

Study On Innovation And Challenges Of Teachers In Using AI In Islamic Religious Education Learning

Ahmad Nanda Maulana¹, Teguh Pamuji², Miftah Falah Udwi Syarfiah³, Fatih Nur Alif Ramadhan Korlin⁴, Sarbini⁵, Saca Suhendi⁶.

Universitas Islam Negeri Sunan Gunung Djati, Bandung Indonesia ¹²³⁴⁵⁶

ahmadnanda1998@gmail.com¹ teguhpamujii22@gmail.com²

miftahfalahudwi@gmail.com³ fatihramadham17@gmail.com⁴ sarbini1@uinsgd.ac.id⁵

sacasuhendi@uinsgd.ac.id⁶

Abstract: This study aims to analyze teacher innovation and challenges in utilizing Artificial Intelligence (AI) in Islamic Religious Education (PAI) learning. Using a library research approach, this study examines various credible scientific sources to build a comprehensive understanding of AI integration in PAI learning. The findings indicate that AI supports personalized learning through data analysis and recognition of student learning patterns, expands access to learning resources in various formats, and creates interactive learning experiences through simulations and visualizations. Innovations in AI utilization include self-directed learning, Quranic learning applications with voice recognition features, educational chatbots, virtual assistants, and Augmented Reality and Virtual Reality technologies that enrich learning experiences. However, the implementation of AI also presents several challenges, such as limited infrastructure and technology access, potential reduction of humanistic interaction between teachers and students, and excessive dependence on technology. Therefore, AI should be positioned as a strategic partner for teachers rather than a replacement, maintaining a balance between technological innovation and the spiritual essence of religious education. A wise and well-directed integration of AI is expected to strengthen the quality of PAI learning in responding to the dynamics of the digital era.

Keywords: artificial intelligence, teacher innovation, Islamic religious education, digital learning, educational technology

Abstrak: Penelitian ini bertujuan menganalisis inovasi dan tantangan guru dalam pemanfaatan Kecerdasan Buatan (AI) pada pembelajaran Pendidikan Agama Islam (PAI). Dengan menggunakan pendekatan riset kepustakaan, penelitian ini menelaah berbagai sumber ilmiah yang kredibel untuk membangun pemahaman komprehensif tentang integrasi AI dalam pembelajaran PAI. Temuan penelitian menunjukkan bahwa AI mendukung pembelajaran yang personal melalui analisis data dan pengenalan pola belajar siswa, memperluas akses terhadap sumber belajar dalam berbagai format, dan menciptakan pengalaman belajar interaktif melalui simulasi dan visualisasi. Inovasi penggunaan AI meliputi pembelajaran mandiri, aplikasi pembelajaran Al-Quran dengan fitur pengenalan suara, chatbot pendidikan, asisten virtual, serta teknologi Augmented Reality dan Virtual Reality yang memperkaya pengalaman belajar. Namun, implementasi AI juga menghadirkan beberapa tantangan, seperti keterbatasan infrastruktur dan akses teknologi,

potensi berkurangnya interaksi humanistik antara guru dan siswa, serta ketergantungan yang berlebihan terhadap teknologi. Oleh karena itu, AI harus diposisikan sebagai mitra strategis bagi guru, bukan sebagai pengganti, dengan tetap menjaga keseimbangan antara inovasi teknologi dan esensi spiritual pendidikan agama. Integrasi AI yang bijak dan terarah diharapkan dapat memperkuat kualitas pembelajaran PAI dalam merespons dinamika era digital.

Kata Kunci: kecerdasan buatan, inovasi guru, pendidikan agama islam, pembelajaran digital, teknologi pendidikan

Corresponding Author:

Ahmad Nanda Maulana

Universitas Islam Negeri Sunan Gunung Djati Bandung, Indonesia;
ahmadnanda1998@gmail.com

Introduction

The rapid progress of digital technology in recent decades has brought fundamental changes to various aspects of human life, including the field of education (Hasan, 2024). Digital transformation not only brings convenience, speed, and efficiency, but also drives changes in societal behavioral patterns, such as the shift from paper-based media to digital formats and the replacement of some human roles with automated systems, robotics, and artificial intelligence (Fuad, 2023; Azizah et al., 2025). This technological innovation has a significant multidimensional impact on the social, economic, and educational order (Cahyono, 2023; Hasan, Azizah, Ainiyah, et al., 2025). Thus, the world of education finds itself in a strategic yet vulnerable position, as it is required to adapt to AI developments without neglecting the fundamental values of education itself.

