is being used to develop digital-based Islamic Religious Education learning modules that are more interactive and contextual. The study found that the digital transformation of Islamic education is built through a synergy between technology and spiritual values, so that the use of technology does not diminish the substance of Islamic teachings (Ari Koswara, Darmanto, Indah Wigati, 2024).

A related study entitled *"Artificial Intelligence (AI): An Opportunity and Challenge for Achieving Success in Islamic Education in the Era of Digital Transformation"* highlights that AI has considerable potential to enhance educational quality through adaptive learning systems, the automation of educational administration, and the strengthening of students' digital literacy competencies. Nevertheless, the study argues that the integration of AI into educational practices should be guided by ethical principles and accompanied by continuous teacher supervision. This is essential to ensure that AI functions as a supportive educational tool rather than replacing the human role in the teaching and learning process (Said Maskur & Hasyamuddin Bin Othman, 2025).

From a pedagogical perspective, AI offers substantial opportunities for the advancement of personalized learning. Through intelligent algorithms and data-driven systems, AI can adjust learning materials, instructional strategies, and levels of difficulty according to students' individual abilities, preferences, and learning needs (Muhajir et.al, 2024). Such an approach is closely aligned with the principles of humanistic learning theory, which emphasizes learner-centered education and recognizes the uniqueness of each student. Furthermore, AI-powered technologies, including digital learning platforms, educational chatbots, virtual assistants, and automated assessment systems, enable learners to engage in more flexible and interactive learning experiences while receiving timely and accurate feedback that supports continuous improvement (Latif et al., 2024).

Within the context of Islamic education, AI has increasingly been utilized in various educational domains, including Qur'anic learning, Arabic language instruction, assessment of Islamic Religious Education, and the development of digital curricula grounded in Islamic values. Studies on the optimization of AI in the evaluation of Islamic Religious Education have demonstrated that AI can

improve assessment effectiveness by analyzing student learning data automatically and in real time, thereby providing more accurate and efficient evaluation results (Nurhasnawati, Sawaluddin, 2025a). In addition, AI assists educators in identifying students' learning characteristics, strengths, and areas for improvement, allowing instructional strategies to be tailored more effectively to individual learning needs (M. Khair, 2025).

However, the implementation of Artificial Intelligence in the digital transformation of Islamic education also faces various challenges. One of the main challenges is the low digital competence of teachers and limited technological infrastructure in some Islamic educational institutions, particularly Islamic boarding schools (pesantren) and madrasahs (madrasahs) in remote areas (Sawaluddin, Koiy Syahbudin, Imran Rido, 2022). Research on Islamic boarding school digital transformation strategies shows that the digitalization process still faces obstacles such as limited internet access, a lack of technology training for educators, and cultural resistance to changes to traditional learning systems (M. Khair, 2025).

In addition to technical challenges, the use of AI in Islamic education also poses ethical and philosophical challenges. From an Islamic perspective, technology must be used in accordance with the principles of maqasid sharia and Islamic moral values (Zailani et al., 2025). Several studies have highlighted the potential for misuse of AI, such as academic plagiarism, technological dependency, the dissemination of invalid information, and decreased social interaction in the learning process. Therefore, the integration of AI in Islamic education must be balanced with strengthening character education, digital ethics, and technological literacy so that students are able to use technology wisely and responsibly (Mardani, 2024).

From the perspective of digital transformation in education, the implementation of AI is also closely related to the Society 5.0 theory, which positions technology as an integral part of human life to improve the quality of life. Islamic education in the Society 5.0 era is required to integrate technological intelligence with spiritual and humanitarian values (Hermawan, Nur, Mansyur, Bariah, & Farida, 2025). Therefore, AI is not merely understood as a technological tool, but as a means to create innovative, humanistic, and values-based Islamic learning (Sawaluddin, Koiy Sahbudin Harahap, Imran Rido, 2022). Research on Islamic digital pedagogy shows that integrating digital technology into Islamic Religious Education learning can increase creativity, student engagement, and the effectiveness of the learning process when supported by appropriate pedagogical strategies (Rohana, Ramdhan, & Hasan, 2026).

