

Innovation and Adaptation of Islamic Religious Education in Madrasahs in the Context of Society 5.0 Era

Zainuddin Zainuddin^{1*}, Zaenal Abidin², Anis Susanti³, Muhammad Muttaqin⁴

^{1,2,4}Institut Agama Islam Al-Qur'an Al-Ittifaqiah Indralaya

³Sekolah Menengah Pertama Negeri 1 Tanjung Lago

Corresponding Author: Zainuddin Zainuddin z.nudien@gmail.com

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ABSTRACT

The Society 5.0 era presents challenges and opportunities for Islamic religious education in madrasahs. This study aims to analyze the innovations and adaptations needed to face this era. Using a qualitative method with a Library Research approach and content analysis, this study examines various related literature sources. The results show that the main challenges include limited technological infrastructure and lack of human resource readiness. Many madrasahs still rely on traditional methods and show resistance to change. In conclusion, a comprehensive strategy is needed, including infrastructure improvement, teacher digital competency development, curriculum update, and mindset change. Recommendations include technology training programs, collaboration with the technology sector, and education policy reforms to support digital transformation in madrasahs

INTRODUCTION

The rapid development of technology has ushered the world into the era of Society 5.0, a concept introduced by Japan as a continuation of the Industrial Revolution 4.0 (Fukuyama, 2020). This era is characterized by the intertwined integration of the virtual and real worlds, where technology is not only a tool, but also an integral part of human life. In this context, education, including Islamic religious education in madrasah, is required to adapt and innovate in order to prepare a generation capable of contributing to Society 5.0 (Priatmoko, 2018).

Madrasahs, as Islamic educational institutions, have a strategic role in shaping the character and intellectuality of the Muslim generation (Tan, 2012). However, in facing the Society 5.0 era, madrasahs are faced with various challenges. One of the main challenges is the digital divide that still occurs in various parts of Indonesia (Azzizah, 2015). Many madrasahs, especially in rural areas, still face limited access to technology and the internet, which are the basic infrastructure in the Society 5.0 era (Rosad, 2019).

In addition, the readiness of human resources, especially teachers, in adopting and integrating technology in the learning process is also a crucial issue at this time (Habibi, et. al, 2018). Many educators in madrasahs are still comfortable with traditional teaching methods and show resistance to change, including reluctance in using technology-based learning media.

On the other hand, the era of Society 5.0 also opens up great opportunities for the transformation of Islamic religious education in madrasahs. Technology can be a means to enrich learning experiences, expand access to Islamic knowledge resources, and facilitate more personalized and adaptive learning (Wekke & Hamid, 2013). However, to capitalize on this opportunity, innovation is needed that is not only limited to technological aspects, but also includes curriculum updates, teaching methods, learning environments and education management.

Several previous studies have examined aspects related to innovation and adaptation of Islamic religious education in the digital era. Nuryana (2019) in her research on "Utilization of information technology in learning Islamic Religious Education" found that the use of information technology can increase the effectiveness of Islamic Religious Education learning, but is still constrained by the lack of infrastructure and teacher skills (Nuryana, 2019).

Meanwhile, Abdullah (2020) in his study "Islamic Education in the Era of Industrial Revolution 4.0" emphasized the importance of PAI curriculum reform to integrate 21st century skills and digital literacy (Abdullah, 2020). This research highlights the need for a paradigm shift in Islamic education to face the challenges of the digital era. Furthermore, Purwokerto, et al. (2023) analyzed how teachers and students, being able to adapt to technology (Porwokerto et al., 2023). They found that despite initial resistance, many teachers and students began to adopt technology to improve the quality of learning and education management.

The era of Society 5.0 demands the strengthening of 21st century skills among students, including the ability to analyze, collaborate, and adapt in an increasingly digital environment. In this case, the application of context- and problem-based learning methods, as well as the use of digital media in the learning process of Islamic Religious Education (PAI), has proven effective in improving students' critical thinking skills (Inayah, 2024).

In addition, other studies have shown that madrasah participation in Society 5.0 opens up opportunities for transformation in teaching approaches that combine Islamic knowledge sources with technology. For example, programs based on digital platforms such as educational apps and social media can be more affordable tools to enrich learning for students, especially in madrasahs located in areas with limited technological infrastructure. However, it is important to remember that the digital divide is still a major challenge in Indonesia, especially in access to technology and teacher readiness in different regions (Rm, 2024).