In education, the utilization of AI has given rise to various learning innovations, such as digital-based learning, academic automation systems, and adaptive learning models that can tailor material to the individual needs of students. AI technology enables the creation of personalized, flexible, and data-driven learning experiences, making the learning process more effective and responsive to student characteristics (Widodo, 2024). However, the application of AI in educational practice does not always run optimally, as it is still influenced by educators' readiness, pedagogical understanding, and the ability to integrate technology with learning objectives.

Along with this development, the educational paradigm is shifting from conventional learning toward technology-based learning. This change has a direct impact on the role of teachers, who are no longer positioned solely as content deliverers, but rather as designers, managers, and developers of learning that is adaptable to technological advancements. Teachers are required to have digital literacy, relevant pedagogical skills, and high-level thinking abilities in order to

respond to global challenges innovatively and sustainably (Nisa, 2024). However, at the implementation level, not all teachers have the same readiness to adopt and utilize AI pedagogically.

In this case, in Islamic Religious Education (PAI) learning, the development of digital technology, especially AI, presents more complex challenges. Islamic Religious Education is not only oriented toward mastering religious knowledge, but also toward the character, moral, and spiritual development of students (Hasan & Sintasari, 2025). In essence, Islamic Religious Education is a process of teaching, guiding, and nurturing aimed at enabling students to understand, appreciate, and practice Islamic teachings as a guide for life in personal and social spheres (Sinulingga, 2023) (Hasan, Azizah, & Tohir, 2025). Therefore, the integration of AI in Islamic Religious Education (PAI) learning requires a careful approach to ensure that the use of technology does not displace the essence of Islamic values, but rather strengthens their internalization.

The utilization of AI in Islamic Religious Education (PAI) learning opens up opportunities to create a more personalized and adaptive learning ecosystem, such as adjusting material according to students' abilities, continuously monitoring learning progress, and providing faster and more accurate feedback. Nevertheless, the reality on the ground shows that the utilization of AI in Islamic Religious Education (PAI) learning is still limited and tends to focus on using technology as a supporting medium, not yet fully integrated into systematic and pedagogically valuable learning designs. This condition indicates a gap between the potential of AI in PAI learning and its practical implementation by teachers.

Based on the description, it can be identified that there are still limitations in studies that specifically discuss how AI is utilized by teachers in PAI learning, the challenges they face, and its implications for the learning process and character development of students. Previous studies have focused more on the role of teachers as innovators in the digital age conceptually, but have not deeply examined teacher innovation and challenges in the context of Islamic Religious Education (PAI) learning. Therefore, this study aims to analyze teacher innovation and challenges in PAI learning.

Methods

This research employs a literature review approach, conducting a structured examination of various relevant scientific sources, such as textbooks, reputable journal articles, and previous research findings with a high level of credibility. The literature review approach was chosen because it allows the researcher to critically examine, compare, and synthesize diverse theoretical concepts and findings related to the research focus, thus enabling the construction of a strong and in-depth conceptual foundation (Creswell, 2015). Thru this approach, the research not only

compiles existing theories but also places them within the context of current educational problems.

The focus of the study is directed toward discussing the religious activities of students in an effort to improve character development at the junior high school level. Data analysis was conducted using a descriptive-qualitative method by classifying the data based on themes and their level of relevance, thus providing a complete, systematic, and argumentative understanding (Sugiyono, 2019). This analytical approach allows researchers to delve into the meaning behind various theoretical findings, while also drawing conceptual implications that can serve as a reference in the development of religion-based character education practices.