The synthesis of various studies shows that the implementation of Artificial Intelligence in the digital transformation of Islamic education has a positive impact on improving the quality of learning, the effectiveness of educational management, and the development of technology-based pedagogical innovations (Saputro, 2025). However, the success of AI implementation depends heavily on the readiness of human resources, digital infrastructure, educational policies, and the ability of Islamic educational institutions to maintain a balance between technological innovation and Islamic values (Mukarromah et al., 2025). Therefore, the AI-based digital transformation of Islamic education needs to be directed not only at the technological aspect, but also at strengthening the ethics, spirituality, and character of students so that Islamic education can continue to fulfill its primary function (Zuhriyeh, Ali, & Hidayat, 2025b). For more details, see the table below.

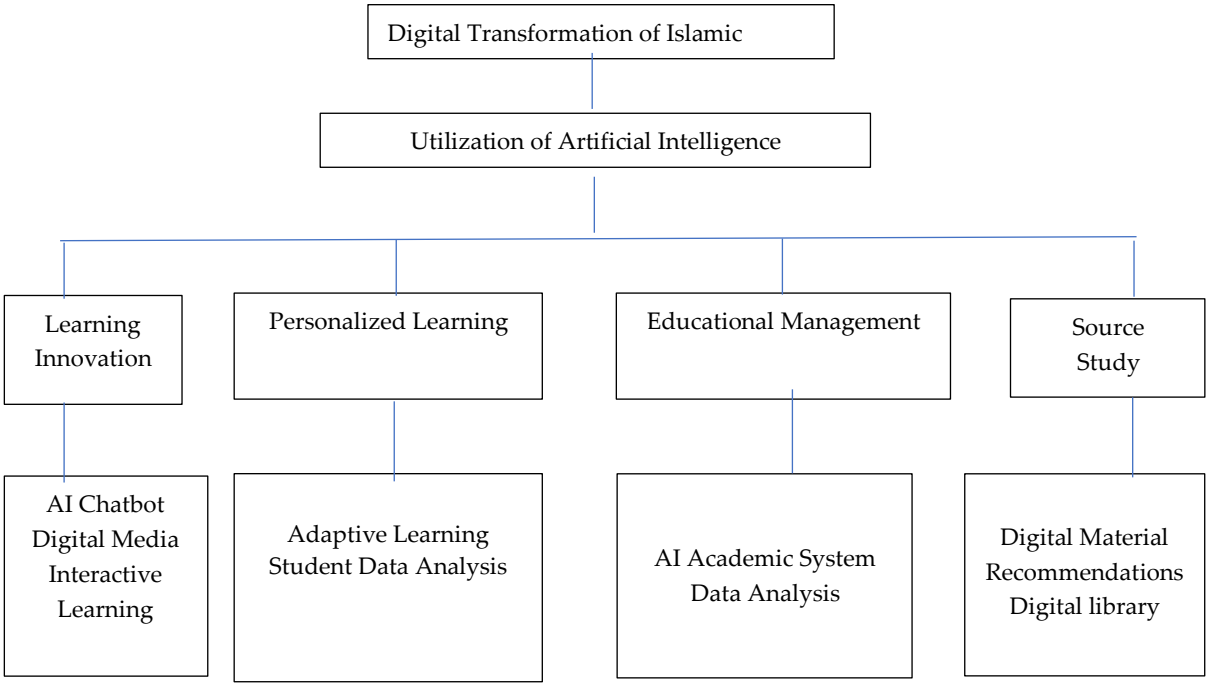
Table 1. Implementation of Artificial Intelligence Technology in the Digital Transformation of Islamic Education

