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Research Article

Technology-Based Islamic Religious Education: Literature Analysis of Trends, Challenges, and Opportunities

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Abstract: This study focuses on exploring technology-based Islamic religious education (PAI) and analyzing the literature related to trends, challenges, and opportunities for technology integration in PAI learning. The aim is to identify and analyze the literature related to technology implementation in PAI and provide recommendations for development. A systematic literature review method was used to analyze 15 articles published between 2020 and 2025. The results show that technologies such as mobile applications and e-learning platforms have great potential to improve the effectiveness of PAI learning; however, significant challenges remain, including limited infrastructure and lack of educator training. This literature synthesis highlights the importance of collaboration between educators, technology developers, and educational institutions to overcome these barriers. In conclusion, integrating technology into PAI learning can significantly improve the quality of education, but a number of challenges need to be considered to ensure effective and sustainable implementation.

Keywords: Digital Learning; Educational Technology; Islamic Religious Education; Literature Review.

1. Introduction

Islamic Religious Education (PAI) plays a central role in shaping the character, morals, and spirituality of students. Along with technological advances, the PAI learning approach has undergone a significant transformation, especially in the use of digital media and e-learning platforms. Digitalization in religious education offers various advantages, including wider learning accessibility, more interactive material delivery methods, and increased effectiveness of communication between educators and students (Jamil, 2022) .

However, this digital transformation also presents various challenges. Some of the obstacles that are often encountered in the implementation of technology in Islamic Religious Education learning include limited technological infrastructure, low digital competence of educators, unpreparedness of the curriculum, and the potential for reduced understanding of Islamic values if the use of technology is not accompanied by adequate pedagogical assistance (Wahyuni & Hidayati, 2022; Zahrah, Hanifah, Adiyas, & Azis, 2025) . To answer this challenge, the integration of technology in learning must consider strategies that are relevant to the learning context.

Various previous studies have highlighted the benefits of using technology in Islamic religious learning, especially in increasing student engagement and motivation to learn (Resti, Wati, Ma'Arif, & Syarifuddin, 2024; Shodiq, 2023) . However, these studies generally focus on specific cases or practical implementations in the field, so there are not many literature reviews that systematically and comprehensively map general trends, structural challenges, and strategic opportunities in the digitalization of Islamic Education from the perspective of academic literature.

Therefore, this study aims to analyze academic literature on the digitalization of Islamic religious education, focusing on three main aspects: development trends, implementation challenges, and development opportunities. By using the library research method , by reviewing various scientific articles and relevant academic publications on the digitalization of Islamic Religious Education learning. It is hoped that this study can provide a synthesis

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and become a strategic reference for educators, researchers, and policy makers to develop adaptive technology-based Islamic Religious Education learning that remains rooted in Islamic values.

2. Theoritical Study

Adapting to the rapid development of digital technology, Islamic religious education needs to adapt by integrating technology into the learning process. One relevant theory that can be used as a basis for technology-based learning is Technology Pedagogical Content Knowledge (TPACK). Developed by Mishra and Köhler, this theory emphasizes the importance of synergy between subject mastery (content), teaching strategies (pedagogical) and the use of technology (technological) in the learning process. The integrity of Islamic values, while delivering religious material in a more contextual and interesting way through digital media (Jiménez Sierra et al., 2023) .

In addition to TPACK, constructivist theory is also relevant to Islamic technology education. This theory suggests that learners actively construct knowledge through meaningful learning experiences. Digital technologies such as online learning platforms and interactive media offer learning environments that support learners to construct meaning independently and collaboratively (A. Triantafyllou, 2022) .

Various previous research results indicate that the integration of technology in religious learning contributes positively to increasing active student participation and deepening their understanding of the content of religious material. Zahrah et al. (2025) found that the use of digital media in Islamic Religious Education learning can encourage students' enthusiasm for learning while optimizing their learning outcomes. Meanwhile, research by Jiménez Sierra et al (2023) emphasized that the application of technology in religious learning can build a dynamic learning environment and encourage cooperation between students. Nellalucky (2024) also revealed that the use of technology, if applied wisely and according to context, has the potential to strengthen the internalization of Islamic values in students' daily activities.