These studies provide an important foundation for the current research, but are still limited in comprehensively analyzing the challenges and opportunities faced by madrasahs in the specific context of Society 5.0. This study aims to comprehensively analyze the challenges and opportunities facing Islamic religious education in madrasahs in the context of Society 5.0, as well as identify the necessary innovation and adaptation strategies. By understanding the complexity of this issue, it is expected that relevant recommendations can be formulated to improve the quality and relevance of Islamic religious education in madrasahs in facing the demands of the Society 5.0 era.

LITERATURE REVIEW

Society 5.0 is a continuation of the Industrial Revolution 4.0 introduced by the Japanese government. Fukuyama defines Society 5.0 as a human-centered and technology-based society, which aims to create a balance between economic progress and solving social problems through a system that integrates the virtual and physical worlds (Fukuyama, 2020). López Aranguren emphasizes that in this era, technologies such as the Internet of Things (IoT), artificial intelligence (AI), robotics, and big data are not only used to increase production efficiency, but also to improve the overall quality of human life (López Aranguren, 2023).

Several studies reveal the challenges madrasahs face in adopting technology. Priatna et al. found that many madrasahs in Indonesia still face obstacles in integrating technology into the learning process, mainly due to limited infrastructure and teachers' digital competencies (Priatna et al., 2020). Azzizah identified the digital divide that still exists in various parts of Indonesia as a major challenge (Azzizah, 2015). This is reinforced by Rosad's findings that many madrasahs, particularly in rural areas, still face limited access to technology and the internet (Rosad, 2019).

Various innovations have been made in Islamic religious education to face the era of Society 5.0. Nuryana in her research found that the use of information technology can increase the effectiveness of Islamic Religious Education learning, although it is still constrained by the lack of infrastructure and teacher skills

(Nuryana, 2018). Abdullah emphasized the importance of reforming the PAI curriculum to integrate 21st century skills and digital literacy (Abdullah, 2020).

Maulidi & Badriya showed that the integration of digital technology can improve students' understanding of Islamic religious values and develop virtuous characters (Rizki Maulidi, 2024). Meanwhile, Suhartini emphasizes the importance of an approach that considers the local context in adopting technology in Islamic educational institutions (Suhartini, 2022).

Recent research shows various forms of learning adaptation in madrasah. Eko Murtiasih examined the implementation of the flipped classroom method in PAI learning which gave positive results (Eko Murtiasih, 2022). Lisyawati et al. discussed the importance of digital literacy in PAI learning (Lisyawati et al., 2023). Rahimah & Cahyadi studied an innovative learning model that integrates technology in PAI (Rahimah, Ani Cahyadi, 2024).

Utomo et al. identified the importance of improving teachers' skills in utilizing information and communication technology (Utomo et al., 2023). Sari discussed the implementation of Technological Pedagogical and Content Knowledge (TPACK) in PAI learning, which showed the importance of integrating technological, pedagogical, and content knowledge in teaching (Sari, 2022).

This literature review shows that innovation and adaptation of Islamic religious education in madrasah in the context of the Society 5.0 era is an unavoidable need. Despite facing various challenges such as the digital divide and resistance to change, various studies have shown that appropriate technology integration can improve the quality of Islamic education learning. The success of this transformation depends on developing infrastructure, improving teacher competencies, updating the curriculum, and changing mindsets that support educational innovation.

METHODOLOGY

This research uses a qualitative approach with the type of Library Research to examine "Innovation and Adaptation of Islamic Religious Education in Madrasahs in the Context of Society 5.0 Era" This approach allows researchers to explore ideas and concepts from various relevant literatures without going directly to the field (Creswell, 2017). With Library Research, researchers utilize a variety of written sources, such as books, scientific journals, research reports, and verified online sources, so as to collect broad and in-depth data on educational innovation in madrasahs in the digital era (Snyder, 2019).