No	AI Implementation Aspects	Implementation Form	Impact on Islamic Education
1	Adaptive Learning	The AI system adapts the material based on the student's abilities.	More personal and effective learning
2	Islamic Education Chatbot	Use of chatbots for Islamic Education material consultations and Al-Quran learning	Facilitate fast access to Islamic information
3	Automatic Learning Evaluation	AI performs assignment assessment, quizzes, and analysis of learning outcomes	Improve the efficiency and accuracy of learning evaluation
4	Digital Learning Media	Development of interactive videos, simulations, and AI-based virtual learning	Learning is more interesting and interactive
5	AI-Based Arabic Language Learning	AI application for Arabic translation and practice	Make it easier to understand Arabic
6	Digitalization of Quranic Learning	AI is used for digital recitation and voice recognition	Improving the quality of learning the Qur'an
7	Educational Virtual Assistant	Virtual assistants help with the learning process and academic administration.	Increased efficiency of educational services
8	Learning Data Analysis	AI analyzes student learning patterns	Teachers can determine appropriate learning strategies
9	Digital Curriculum Development	AI helps in the development of digital-based materials and curriculum	The curriculum is more adaptive to technological developments
10	Strengthening Digital Literacy	Utilization of AI in technology-based learning	Improving the digital skills of students and teachers
11	AI-Based Educational Administration	Automation of attendance, schedules, and academic data management	The effectiveness of educational management increases
12	Development of Islamic E-Learning	AI-based online learning platform	Facilitating distance learning
13	Personalization of Islamic Education Learning	AI recommends materials according to students' learning interests	Learning is more effective and suits the character of the students
14	Integration of AI and Islamic Values	The use of AI remains based on ethics and the values of maqashid sharia.	Maintaining the balance between technology and spirituality
15	Digital Transformation of Madrasas and Islamic Boarding Schools	Implementation of AI-based digital systems in education management	Modernization of Islamic educational institutions

Based on the analysis, the implementation of Artificial Intelligence technology in the digital transformation of Islamic education encompasses various aspects, from adaptive learning, automated evaluation, digital learning media, to strengthening digital literacy and technology-based education

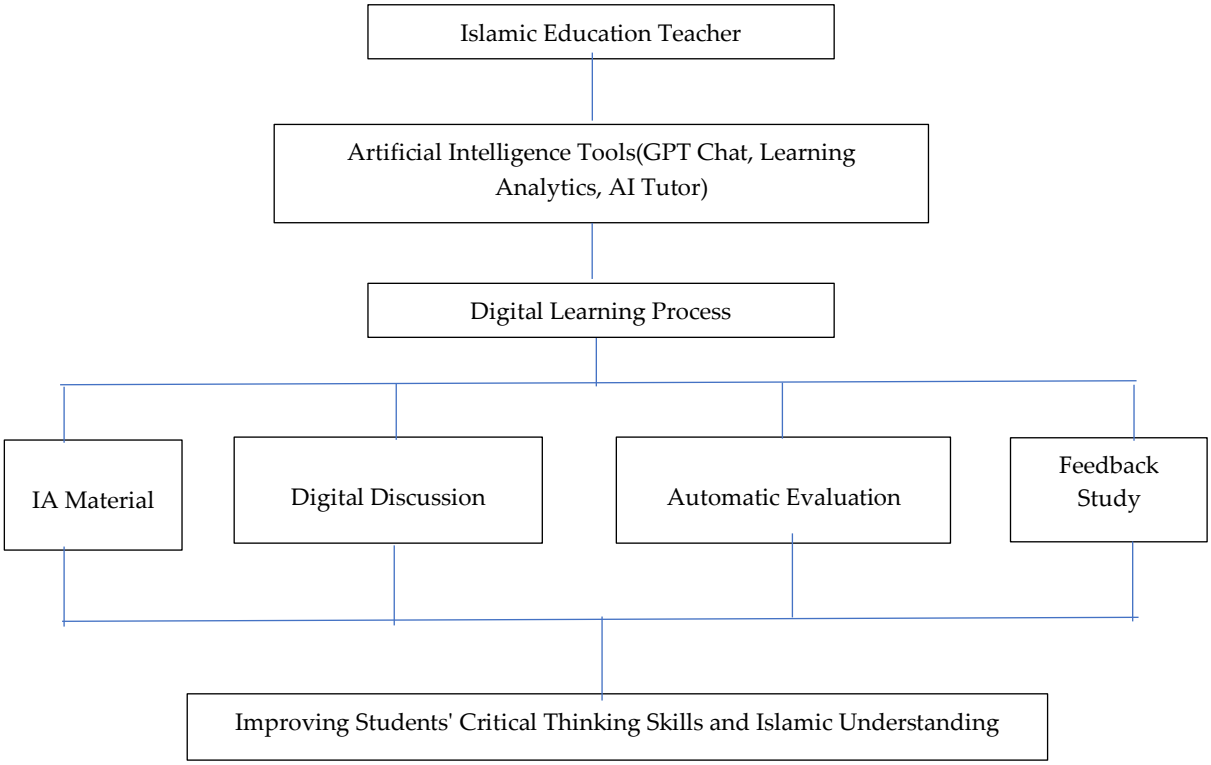
management. These various implementations demonstrate that Artificial Intelligence plays a strategic role in improving the effectiveness, efficiency, and quality of Islamic education in the digital era. To provide a more systematic overview of the relationship between the implementation of Artificial Intelligence and the digital transformation of Islamic education, the results of the research synthesis can be described in the following chart:

