

Innovation in the Utilization of Technology in Islamic Religious Education in Indonesian Schools

Achmad Musthofa¹, Riza Ashfari², Beni Zakaria³, Malik Ashari⁴, Khoiriyah⁵

¹ Institut Ahmad Dahlan Probolinggo; musthofaachmad05@gamil.com

² Institut Ahmad Dahlan Probolinggo; rizaashfari13@gmail.com

³ Institut Ahmad Dahlan Probolinggo; benizakaria.f@gmail.com

⁴ Institut Ahmad Dahlan Probolinggo; malikashari.spt@gmail.com

⁵ Institut Ahmad Dahlan Probolinggo; riyaahmad89@gmail.com

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ABSTRACT

This research aims to comprehensively analyze innovation The Use of Technology in Islamic Religious Education (PAI) Learning in Indonesian Schools. Islamic Religious Education (PAI) in Indonesian schools still faces various fundamental problems. The implementation of technology is often limited to the use of instrumental digital learning media, without being accompanied by substantial pedagogic transformation. This study uses a descriptive qualitative approach with the method used in this study is library research (literature study). Data collection techniques are carried out through searching, collecting, and organizing scientific documents relevant to the focus of research. The data analysis in this study uses a content analysis model. The results of the study show that. 1. Learning videos are used in various formats, ranging from interactive lecture recordings, animations of Islamic materials. 2. VR technology is mainly used as an experiential-based learning medium to simulate religious practices and historical events in Islam. 3. The hybrid classroom model is implemented through a combination of face to face learning and online learning by utilizing various digital platforms. Research findings regarding the use of video-based learning technology, virtual reality, and hybrid classes in Islamic Religious Education (PAI) show that technological innovation not only has implications for the technical aspects of learning, but also reflects changes in pedagogic paradigms in religious education in Indonesian schools.

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Corresponding Author:

Achmad Musthofa

Institut Ahmad Dahlan Probolinggo; musthofaachmad05@gamil.com

1. INTRODUCTION

Digital transformation has become a structural phenomenon that fundamentally changes the global education landscape, including in value-based learning practices and character building. The development of information and communication technology no longer merely functions as an instrument to support learning, but has acted as a catalyst for pedagogical, epistemological, and cultural change in the modern education system (Nurhayati et al., 2025). In the context of Islamic

Religious Education (PAI), this dynamic presents complex opportunities as well as challenges, especially in developing countries such as Indonesia which have social diversity cultural, and religious (Ramdani et al., 2025).

On the one hand, technology has the potential to expand access, increase student involvement, and enrich the strategy of internalizing Islamic values; But on the other hand, pedagogical unpreparedness and inequality in the use of technology risk reducing the substance of religious learning to just a process of digitizing content. Therefore, innovation in the use of technology in Islamic Religious Education cannot be understood solely as the adoption of digital devices, but as an effort to transform pedagogy that places values, meaning, and character as the core of the educational process in the digital era. Although the use of digital technology in education continues to increase, its integration in the learning of Islamic Religious Education (PAI) in Indonesian schools still faces various fundamental problems.

The implementation of technology is often limited to the use of digital learning media that is instrumental, without being accompanied by substantial pedagogic transformation (Ramdani et al., 2025). This condition is exacerbated by the disparity in teachers' digital competence, limited institutional support, and the tendency of PAI learning which is still oriented towards one-way knowledge transmission (Kesuma et al., 2025). As a result, the potential of technology as a means of strengthening the internalization of Islamic values, the formation of religious character, and the development of competencies in the 21st century has not been optimally utilized. The discontinuity between the development of educational technology and the pedagogic needs of PAI shows that there are structural and conceptual problems that require in depth scientific study, especially in formulating innovations in the use of technology that are contextual, valuable, and sustainable in the learning of Islamic Religious Education.

The study of innovation in the use of technology in Islamic Religious Education (PAI) requires a comprehensive and multidimensional theoretical foundation in order to be able to fully explain the dynamics of pedagogy, technology, and values. From the perspective of educational innovation theory, technology adoption is understood as a social process influenced by individual, institutional, and cultural factors, not just a technical issue (Imroah et al., 2025). Meanwhile, learning technology integration frameworks such as Technological Pedagogical Content Knowledge (TPACK) and Technology Acceptance Model (TAM) (Wijayati et al., 2024) emphasize the importance of alignment between teachers' pedagogic competencies, content characteristics, and user acceptance of technology. At the same time, constructivist and socio cultural learning theories (Ahyani et al., 2020)

view technology as a medium of meaning construction that allows learners to actively participate in the learning process. In the context of PAI, the theoretical framework needs to be met with the Islamic education paradigm based on the concepts of *tarbiyah*, *ta'lim*, and *ta'dib* (Ridwan, 2018), so that technological innovation is not only oriented to the effectiveness of learning, but also to the internalization of values, character formation, and strengthening the spirituality of students in the digital era. A number of previous studies have examined the use of digital technology in religious education learning and shown a positive contribution to increasing student learning engagement, motivation, and cognitive achievement (Abas, 2025).