Using inclusion criteria, data were collected from publications within the last 10 years, particularly those highlighting Islamic religious education in Indonesian madrasahs. The selected studies address aspects of innovation and adaptation of Islamic education to technological developments in Society 5.0, for example, how madrasahs can utilize technology to enrich religious learning and increase the accessibility of Islamic knowledge.

Data analysis using the content analysis method is carried out in several main stages, namely coding, categorization, comparison, synthesis, and interpretation (Krippendorff, 2018). Content analysis method aims to identify patterns and main themes that emerge from qualitative data, so as to produce a deep and systematic understanding. In this context, the coding process helps sort information into relevant categories, such as technological innovation in madrasah, the digital divide, and the readiness of human resources (teachers and students) to adopt technology.

To ensure validity and reliability, the study applied source triangulation, peer review, and audit trail (Noble & Smith, 2015). Source triangulation involved testing the consistency of data from multiple sources, while peer review provided an opportunity for others to review the analysis and findings. An audit trail is included as a detailed record of the entire research process, allowing for greater traceability and transparency. Despite being literature-based, the ethics of the research are maintained through proper acknowledgement of sources and objectivity in analysis (Wager & Wiffen, 2011). Ethics in desk-based research is essential to maintain scientific integrity and give fair credit to intellectual contributions. This methodology is designed to provide a comprehensive understanding of the challenges and opportunities madrasahs face in implementing innovation and adaptation of Islamic religious education in the Society 5.0 era.

RESULT AND DISCUSSION

The Concept of Society 5.0 and its Implications for Islamic Education

The concept of Society 5.0 is a vision of a future society introduced by the Japanese government as a continuation of the industrial revolution 4.0. Society 5.0 is defined as a human-centered and technology-based society, which aims to create a balance between economic progress and social problem solving through a system that integrates cyberspace and physical space. (López Aranguren, 2023).

In the context of Society 5.0, technologies such as the Internet of Things (IoT), artificial intelligence (AI), robotics, and big data are not only used to improve production efficiency, but also to improve the overall quality of human life. This concept emphasizes the use of advanced technology to serve human needs, not the other way around (Fukuyama, 2020).

Furthermore, the concept of Society 5.0 and its implications for Islamic education in Indonesia bring significant challenges and opportunities. Islamic education, which has traditionally focused on teaching Islamic values and religious practices, must now adapt to the rapidly evolving digital landscape (Al Haddar, et al. 2023).

In Indonesia, madrassas and Islamic boarding schools, as traditional Islamic educational institutions, are facing demands for digital transformation. Research conducted by Priatna et al. (2020) shows that many madrasahs in Indonesia still face obstacles in integrating technology into the learning process, mainly due to limited infrastructure and teachers' digital competencies (Priatna et al., 2020).

In the context of pesantren, which is a typical form of Islamic education in Indonesia, the adoption of technology has also begun to be seen. A study conducted by Arif (2016) shows that some modern pesantren in Java have started to integrate technology-based learning, including the use of e-learning and social media to enrich the learning experience of students (Arif, 2016).

Moral and character education, which is the core of Islamic education, can also be enriched through a technological approach. Research conducted by Maulidi & Badriya (2024) showed that the integration of digital technology can improve students' understanding of Islamic religious values and develop virtuous characters (Rizki Maulidi, 2024).

However, the adoption of technology in Islamic education in Indonesia also raises ethical and cultural questions. How to ensure that the use of technology does not diminish the spiritual aspects and local wisdom values that characterize Islamic education in Indonesia? Suhartini (2022) in their research emphasized the importance of an approach that considers the local context in adopting technology in Islamic education institutions (Suhartini, 2022).

To address this challenge, the Indonesian Ministry of Religious Affairs has issued guidelines on the integration of technology in the madrasa curriculum. These guidelines emphasize the importance of balancing technological innovation with the preservation of Islamic values and local wisdom (Amin, 2019).

The role of religious teachers has also undergone a transformation. They are not only required to master religious knowledge, but also to be technologically literate. In addition to religious materials, the curriculum should include subjects such as technology ethics from an Islamic perspective and digital literacy. Another challenge is ensuring inclusivity in technology adoption.

In conclusion, Islamic education in Indonesia in the era of Society 5.0 faces a big task to integrate technology without losing its spiritual essence and local wisdom values. Innovation and adaptation are needed, but it must be done carefully and wisely, considering the Indonesian socio-cultural context and the main goal of Islamic education, which is to form a perfect person.