Figure 1. Diagram of the Digital Transformation Model for Islamic Education Based on Artificial Intelligence



Based on the AI-based digital transformation model for Islamic education above, it can be understood that AI implementation not only plays a role in supporting the digitalization of the education system but is also directly integrated into the Islamic education learning process. This integration includes the use of AI in material delivery, learning evaluation, digital media development, and personalized learning oriented to student needs. Furthermore, the form of integration of Artificial Intelligence in the Islamic Education learning process can be explained through the following diagram:

Figure 2. AI Integration Model in Islamic Education Learning



The influence of the use of Artificial Intelligence on the effectiveness of the Islamic education learning process

Based on the results of a study using a Systematic Literature Review (SLR) approach on various national and international scientific articles from 2021–2026, it was found that the use of Artificial Intelligence (AI) technology has a significant impact on the effectiveness of the Islamic education learning process. The study was conducted through a process of identifying, selecting, evaluating, and synthesizing various studies obtained from scientific databases such as Google Scholar, Scopus, ScienceDirect, Springer, and Garuda. The results of the synthesis indicate that the implementation of AI can improve the quality, efficiency, interactivity, and flexibility of Islamic Religious Education (PAI) learning (Motlagh, Khajavi, Sharifi, & Ahmadi, 2025).

Theoretically, the impact of Artificial Intelligence on learning effectiveness can be explained through the constructivism theory developed by Jean Piaget and Lev Vygotsky. Constructivism theory emphasizes that learning occurs when students actively construct knowledge through experience and interaction. In this context, AI technology supports student-centered learning through adaptive learning systems, educational chatbots, and interactive learning media that enable students to learn according to their individual abilities and needs. AI technology helps students gain a more personalized, responsive, and flexible learning experience, thereby enhancing their understanding of Islamic Education learning materials (Salim & Aditya, 2025).

Various studies have shown that the use of Artificial Intelligence in Islamic Education can increase the effectiveness of the learning process through personalized teaching materials. Research on the effectiveness of AI in Islamic Religious Education shows that its use helps teachers deliver material in a more structured, engaging, and relevant manner to students' needs. Furthermore, AI enables students to gain faster access to Islamic information through the use of chatbots, virtual assistants, and AI-based digital learning platforms (Maskur & Othman, 2025).