International studies confirm that the integration of digital platforms, interactive media, and network-based learning is able to create a more adaptive and participatory learning experience (Entriza & Puspitasari, 2025). However, in the context of Islamic Religious Education (PAI) in Indonesia, most of the research still focuses on the technical aspects of the use of digital media, such as e-learning, learning videos, or online-based applications, without examining in depth the dimensions of innovation pedagogic and internalization of Islamic values (Mungalim, 2025). In

addition, existing studies tend to be partial and contextual, so they do not provide a comprehensive conceptual framework on how technology can function as an instrument for transforming PAI learning oriented towards character formation and spirituality.

These limitations show the existence of significant research gaps and affirm the urgency of further studies on innovations in the use of Islamic Religious Education technology that are contextual, valuable, and relevant to the dynamics of education in Indonesia. Based on the mapping of theoretical studies and previous empirical findings, this study offers novelty by positioning the innovation of the use of technology in Islamic Religious Education (PAI) as a value-based pedagogic transformation process, not just the digitization of learning media. Unlike previous studies that generally focused on the technical effectiveness of the use of digital devices or platforms (Sari & Munir, 2024), this study integrates the pedagogical, religious, and socio-cultural dimensions of Indonesian schools in a complete analytical framework.

The novelty of this research lies in the effort to formulate a conceptual model of PAI technological innovation that places technology as a means of internalizing Islamic values, strengthening religious character, and developing students' competencies in the digital era. Thus, this research not only contributes to the enrichment of Islamic educational literature and educational technology, but also provides an empirical and conceptual basis for the development of contextual and sustainable PAI learning policies and practices. Departing from the complexity of the problems and research gaps that have been identified, this research is directed to answer a number of key questions related to the innovation of the use of technology in Islamic Religious Education (PAI) in Indonesian schools.

The main focus of the research is not only on the identification of forms of technological innovation used in PAI learning, but also on the pedagogical, institutional, and cultural factors that influence the successful implementation. In addition, this study seeks to examine how technological innovation has implications for the process of internalizing Islamic values, strengthening religious character, and developing students' competencies in the digital era. The formulation of this problem is expected to be able to direct the study systematically and analytically, so as to produce a comprehensive understanding of the strategic role of technology as an instrument for the transformation of Islamic Religious Education learning that is contextual and sustainable.

In line with the formulation of the problem that has been presented, this study aims to comprehensively analyze the innovation of the use of technology in the learning of Islamic Religious Education (PAI) in Indonesian schools. In particular, this study is directed to identify the forms and patterns of PAI technological innovations that develop in learning practices, examine the factors that affect the effectiveness of its implementation, and evaluate its implications for strengthening religious character and developing students' competencies. Through the achievement of these goals, this research is expected to be able to produce an analytical framework and recommendations based on empirical evidence to support the development of PAI learning policies and practices that are contextual, adaptive to the dynamics of the digital era, and in line with Islamic values.

2. METHODS

This study uses a descriptive qualitative approach (Mappasere & Suyuti, 2019) with the aim of obtaining a deep and comprehensive understanding of the innovation in the use of technology in Islamic Religious Education (PAI) in Indonesian schools. The method used in this study is library research (literature study) (Pringgar., Rizaldy Fatha, 2020). This method is seen as relevant because the study of technological innovations in Islamic Religious Education requires an in-depth conceptual and theoretical exploration of credible scientific sources. Research data was obtained

from various written sources, including articles from reputable international journals (Scopus and Web of Science), accredited national journals, academic books, research reports, and education policy documents related to educational technology and Islamic Religious Education. Data collection techniques are carried out through searching, collecting, and organizing scientific documents relevant to the focus of research.

This process includes identification of key literature, critical reading, and systematic recording of concepts, findings, and arguments related to innovations in the use of technology in PAI learning. All data collected are secondary and in the form of narratives, concepts, and the results of previously published empirical studies. The data analysis in this study uses a content analysis model (Asfar & Taufan, 2019), this analysis model allows researchers to interpret data in depth and reflectively, so as to be able to produce a conceptual synthesis of innovations in the use of technology in Islamic Religious Education in Indonesian schools.