The Society 5.0 era introduced by Japan brings the concept of a society based on advanced technology but still human-centered. In the context of Islamic education in Indonesia, especially in madrasah and pesantren, the main challenge is to ensure that technology not only improves efficiency, but also strengthens local spiritual and cultural values. Technologies such as AI and IoT open up great opportunities to enrich learning materials, improve access, and create a more personalized learning experience (Al Haddar et al., 2023; Fukuyama, 2020).

However, limited digital infrastructure and technological competence in teachers remain significant challenges. Many teachers need intensive training to master the use of technology in learning. This is important so that the Islamic education curriculum can include digital literacy and technological ethics according to the Islamic perspective (Amin, 2019; Priatna et al., 2020). With the right innovation and adaptation strategies, Islamic education can utilize the

potential of the Society 5.0 era to produce a generation that is not only technologically literate, but also noble and broad-minded.

Innovation of Islamic Religious Education in Madrasahs in the Era of Society 5.0

The era of Society 5.0, which is characterized by the integration of digital technology into various aspects of human life, brings both challenges and opportunities for the development of Islamic religious education in madrasahs. Innovation is the key to ensuring the relevance and effectiveness of Islamic religious education in facing the changing demands of the times (Priatna et al., 2020). In this context, madrasahs in Indonesia have begun to make various breakthroughs to adapt Islamic religious education to the needs of the digital era.

One of the main innovations is the integration of technology in the learning process. The use of e-learning platforms, mobile applications and interactive multimedia has begun to be implemented in various madrasahs. The Indonesian Ministry of Religious Affairs, for example, has developed a "Madrasah Digital" application that provides Islamic learning materials in an interactive digital format.

Furthermore, Augmented Reality (AR) and Virtual Reality (VR) technologies are beginning to be utilized to provide immersive experiences in learning Islamic history and worship practices. Some madrasahs have used VR technology for virtual tours to Islamic historical places, allowing students to virtually "visit" the Grand Mosque or the Prophet's Mosque.

Personalization of learning through the use of Artificial Intelligence (AI) and big data analysis is also a growing trend. Adaptive learning systems that can customize teaching materials and methods based on students' individual needs and learning styles are being developed. This approach allows the teaching of complex religious concepts to be more effective and suited to the abilities of individual students.

The Islamic religious education curriculum in madrasahs has also undergone renewal by incorporating digital competencies as an integral part of the Islamic religious education curriculum (Reza Bagus Anugerah, 2023). In addition to traditional religious knowledge, students are also equipped with skills such as digital literacy, computational thinking, and technology ethics from an Islamic perspective. This is in line with the efforts to prepare students to be competent Muslims in the digital era (Lisyawati et al., 2023).

Innovative learning methods such as blended learning, flipped classroom, and project-based learning are also increasingly being applied in the context of Islamic religious education (Rahimah, Ani Cahyadi, 2024). For example, the use of the flipped classroom method where students learn basic material through learning videos at home, while in-class time is used for in-depth discussions and practical applications of Islamic teachings (Eko Murtiasih, 2022).

Soft skills and character development also receive greater emphasis in Islamic education innovations. The utilization of technology also opens up opportunities for global collaboration and networking in Islamic education. Some madrasahs have started participating in virtual exchange programs with Islamic schools in other countries, allowing students to interact and learn from

their peers around the world, broadening their perspectives on the diversity of Islamic practices and interpretations (Sulaiman Kurdi, 2021).

Innovations also occurred in terms of teacher competency development and evaluation systems. Training programs that focus on improving the digital and pedagogical skills of Islamic religion teachers began to be intensively implemented (Utomo et al., 2023). Meanwhile, the evaluation system is transforming with the use of technologies such as computer-based assessment, learning analytics, and digital portfolios to provide a more comprehensive and real-time assessment of student progress (Sari, 2022).

While these innovations offer many opportunities, their implementation is not without challenges. The digital divide between urban and rural madrasas, resistance to change from some quarters, as well as concerns about the loss of traditional values are some of the challenges that need to be overcome (Sinambela et al., 2024). However, with the right approach, madrasas can utilize technology to strengthen students' religious understanding and practices, while preparing them to be competent Muslims in the digital age.