From the perspective of the Technology Acceptance Model (TAM) theory developed by Fred Davis, the effectiveness of technology use is influenced by perceived usefulness and perceived ease of

use. Based on the research results analyzed in this SLR study, the majority of teachers and students showed positive perceptions of the use of AI in Islamic Education learning because the technology is considered capable of increasing learning efficiency, facilitating access to materials, and assisting the learning evaluation process. Teachers also feel assisted in compiling teaching materials, creating digital learning media, and processing student academic data (Safwandi, Ari, Syibran Mulasi, Fransisca Tassia, Mohd Lokman bin Marzuki, 2025).

The synthesis of various studies shows that one of the greatest influences of AI on the effectiveness of Islamic Education learning is increasing interactivity. AI technology makes learning more engaging through the use of interactive visual media, learning simulations, voice assistants, and digital conversation-based learning platforms such as ChatGPT and Google Gemini. Research on the integration of AI in Islamic Education learning shows that the use of AI technology can increase learning motivation, student engagement, and active participation in the learning process (Lailiya Rachmawati Syarif, 2025).

In addition to increasing interactivity, the use of AI also impacts the effectiveness of Islamic Education learning evaluation. AI technology enables automated, real-time evaluation processes, allowing teachers to obtain information on student learning progress more quickly and accurately. AI systems are also capable of analyzing student learning patterns and providing learning recommendations tailored to individual abilities. This demonstrates that AI supports the creation of more adaptive and efficient learning (Zarkani et al., 2024).

From the perspective of humanistic learning theory, the use of AI in Islamic education can enhance learning effectiveness because technology provides opportunities for students to learn independently and according to their individual potential. AI-based learning supports the development of creativity, critical thinking skills, and digital literacy through broader and more flexible access to learning resources. AI technology also helps students understand Islamic material more deeply through contextual and interactive presentations (Agus Suryana, 2025).

However, the literature review also indicates that the use of Artificial Intelligence in Islamic Education presents several challenges that can impact its effectiveness. One major challenge is teachers' low digital competency in optimally utilizing AI technology. Several studies indicate that some Islamic Education teachers still experience difficulties operating AI platforms and integrating the technology into the learning process. Furthermore, limited digital infrastructure, such as internet access and technological devices, also hinders AI implementation in some Islamic educational institutions, particularly in remote areas (Salim & Aditya, 2025).

Another challenge identified in the research findings is the growing dependence of students on AI technology. Several studies have shown that excessive use of AI can reduce students' critical thinking skills, creativity, and independent learning if not accompanied by adequate teacher supervision. Public discussions regarding the use of AI in education also reveal concerns regarding students' dependence on generative technologies like ChatGPT to complete academic assignments (Basyit et al., 2024).

Furthermore, from an Islamic educational perspective, the use of Artificial Intelligence also poses ethical and spiritual challenges. Islamic education is not solely oriented toward knowledge transfer but also toward the development of students' morals and character. Therefore, the use of AI must remain under teacher supervision to ensure that moral and spiritual values remain a central component of the learning process. Research on Artificial Intelligence and Islamic education emphasizes the importance of integrating the values of maqasid sharia (Islamic principles) in the use of AI technology, ensuring that the technology not only enhances learning effectiveness but also supports the development of students' Islamic character (Azzahra & Usman, 2026).

The overall results of the SLR study indicate that the use of Artificial Intelligence has a positive impact on the effectiveness of the Islamic education learning process, particularly in increasing interactivity, flexibility, personalization of learning, and the efficiency of learning evaluation. However, the success of AI implementation is greatly influenced by the readiness of human resources, teachers' digital competence, technological infrastructure, and strengthening the ethics of technology use in

Islamic education (Zuhriyeh, Ali, & Hidayat, 2025a). Therefore, the integration of Artificial Intelligence in Islamic education needs to be carried out in a balanced manner between technological development, pedagogical strengthening, and internalization of Islamic values so that learning effectiveness is achieved not only in academic aspects, but also in character and spiritual development of students (Rosmaini, 2025). For more details, see the table below.