Result and Discussion

Result

The Use of Artificial Intelligence in PAI Learning

The application of Artificial Intelligence was previously conducted by a researcher named M. Ishom Fahmi Ayatillah, with the title "The Use of Artificial Intelligence in the Development of Islamic Education Learning Materials at Surabaya State Junior High School (Fahmi Ayatillah, 2024). The results of the study indicate that the application of artificial intelligence (AI) has significant potential to improve the quality and efficiency of the learning process. AI plays a role in providing adaptive learning tools that meet the needs of students, ranging from modules and teaching materials to interactive media. Furthermore, AI also enables personalized learning, where the tools provided can be tailored to individual student needs, making the learning process more relevant and effective.

The application of AI intelligence was also previously implemented by Azie Ony Saputra, with the title "Implementation of Artificial Intelligence Use in AI-Islam Learning in the Digital Technology Class Program at SMP Muhammadiyah Gresik (Sapura, 2024). The results of the study indicate that the use of technology in learning contributes to the creation of a more active, innovative, and creative learning process, making it easier for students to absorb the material presented. Despite offering various advantages, the use of technology is not entirely without limitations for both teachers and students. The application of Artificial Intelligence (AI) in AI-Islam learning through the Digital Technology Class Program offers significant opportunities to enhance the effectiveness and appeal of learning. With this technology optimization, educators can design learning experiences that are more interactive, personalized, and tailored to students' needs.

The effectiveness of applying artificial intelligence (AI) in Islamic Religious Education (PAI) learning was also researched by Clarisya Amalia Sholehah, whose thesis was titled "Implementation of Artificial Intelligence-Based Adaptive Learning Technology in Islamic Religious Education Subjects at SMK Negeri 2

Kraksaan(Sholehah, 2025). The results of the study provided a significant change in improving the quality of learning. Artificial intelligence (AI) technology supports educators in designing teaching materials that are more relevant, interactive, and easier for students to understand. Teachers also gained flexibility in implementing problem-based learning because reference sources could be accessed more quickly and efficiently. On the other hand, students benefit from easy access to information, explanations presented simply, and engaging visual support, such as thru the use of Canva AI. This condition encourages students to be more active and motivated, as the learning process can be tailored to their characteristics as a digital generation. Additionally, AI also opens up opportunities for self-directed learning, where students can explore material more broadly according to their individual interests and needs.

Based on the research conducted, it shows that artificial intelligence (AI) in Islamic Religious Education (PAI) learning has great potential to improve the quality, effectiveness, and efficiency of the learning process. This can be seen from the findings of the research above, which indicate that artificial intelligence (AI) can assist teachers in developing modules, teaching materials, and interactive media tailored to the needs of students. This shows that AI has the potential to address the classic challenge in Islamic Religious Education (PAI) learning, namely the diverse learning abilities and styles of students.

Furthermore, the research conducted by the above-mentioned researchers strengthens the argument that AI can create more active, innovative, and engaging learning, especially for digital learners. The use of technology such as generative AI platforms and Canva AI not only enhances visual appeal but also promotes cognitive and affective student engagement. In this case, AI serves as a pedagogical support that allows teachers to implement problem-based learning, self-directed learning, and project-based learning approaches more optimally. Additionally, AI opens up significant opportunities for self-directed learning and broader access to information. Students are no longer entirely dependent on the teacher as the sole source of knowledge, but can explore Islamic Religious Education (PAI) materials according to their needs. If managed properly, this condition aligns with the goals of Islamic education, which emphasizes the development of individual potential and independent learning. Based on the research results above, there is a study that can be discussed, namely Innovation and Challenges regarding the use of AI in PAI learning.

Discussion

Innovation in the Use of Artificial Intelligence (AI) in PAI Learning

Islamic Religious Education teachers are educators who play a strategic role in instilling the values of Islamic teachings to achieve a balance between the physical

and spiritual aspects of students. Their task is not limited to simply transferring religious knowledge, but also to guide and direct students toward maturity in thinking and acting according to Islamic principles. Through a continuous learning process, PAI teachers strive to shape the personality of a Muslim with noble character, leading to harmony in life and happiness in this world and the hereafter (Nurhidin, 2022). Knowing this, as the learning generation of today changes with technological advancements, it is only right that PAI teachers innovate to keep up with these developments.