Based on theoretical foundations and previous study results, this study aims to compile a literature review that discusses the dynamics of trends, obstacles, and potential for digitalization in Islamic religious education. This study is expected to be a conceptual and practical basis in designing religious learning strategies that are responsive to technological developments but remain firmly based on Islamic values.

3. Research Method

This study examines various scientific literature related to technology integration in Islamic Religious Education (PAI). Through the literature review method, researchers can identify development patterns, emerging challenges, and potentials contained in previous research results without collecting data directly in the field. This approach is in accordance with the methodological guidelines put forward by Zed (2004) , which emphasizes the importance of literature studies in developing a conceptual framework for research.

Data were collected from 15 articles published between 2017 and 2024 that discussed technology integration in PAI. These sources were selected based on their credibility and relevance to the research topic. The analysis was conducted using a descriptive-critical approach to understand the pattern of technology application in PAI and evaluate its effectiveness based on previous research findings. This method is in line with the approach used by Subagiya (2023) in exploring PAI research through literature review.

The research stages include: (1) problem identification to determine the main issues related to the application of technology in PAI, including the challenges and opportunities faced; (2) literature collection by collecting relevant academic sources; (3) literature analysis by reviewing and comparing the results of previous studies to identify trends and patterns of technology application in PAI; (4) evaluation and synthesis to compile key findings based on literature analysis and develop recommendations for the implementation of technology in PAI; and (5) preparation of research reports in the form of systematic and evidence-based academic journals. This process follows the general steps in the literature study research method as explained by Munandar et al (2022).

4. Results and Discussion

This research is based on literature review, where the samples analyzed consist of various previous studies that discuss technology integration in PAI. The results of the sample analysis are presented in the table below.

Table 1. Article Analysis Results

No	Researcher	Title	Trends	Opportunity	Challenge
1	Dedy Yansyah, Dadan Sunandar, Zaenuri Zaenuri, Rian Antoni	Application of Digital Technology in Islamic Religious Education Learning	Digitalization of Islamic Religious Education learning	Improve student interaction and understanding	Limited access to technology and readiness of educators
2	Tamami et al.	Innovation of Islamic Religious Education Learning Media Based on Technology	Use of digital media in PAI	Enriching students' learning experiences	Obstacles in the application of technology in the realm of Islamic education
3	Fitri Sarinda et al.	Islamic Religious Education Based on Artificial Intelligence (AI) Technology	Integration of AI technology in PAI curriculum	Improving accessibility and effectiveness of learning	The need for a planned development strategy
4	Rizka Zulmi et al.	Islamic Education Based on Digitalization	Technology-based transformation of academic systems	Simplify administration and learning	Infrastructure limitations in some institutions
5	Saputra and Syahputra	Instilling Digital Literacy Understanding in Islamic Religious Education Learning	Improving digital literacy in PAI	Facilitating access to religious information	Lack of training for educators
6	Rachmawati &	Implementat	Utilization of	Flexibility in	Adaptation

	Rusydiyah	ion of E-Learning Based Learning in Islamic Religious Education Subjects	e-learning in Islamic Religious Education	learning	difficulties for some students and teachers
7	Miftahul Huda & Irwansyah Suwahyu	Artificial Intelligence in Islamic Religious Education	The use of AI in religious learning	AI-based learning personalization	Ethics and regulation in the use of AI
8	Salsabila et al.	The Influence of Technological Developments on Islamic Education	The impact of technology on teaching methods	Improving learning effectiveness	Risks of dependence on technology
9	Ruzakki et al.	*Trends In The Use Of Augmented Reality And Virtual Reality Technology In Learning Islamic Religious Education In Indonesia*	Utilization of AR and VR in learning simulations	A deeper learning experience	High cost for implementation
10	Ika Winarthi	Utilization of Gadgets to Increase Students' Interest and Understanding in Islamic Religious Education	Use of gadgets in PAI	Increasing student engagement	Difficulty in developing appropriate content and gadget addiction
11	The Greatest	The Role of	Adaptation of	Facilitating access	Digital