Table 2. The Effect of Artificial Intelligence Utilization on the Effectiveness of the Islamic Education Learning Process

No	Utilization of Artificial Intelligence	Forms of Implementation in Islamic Education Learning	Influence on Learning Effectiveness
1	Adaptive Learning System	AI adapts the material to the student's abilities	More personal and effective learning
2	Islamic Education Chatbot	Chatbot for consultation on Islamic Education materials and learning the Qur'an	Facilitating access to learning information
3	AI-Based Automated Evaluation	Automatic grading of assignments and quizzes	Evaluation efficiency and accuracy are increased
4	Interactive Learning Media	AI-based learning videos, simulations, and virtual learning	Learning is more interesting and interactive
5	Virtual Learning Assistant	AI helps answer students' questions	More flexible and responsive learning
6	Digital Al-Qur'an Learning	AI is used for digital recitation and voice recognition	Make it easier to learn to read the Qur'an
7	AI-Based Arabic Language Learning	AI helps with Arabic translation and practice	Make it easier to understand Arabic
8	Learning Data Analysis	AI analyzes student learning patterns	Teachers can determine appropriate learning strategies
9	Personalized Learning	AI recommends materials according to student needs	Learning is more tailored to individual abilities
10	AI-Based E-Learning	Online learning platform with AI features	Learning can be done at any time
11	Academic Administration Automation	AI-based attendance and academic data management	Learning management efficiency increases
12	Strengthening Digital Literacy	Utilization of AI in digital learning activities	Students' digital competence increases
13	Developing Student Creativity	AI helps create learning projects and media	Creativity and innovation in learning increases
14	Digital Collaborative Learning	AI supports online discussions and collaboration	Wider learning interactions
15	Strengthening Teacher Effectiveness	AI helps in the development of learning materials and strategies	Teacher performance and effectiveness increases
16	Increasing Learning Motivation	Use of interesting and interactive AI media	Students' learning motivation increases
17	Critical Thinking Development	AI helps analyze and explore learning materials	Critical thinking skills increase
18	Learning Time Efficiency	AI accelerates access to materials and evaluation	The learning process is more efficient

19	Strengthening Independent Learning	AI supports digital-based self-learning	Students' learning independence increases
20	Integration of AI and Islamic Values	The use of AI remains based on Islamic ethics and spirituality.	Learning remains oriented towards morals and character

Challenges and opportunities for using Artificial Intelligence in developing Islamic education in the digital era

Based on the results of a study using a Systematic Literature Review (SLR) approach on various national and international journals from 2021–2026, it was found that the use of Artificial Intelligence (AI) in the development of Islamic education offers significant opportunities while also presenting various complex challenges. The results of the literature synthesis indicate that AI has become a crucial part of the digital transformation of Islamic education through the development of adaptive learning, automation of educational administration, personalized learning, and strengthening the digital literacy of students and teachers. However, the implementation of this technology also poses pedagogical, ethical, epistemological, and social challenges that require a wise response (Norman, Pahlawati, Siregar, & Damayanthy, 2025).

From the perspective of the Technology Acceptance Model (TAM) theory developed by Fred Davis, the potential for AI use in Islamic education is influenced by perceived usefulness and perceived ease of use. Various studies have shown that teachers and students tend to accept the use of AI because the technology can improve learning effectiveness, facilitate information access, and support faster and more accurate learning evaluation processes. The use of educational chatbots, adaptive learning systems, and AI-based virtual assistants is considered capable of improving the quality of students' learning experiences in Islamic educational environments (Najla Kamilia Marwa, Saepul Anwar, 2025).

The research results analyzed in this SLR study indicate that one of the greatest opportunities for using AI in Islamic education is the creation of more personalized and flexible learning. AI technology enables learning systems to adapt materials, methods, and learning difficulty levels to suit the learner's abilities. This concept aligns with the constructivist theory developed by Jean Piaget and Lev Vygotsky, which emphasizes that learners construct knowledge through active and contextual learning experiences. In its implementation, AI supports student-centered learning, giving learners greater opportunities to learn independently and according to their individual needs.