The transformation of Islamic religious education in the era of Society 5.0 shows significant progress in integrating digital technology into madrasah learning systems. The use of e-learning, AR/VR technology, and AI has opened a new dimension in Islamic teaching, enabling more interactive and personalized learning. Hybrid learning models that combine traditional and digital methods, the application of project-based learning based on Islamic values, and the development of collaborative learning through digital platforms have created a more dynamic and adaptive learning environment.

Although this transformation faces challenges such as the digital divide and change resistance, madrasahs have developed a comprehensive adaptation strategy through gradual infrastructure development and capacity building programs for educators. Positive impacts can be seen from increased student engagement and strengthened understanding of concepts through digital visualization. With an approach that balances technological innovation and fundamental Islamic values, this transformation has the potential to produce a generation of Muslims who are not only technologically competent but also have a strong spiritual foundation to face the digital era.

In conclusion, innovation in Islamic religious education in madrasah in the era of Society 5.0 is a necessity that must be done carefully and wisely. A balance is needed between the adoption of technology and the preservation of fundamental Islamic values. With a holistic and balanced approach, madrasahs can produce a generation of Muslims who are not only strong in religious understanding and practice, but also able to contribute positively in a global digital society, especially in the era of society 5.0.

With a holistic and balanced approach in adopting innovations, madrasahs in the era of Society 5.0 have the potential to not only produce a generation of Muslims who are technologically literate and academically competent, but also have spiritual depth and high social sensitivity. The challenge is how to continue to maintain the relevance and quality of Islamic religious education in the midst

of rapid technological change, while still maintaining the fundamental values of Islamic teachings.

CONCLUSION AND RECOMMENDATION

Islamic religious education innovation in madrasas in the era of Society 5.0 reflects a complex effort to balance tradition with modernity. Madrasahs face the challenge of adopting modern learning technologies and methods, while maintaining fundamental Islamic values. Initiatives such as the use of AR/VR, the development of interactive Quran applications, and the application of project-based learning methods demonstrate the potential of technology in enriching religious education.

However, these innovations also face challenges such as the digital divide and resistance to change. A holistic approach that integrates religious knowledge with 21st century skills and digital literacy is crucial. Madrasahs are now tasked with producing graduates who not only understand Islamic teachings deeply, but are also able to apply them in a digital global context.

The success of this innovation depends on the collaboration of all stakeholders and the creation of an ecosystem that supports continuous experimentation. With the right approach, madrasas in Indonesia have the potential to become a model of how Islamic educational institutions can adapt to the digital era without losing their essence. The ultimate goal is to produce a generation of Muslims who are technologically literate, academically competent, spiritually deep, and able to contribute positively in a complex global society.

FURTHER STUDY

Further in-depth research is needed to further explore the impact of technology integration in madrasahs in the context of Society 5.0. One relevant direction is an empirical study on the readiness of madrasah, both in terms of infrastructure and human resources, especially teachers, in adopting a technology-based curriculum. This research should focus on the implementation of Technological Pedagogical and Content Knowledge (TPACK) to improve teachers' competence in teaching Islamic Religious Education (PAI) by utilizing digital technology. In addition, it is also important to examine the effectiveness of the flipped classroom learning model in PAI subjects. This model has the potential to increase student engagement and develop a deeper understanding of religious values. However, more extensive empirical data is needed to see how this method works in Islamic education environments that have unique characteristics.

Another relevant research is a comparative study between madrasahs in urban and rural areas regarding digital technology readiness and implementation. This research can identify significant access and infrastructure gaps and offer solutions to overcome these barriers. In addition, it is important to analyze how the use of technologies such as the Internet of Things (IoT) and artificial intelligence (AI) can support PAI learning, especially in facilitating a more interactive and personalized learning experience. This research also needs to explore the ethical and social challenges that may arise from the use of such technologies in Islamic educational institutions. Thus, this follow-up research

will provide deep insights into how madrasahs can continue to be relevant and contribute effectively in building a generation that is religious, intelligent, and adaptable to the demands of the Society 5.0 era.

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