With the use of AI, teachers can become both a tool and potentially optimize the effectiveness of the learning process by reducing educators' workload and strengthening academic integrity thru a more objective, transparent, and accurate evaluation and monitoring system (Rifky, 2024). By utilizing artificial intelligence (AI) technology, teachers can automate a number of administrative and technical tasks that previously consumed a lot of time, such as assessment, summarizing learning outcomes, and monitoring student progress. This not only helps reduce the workload of educators but also provides more space for teachers to focus on more substantial pedagogical aspects, such as character building, developing critical thinking skills, and spiritual guidance for students. Additionally, the use of AI in the learning process can also strengthen academic integrity thru more objective and measurable evaluation mechanisms, thus maintaining the quality of learning and increasing the accountability of teachers as educators.

The utilization of Artificial Intelligence (AI) in Islamic Religious Education (PAI) learning introduces various innovations that can support teachers in improving the quality and effectiveness of the learning process (Hidayat, 2024) (Caniago et al., 2025). One of the key innovations lies in AI's ability to facilitate personalized learning. Thru data analysis and recognition of student learning patterns, AI enables the presentation of materials and teaching methods tailored to individual abilities, needs, and learning styles. This adaptive learning approach makes students feel more cared for, which has a positive impact on their motivation and engagement in the learning process. In the context of Islamic Religious Education (PAI), AI-based personalized learning helps teachers deliver religious values in a more contextual and relevant way to students' conditions, leading to a deeper and more meaningful understanding of Islamic teachings compared to conventional approaches that are uniform and less flexible.

Besides supporting personalized learning, artificial intelligence also serves as a tool that offers ease of access and speed in obtaining learning resources. The integration of AI in Islamic Religious Education (PAI) learning allows students to access a wider and more efficient variety of learning materials in text, audio, visual, and interactive media formats. This facility provides students with the space to learn

independently and flexibly at their own pace. Quick access to learning resources not only broadens students' religious horizons but also encourages them to be more active in exploring and connecting Islamic Religious Education (PAI) material with the realities of daily life (Afif & Etikoh, 2023; Asy'arie & Mulyadi, 2023; Hasan & Aziz, 2023). Thus, AI not only serves as a supporting technological means but also as a catalyst capable of enhancing students' motivation, learning interest, and active participation in Islamic Religious Education learning.

The innovation of using Artificial Intelligence (AI) in Islamic Religious Education (PAI) presents various forms of application that support the creation of a more effective, flexible, and student-centered learning process (Skiara, 2025). One such innovation is self-learning, which allows students to learn more autonomously with the support of an AI-based system. Through this technology, learning materials, difficulty levels, and presentation methods can be tailored to each student's abilities and needs, making the learning process more focused and optimal.

The application of AI in Islamic Religious Education (PAI) learning can be found in the use of AI-Quran learning applications equipped with voice recognition features. This technology is capable of providing direct feedback on reading accuracy, particularly in terms of tajwid and makhraj, thus helping students independently correct pronunciation errors. In addition, the study of Hadith and Fiqh can also be developed through AI-based digital platforms, such as educational chatbots, which serve to answer students' questions related to Islamic law or explain the meaning of Hadith interactively and contextually. This approach encourages students to ask more questions and deepen their understanding of Islamic Religious Education (PAI) material.

Another innovation in the use of AI in Islamic Religious Education (PAI) learning is the utilization of virtual assistants and chatbots powered by Natural Language Processing (NLP) technology. This technology allows students to access PAI materials anytime, anywhere, using natural and easy-to-understand language. Through interaction with chatbots, students can quickly and responsively obtain explanations regarding the interpretation of the Quran, the history of the Prophet, the jurisprudence of worship, and Islamic moral values (Azizah et al., 2023a, 2023b; Kholik et al., 2024; Nahdliyah & Naelasari, 2024). The presence of the virtual assistant not only expands learning access outside the classroom but also enriches the learning experience, making it more interactive and sustainable.

In addition, the use of AI-based interactive supporting technologies, such as voice assistants, Augmented Reality (AR), and Virtual Reality (VR), is increasingly strengthening PAI learning innovation. AI-based voice assistants can be utilized to help students practice reading the Quran, particularly in learning tajwid and correctly pronouncing verses. Meanwhile, AR and VR technologies provide a more

immersive learning experience, for example, thru virtual tours of holy places or reconstructions of important events in Islamic history. This visual and interactive experience not only enhances students' cognitive understanding but also strengthens the affective and spiritual dimensions in PAI learning.