In addition to supporting personalized learning, Artificial Intelligence also offers opportunities for developing more innovative and interactive Islamic Religious Education learning media. Various studies have shown that the use of AI in teaching the Quran, Arabic, Islamic jurisprudence, and Islamic Religious Education can increase student motivation through engaging digital media. The use of machine learning-based technology, Islamic chatbots, and virtual learning allows for flexible learning without the constraints of space and time (Shofiyyah, Lesmana, & Tohari, 2024).

From the perspective of Society 5.0 theory, the use of AI in Islamic education also presents a strategic opportunity to create an educational system that adapts to developments in digital technology. Islamic education in the Society 5.0 era requires not only technological mastery but also the integration of spirituality, ethics, and humanity in the use of digital technology. Therefore, Artificial Intelligence is seen as a means to improve the quality of Islamic education to make it more relevant to the needs of modern society without diminishing Islamic values (Anas Sofyan, 2024).

In addition to these opportunities, research synthesis also indicates that the implementation of Artificial Intelligence in Islamic education faces various challenges. One of the main challenges is the low digital competence of teachers and educators in operating AI technology. Several studies indicate that some Islamic Religious Education teachers still experience difficulties integrating AI into the learning process due to limited technological skills and a lack of digital training. This situation has resulted in the implementation of AI in some Islamic educational institutions being less than optimal (Bakri, 2024).

Another challenge identified in various studies is the limited technological infrastructure in Islamic educational institutions, particularly madrasas and Islamic boarding schools (pesantren) in remote areas. Limited internet access, digital devices, and technological facilities are major obstacles to supporting the AI-based digital transformation of Islamic education. Public discussions regarding the digitalization of Islamic boarding schools (pesantren) also reveal concerns about the infrastructure readiness and financing for implementing AI technology in traditional Islamic educational settings (Pohan & Pohan, 2025).

Beyond technical concerns, the integration of Artificial Intelligence (AI) into Islamic education presents significant ethical and epistemological challenges. Within the framework of Islamic education, knowledge is not solely directed toward intellectual and rational development but also encompasses spiritual, moral, and ethical dimensions. Consequently, the adoption of AI raises important questions regarding the authority of knowledge, the authenticity and reliability of religious information, and the risk of algorithmic bias in the dissemination of Islamic teachings. Studies examining the epistemological implications of AI in Islamic education indicate that the uncontrolled use of AI technologies may contribute to the spread of inaccurate religious content and potentially undermine the traditional authority of religious scholars and educators in the educational process (Auwaliyah et al., 2025).

From the perspective of Islamic educational philosophy, the challenges associated with AI implementation also extend to issues of social interaction and character formation. The fundamental objective of Islamic education is not merely the transmission of knowledge but the cultivation of individuals who possess strong moral character and spiritual integrity. Therefore, educational activities are expected to foster meaningful interactions between teachers and students, which play a vital role in moral and character development. Excessive reliance on AI-based technologies may increase students' dependence on digital systems, reduce opportunities for critical thinking, and weaken the quality of interpersonal relationships within the learning environment. For this reason, several studies emphasize the necessity of maintaining active teacher involvement and supervision to ensure that AI serves as a complementary educational resource rather than a substitute for educators (Jumahir, Afga Sidiq Rifai, 2025).

Furthermore, findings from the Systematic Literature Review (SLR) reveal that the effective implementation of AI in Islamic education requires comprehensive regulatory frameworks and institutional policies. Governments, educational institutions, and relevant stakeholders must establish clear ethical guidelines governing the use of AI in educational settings to mitigate risks such as academic dishonesty, plagiarism, information manipulation, and breaches of student data privacy. Existing national policies related to digital transformation and AI adoption in education suggest that the successful development of AI-based educational systems depends on collaborative efforts among policymakers, educational institutions, researchers, and technology developers. Such collaboration is essential to ensure that AI is implemented responsibly, ethically, and in accordance with the educational objectives and values of Islamic education (Muhammad Farhan, Mohamad Ali, 2026).