3. FINDINGS AND DISCUSSION

The results of the study show that the use of video-based learning technology has become one of the most dominant forms of innovation in the learning practice of Islamic Religious Education (PAI) in Indonesian schools. Learning videos are used in various formats, ranging from interactive lecture recordings, animations of Islamic materials, to visual simulations of worship practices designed to help students understand abstract religious concepts (Hanifah et al., 2025). These findings indicate that video media is used not only as a means of delivering material, but also as a pedagogic strategy to increase learning engagement, facilitate conceptual understanding, and support the process of internalizing Islamic values. In addition, the use of video allows for more contextual and adaptive learning to the characteristics of digital generation students (Hanifah et al., 2025), thus contributing to the creation of a more interesting and meaningful PAI learning experience.



Figure 1. Video Based Learning Source: PAI Learning Innovation Content Analysis

The results of the study revealed that the use of virtual reality (VR) technology in Islamic Religious Education (PAI) learning in Indonesian schools (Astari, 2021) is starting to show development, although its implementation is still limited and selective. VR technology is mainly used as an experiential-based learning medium to simulate religious practices and historical events in Islam (Sharia, 2022), such as the simulation of hajj manasik and the visualization of Islamic historical sites. These findings show that VR is positioned as a means to present an immersive and contextual learning experience, thereby helping students understand PAI material more concretely.

In addition, the use of VR contributes to increased student interest and learning engagement (Triastani et al., 2026), although the effectiveness of its implementation is strongly influenced by the availability of technological infrastructure, teacher readiness, and institutional support at the school level.



Figure 2. Utilization of Virtual Reality (VR) Technology
Source: PAI Learning Innovation Content Analysis

The results of the study show that the implementation of hybrid classes in Islamic Religious Education (PAI) learning in Indonesian schools is a form of pedagogic adaptation to technological developments and the demands of learning flexibility in the digital era (Ramdani et al., 2025). The hybrid classroom model is implemented through a combination of face-to-face learning and online learning by utilizing various digital platforms to support synchronous and asynchronous interactions (Rohmah & Sholikhah, 2024). These findings indicate that hybrid classrooms allow for an expansion of learning space and time, thus providing flexibility for learners without completely eliminating the role of direct interaction in the formation of religious values and character. However, the effectiveness of the implementation of hybrid classrooms is highly dependent on the readiness of teachers, the availability of technological infrastructure, and the ability of schools to design learning strategies that still place the substance of Islamic values as the core of the educational process.



Figure 3. Implementation of Hybrid Class in Learning
Source: Content Analysis of Innovation in Islamic Religious Education (PAI) Learning

Research findings regarding the use of video-based learning technology, virtual reality, and hybrid classes in Islamic Religious Education (PAI) show that technological innovation not only has

implications for the technical aspects of learning, but also reflects changes in pedagogic paradigms in religious education in Indonesian schools. These three forms of innovation show a tendency to shift from transmissive PAI learning to a more participatory, contextual, and experiential approach as shown in the following table:

| No | Innovation Technology | Implementation In PAI Learning | Key Findings |
|----|---------------------------------|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Video Based Learning Technology | Interactive Lecture Videos, Animation of Islamic Materials, Visual Simulation of Worship Practices | Learning videos are the most dominant innovation and are used not only as a medium for delivering material, but also as a pedagogic strategy to increase learning engagement, conceptual understanding, and Internalization of Islamic Values |
| 2 | Virtual Reality (VR) | Hajj Manasik Simulation, Visualization of Islamic History Sites, Experiential Learning Immersive | The use of VR is starting to grow although it is still limited and selective; VR functions as an experiential learning medium that helps in the understanding of PAI material in a concrete way |
| 3 | Hybrid Class | A combination of face-to-face and online learning using synchronous and asynchronous digital platforms | Hybrid classes are a form of pedagogic adaptation that expands the space and time of learning without eliminating direct interaction in the formation of religious values and characters |

Table 1. Research Results of Innovation in the Use of Technology in Islamic Religious Education (PAI) Learning

DISCUSSION

Research findings regarding the use of video-based learning technology, virtual reality, and hybrid classes in Islamic Religious Education (PAI) (Khoerudin et al., 2024) show that technological innovation not only has implications for the technical aspects of learning, but also reflects changes in pedagogic paradigm in religious education in Indonesian schools. These three forms of innovation show a tendency to shift from transmissive PAI learning to a more participatory, contextual, and experiential approach to learning. In the perspective of multimedia learning, experiential learning, and blended learning theory (Ariani, 2018), technology functions as a medium that allows the construction of meaning, internalization of values, and the strengthening of students' cognitive and affective involvement.