Overall, the application of artificial intelligence in Islamic Religious Education learning, whether through self-directed learning, chatbots, virtual assistants, or immersive reality technology, demonstrates that AI can be a strategic innovation in education. Through this approach, students are encouraged to actively participate in a continuous learning process, aligning with Rogers' view of self-actualization as a dynamic process in optimally developing human intellectual and spiritual potential.

Challenges of Using Artificial Intelligence (AI) in Islamic Religious Education (PAI) Learning

The utilization of technology, particularly artificial intelligence (AI), in Islamic Religious Education learning encourages teachers to be more innovative in designing and implementing the learning process. The use of AI offers various benefits for both teachers and students, such as ease of material delivery, time efficiency, and increased student learning engagement. However, behind these opportunities, the application of AI also presents a number of challenges that need to be critically examined to avoid obscuring the main goals of religious education.

One of the main challenges in integrating AI into Islamic religious education (PAI) learning is the limited infrastructure and access to technology. Not all schools and madrasas, especially those in remote areas, have adequate internet access and digital devices to support AI usage. This situation could potentially lead to a digital divide, impacting the quality of religious education. Additionally, limited access to technology also affects teachers' readiness and skills in operating AI-based devices and applications. Therefore, continuous efforts are needed to equalize access to technology, provide training, and conduct socialization so that teachers become accustomed to and capable of overcoming technical obstacles in implementing AI in PAI learning.

Another challenge that needs to be considered is the potential decline in the quality of the relationship between teachers and students. In religious education, direct interaction and the teacher's example play an important role in shaping students' character, moral values, and spirituality. Excessive use of AI is feared to reduce the intensity of such humanistic interactions, thereby hindering the optimal process of internalizing Islamic values. Therefore, a humanistic approach must still be prioritized so that technology functions as a supporting tool, not a replacement for the teacher's role in guiding students' moral and spiritual aspects (Fauzi, 2025). Additionally, AI integration also risks creating excessive dependence on technology. Islamic Education teachers are required to have adequate digital competence and be

able to keep up with the ever-changing technological developments. This adaptation process requires time, effort, and mental readiness from both teachers and educational institutions. External factors, such as future demands on education, societal perceptions, and the rapid development of science and technology, also influence the successful implementation of AI in PAI learning (Muis, 2025).

Overall, the application of artificial intelligence in Islamic Religious Education learning offers significant opportunities to create more adaptive, inclusive, and efficient learning. AI enables the customization of materials to meet students' needs, expands access to learning, and supports students with diverse learning characteristics. However, on the other hand, challenges such as limited infrastructure, the potential for reduced humanistic interaction, and dependence on technology demand wise preparation and management. Thus, the use of AI in Islamic religious education is not only related to technical aspects but also demands a balance between technological innovation and spiritual essence. The role of the teacher as an educator and guide of values remains key to ensuring that the use of AI strengthens, rather than diminishes, the primary goals of Islamic religious education.

Conclusion

The development of digital technology, particularly artificial intelligence (AI), has fundamentally changed the educational paradigm, including in the learning of Islamic Religious Education (PAI). In this context, the role of the teacher becomes the key to ensuring technology is used effectively and meaningfully. AI is not just a tool, but a strategic opportunity for teachers to innovate in designing learning that is adaptive, personalized, interactive, and aligned with the characteristics of students in the digital age. The innovation of PAI teachers is a determining factor in the successful integration of AI into the teaching and learning process. Teachers are required to possess digital literacy, modern pedagogical skills, and creativity in integrating religious values with technology. Through such innovation, teachers can create contextual learning experiences, strengthen the internalization of Islamic values, and increase students' active participation. Despite challenges such as limited infrastructure, reduced human interaction, and dependence on technology, innovative teachers can manage and overcome these obstacles by positioning AI as a strategic partner, not a replacement for the educator's role. Thus, the orientation of Islamic Religious Education (PAI) learning in the digital era must be directed toward strengthening teachers' capacity for innovation, so that learning is not only technologically relevant but also spiritually and morally meaningful.

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