Overall, the synthesis of various studies shows that Artificial Intelligence (AI) offers significant potential for improving the quality and effectiveness of Islamic education through adaptive learning, pedagogical innovation, administrative efficiency, and strengthening digital literacy. However, the implementation of AI also presents challenges in the form of limited digital competency, technological infrastructure, ethical issues, and threats to spiritual values and the authority of Islamic scholarship (Sabila, Mumtaz, & Shohib, 2025). Therefore, the development of AI-based Islamic education needs to be carried out in a balanced manner by integrating technological, pedagogical, ethical, and Islamic values so that the digital transformation of Islamic education remains oriented towards developing individuals who are knowledgeable, moral, and adaptable to current developments. For more details, see the table below.

Table 3. Challenges and Opportunities for Using Artificial Intelligence in the Development of Islamic Education

No	Aspect	Opportunities for Using AI	Challenges of Using AI
1	Adaptive Learning	The material can be adapted to the students' abilities.	Student dependence on technology
2	Digital Learning Media	Learning is more interactive and interesting	Teachers have not yet mastered AI technology
3	Learning Evaluation	Faster and more accurate assessment	The risk of academic plagiarism
4	Digital Literacy	Improving students' technological capabilities	Digital literacy gap
5	Digital Al-Qur'an Learning	Makes learning Tajweed and recitation easier	The validity of religious content needs supervision
6	Educational Administration	Efficiency of academic data management	Limitations of technology infrastructure
7	Arabic Language Learning	Make Arabic translation and practice easier	Potential for language misinterpretation
8	Virtual Learning	Learning can be done at any time	Reduced social interaction
9	Curriculum Development	The curriculum is more adaptive to the digital era	The curriculum is not ready to face AI
10	Ethics and Morals	AI can support Islamic value-based education	Potential misuse of technology
11	Scientific Authority	Facilitating access to Islamic knowledge	The decreasing authority of scholars and teachers
12	Creativity Development	AI supports learning innovation	Students are too dependent on AI
13	Strengthening Independent Learning	Students are more active in learning	Decreased critical thinking skills
14	Transformation of Islamic Boarding Schools and Madrasas	Modernization of the Islamic education system	Limited technological facilities
15	Digital Education Policy	Encourage the development of technology-based education	Regulation of AI use is still limited

4. CONCLUSION

Based on the findings and discussion presented in this study, it can be concluded that the integration of Artificial Intelligence (AI) has become a significant driver of the digital transformation of Islamic education in the contemporary digital era. The application of AI has expanded across various educational domains, including adaptive learning systems, educational chatbots, automated assessment and evaluation, digital learning resources, virtual learning environments, and the digital management of Islamic educational institutions. These technological innovations have contributed to the creation of more interactive, flexible, personalized, and efficient learning experiences, thereby facilitating the modernization and advancement of Islamic education in response to the demands of digital transformation. The findings further indicate that AI enhances the effectiveness of the learning process by enabling personalized instructional approaches, increasing learner engagement, improving assessment efficiency, and strengthening the digital competencies of both educators and students. Moreover, AI supports the implementation of student-centered learning by fostering greater learner autonomy, motivation, creativity, and active participation in educational activities. Despite these

benefits, the adoption of AI in Islamic education continues to face several challenges. These include limitations in teachers' digital competencies, inadequate technological infrastructure, unequal access to internet connectivity, and concerns related to ethical, moral, and spiritual dimensions of technology use. Such challenges highlight the importance of developing appropriate policies, strengthening digital capacity among educators, and establishing ethical frameworks to ensure that AI is utilized responsibly and in accordance with the principles of Islamic education. This study contributes to the existing body of knowledge by providing a comprehensive analysis of the role of AI in the digital transformation of Islamic education. Furthermore, it offers both theoretical insights and practical implications that may serve as valuable references for policymakers, educational leaders, and Islamic educational institutions in designing and implementing technology-based educational innovations while preserving the fundamental values and objectives of Islamic education

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