However, the integration of technology in PAI cannot be separated from the Islamic education framework that places values, character, and spirituality as the main goals of education. Therefore, PAI technological innovation needs to be understood as a pedagogic transformation process that

requires a balance between technological advances, the readiness of educational actors, and the substance of Islamic values so that PAI learning remains meaningful, contextual, and sustainable in the digital era. The use of video based learning technology in a theoretical perspective the findings of the study show that video-based learning technology plays a significant role in improving the quality of Islamic Religious Education (PAI) learning through the presentation of materials that are more visual, contextual, and easy to understand (Suseno & Ritonga, 2025).

In the perspective of the Cognitive Theory of Multimedia Learning (Mayer, 2005), the use of video allows for integration between visual and auditory channels, thereby strengthening the process of information processing and retention of students' knowledge. These results indicate that video not only functions as a medium of conveying information, but also as a pedagogic instrument that supports the construction of meaning and the internalization of Islamic values more effectively. Theoretically, these findings reinforce the assumption that multimedia-based PAI learning is able to bridge the gap between normative content and the learning experience of digital generation students.

Practically, the results of this study imply the need to develop the competence of PAI teachers in designing learning videos that are not only informative, but also reflective and valuable, as well as video integration as part of a sustainable PAI learning strategy. Virtual reality as experiential learning media in islamic religious education the use of virtual reality (VR) technology in PAI learning presents an experiential learning approach that is immersive and contextual. Within the framework of Experiential Learning Theory (Kolb) (Priatmoko & Dzakiyyah, 2020), VR allows students to gain concrete experiences that become the basis for reflection, conceptualization, and application of Islamic values.

Simulation of religious practices and visualization of Islamic history through VR provides space for students to understand religious teachings not only cognitively, but also affectively and spiritually (Readi, 2023). From a theoretical perspective, these findings expand the discourse on the integration of immersive technology in religious education, especially in the context of Islamic education that emphasizes the formation of personality and spiritual awareness. Practically, the implementation of VR in PAI requires infrastructure support, school policies, and pedagogic readiness of teachers so that this technology is not just a visualization tool, but really functions as a means of meaningful and directed value learning.

Implementation of hybrid classrooms in the framework of blended learning and islamic Education The implementation of hybrid classes in Islamic Religious Education learning reflects the adaptation of the learning system to the blended learning paradigm (Ningtyas & Sihombing, 2023) and the demands of Education 4.0 (Darma et al., 2020). The findings of the study show that the combination of face to face and online learning provides learning flexibility while maintaining a space for direct interaction that is essential in learning values and character. In the perspective of blended learning theory (Anggraeni & Nuraini, 2022), hybrid classes allow for personalization of learning and strengthen students' reflection through synchronous and asynchronous activities.

Theoretically, these findings confirm that hybrid classes can be an adaptive PAI learning model without eliminating the substance of Islamic values (Ananda & Malik, 2025). Practically, the results of this study imply the need for a balanced PAI learning design between the use of technology and value interaction, strengthening the role of teachers as value facilitators, and developing school policies that support hybrid-based PAI learning in a sustainable manner.

4. CONCLUSION

Based on the results of the research and discussion, it can be concluded that innovations in the use of technology in Islamic Religious Education (PAI) learning in Indonesian schools have shown significant developments, especially through the use of video-based learning technology, virtual reality, and hybrid classes. Video based technology is the most dominant and effective innovation in supporting conceptual understanding and internalization of Islamic values, because it is able to present learning materials visually, contextually, and adaptively to the characteristics of students of the digital generation. The use of virtual reality technology presents an experiential learning approach that allows students to understand religious teachings and practices in a more concrete and immersive way. However, its implementation is still limited and highly dependent on infrastructure readiness, pedagogic competence of teachers, and institutional support of schools. Meanwhile, the implementation of hybrid classes reflects the pedagogical adaptation of Islamic Religious Education to the demands of learning flexibility in the digital era, while maintaining the role of direct interaction as an important element in the formation of students' character and spirituality. The researcher is then advised to develop a field-based empirical study to directly test the effectiveness of Islamic religious education technological innovations on the formation of religious character and learning outcomes of students.

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