	Showman	Technological Innovation in the Transformation of Islamic Education in the Digital Era	technology in Islamic education	to learning resources	divide between regions
12	Wandansari	*A Preliminary Study of the Integration of Big Data to Answer the Challenges of Islamic Education in the Technological Age*	Big data analysis for Islamic Religious Education learning	Data-based curriculum optimization	Privacy and data security
13	Alimjon & Sabri	Methods Of Using Cloud Technologies In Islamic Education Institutions	Cloud-based data storage and access	Facilitating access to teaching materials	System security and stability
14	Arikarani et al.	Mobile Learning in Islamic Religious Education	Mobile application based learning	Flexibility in learning	Limited access for students without devices
15	Muhammad Agus Nurohman, et al.	Innovation in Islamic Education to Develop the National Curriculum Towards the Concept of Local Genius 6.0	IoT integration in learning	Increasing interactivity in the classroom	High costs and complexity of implementation

		Internet of Things (IoT).			

4.1 Trends in Technology Application in Islamic Religious Education

The integration of technology in the Islamic Religious Education (PAI) learning process has shown significant progress in recent years. According to research conducted by Baharuddin et al. (2025) , the use of technology in Islamic Religious Education has increased students' interest and religious awareness. This study shows that schools that use technology such as computers, the internet, and projectors can create a more interactive and engaging learning environment.

Through various technological innovations, Islamic religious education has undergone a major transformation in the last five years. Research by Yansyah et al. (2025) and Tamami et al., (2024) shows that digitalization of learning, such as the use of interactive media, e-learning, and multimedia-based educational software, has dominated the Islamic Religious Education learning process.

In addition, research by Fitri Sarinda et al. (2023) highlights the contribution of artificial intelligence (AI) in the realm of Islamic religious education. Various AI-based technologies, such as visual companions and voice-based assistants, have supported educators in delivering material more attractively and creatively. In addition, AI is also able to provide more precise and efficient learning evaluations of student understanding. Saputra and Syahputra (2021) added that increasing digital literacy between educators and students is a major driver of the technology adoption process. This is reinforced by the trend of mobile learning, which allows flexibility in learning through Android or iOS-based applications.

4.2 Opportunities for Technology Development in PAI

The biggest opportunity of using technology in Islamic Religious Education is its ability to increase accessibility, effectiveness, and personalization of learning. For example, the use of Artificial Intelligence (AI) studied by Miftahul Huda and Irwansyah Suwahyu (2024) allows the system to adjust teaching materials to the level of individual student ability. In a broader context, the use of big data by Wandansari (2022) can help analyze student development and improve the curriculum continuously.

Alimjon and Sabri (2020) also highlighted that cloud computing opens up great opportunities in storing and distributing teaching materials quickly and widely. In addition, the Internet of Things (IoT) studied by Muhammad Agus Nurohman, et al (2024) provides a picture of the future of more interactive Islamic Religious Education classes, with smart devices that support active student involvement.

4.3 Challenges in Implementing Technology in PAI

Although technology helps Islamic education, there are some issues that need to be considered. Based on research by Yansyah et al., (2025) limited access to digital devices and resistance to changes in learning methods are major obstacles in implementing technology in Islamic Religious Education. In addition, many teachers face difficulties in adapting due to the lack of instructions on the use of technology in education (Rachmawati & Rusydiyah, 2020) .

On the other hand, new challenges arise regarding ethics and regulation, especially in the use of AI and big data, which can raise privacy and data manipulation issues. (Miftahul Huda & Irwansyah Suwahyu, 2024) . There are also concerns about dependence on technology, as conveyed by Salsabila et al., (2023) , which has the potential to reduce the quality of spiritual interactions and moral values in religious education.

5. Conclusions and Suggestion

Based on the literature analysis conducted, it is seen that the integration of technology in Islamic religious education is a necessity that has many benefits. However, it still requires careful policies, investment in infrastructure, and strengthening teacher capacity. Existing

research shows that digital transformation in Islamic Religious Education is not only a trend but also a strategic choice for Islamic education in the future .

To optimize technology in Islamic Religious Education, teachers need regular training, internet access must be evenly distributed, and the curriculum must be integrated with technology. The use of technology must also continue to pay attention to Islamic ethics, and involve collaboration between educators and related parties.

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