

Integration of Pesantren Curriculum with Digital Technology: Challenges and Opportunities in Islamic Education

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Abstract

The development of digital technology has changed the face of education, including in Islamic boarding schools as traditional Islamic educational institutions in Indonesia. This study aims to analyze the urgency, challenges, and opportunities for integrating digital technology into the Islamic boarding school curriculum in order to answer the needs of 21st century competencies without ignoring Islamic values. The research method uses a literature study with a descriptive-analytical approach to review literature related to the digitalization of Islamic boarding school education, digital literacy, and the development of STEAM-based curriculum. The results of the study indicate that the integration of digital technology is very important to increase the competitiveness of students in the world of work, support online learning, expand digital preaching, and improve education management efficiently. However, obstacles such as limited infrastructure, low teacher readiness, moral concerns, and the lack of an integrated curriculum are still the main obstacles. Strategic opportunities that can be utilized include the digitalization of yellow books, human resource training, collaboration between technology institutions, the development of the STEAM Islamic curriculum, and strengthening the role of students in digital preaching. These findings underline the importance of transforming Islamic boarding schools into modern educational institutions that are harmonious between traditional values and advances in digital technology in order to face the challenges of globalization.

Keywords: Pesantren, Digital Curriculum, Digital Literacy, Islamic Education, Educational Transformation

A. Introduction

The development of digital technology has revolutionized almost all aspects of human life, including in the world of education (Zh et al., 2024). Islamic education, especially Islamic boarding schools as traditional educational institutions in Indonesia, are required to be able to adapt to the flow of digitalization in order to remain relevant in the modern era. According to Nasution (2019), the main challenge of Islamic education today is to integrate Islamic values with technological advances without losing moral and spiritual identity. Therefore, the integration of technology in the Islamic boarding school curriculum is an inevitability that cannot be avoided.

Islamic boarding schools have a unique curriculum system based on the teaching of yellow books and understanding of classical Islamic knowledge. However, along with the entry of the industrial revolution 4.0 and society 5.0, there has been a shift in competency needs. As expressed by Zarkasyi (2021), today's students must be equipped with digital literacy skills and 21st century skills to be able to compete globally. This is the basis for the urgency to develop a curriculum that is able to bridge Islamic values and the development of information technology.

The integration of the pesantren curriculum with digital technology is not only limited to the use of digital devices in learning activities, but also involves the preparation of a comprehensive and contextual curriculum. According to the integration-interconnection theory by Amin Abdullah (2006), Islamic education must be inclusive and able to combine classical scientific traditions with contemporary science harmoniously. This concept is relevant to efforts to develop pesantren that not only preserve the heritage of Islamic science, but are also adaptive to the times.

However, this integration process certainly faces various challenges. Based on research by Maulana and Siregar (2020), the main challenges include limited digital infrastructure in pesantren, lack of teacher training in technology, and concerns about the entry of foreign cultures that are not in accordance with Islamic values. However, the opportunities that are open are very large, such as the development of pesantren-based e-learning, digitization of yellow books, and the use of social media as a means of preaching to students.

Research Methodology

This study uses a library research approach, which gathers data and information through library facilities, including books, magazines, documents, records, and historical narratives (Mardalis, 1996, p. 28). This method involves tracing primary and secondary data sources, followed by content analysis (*Istimbathiyah*), offering objective, systematic, and qualitative descriptions of the content obtained. The descriptive-analytic method is used to reveal and explain ideas regarding the role of pesantren in digital literacy.

Data collection was carried out through documentation, collecting written sources such as books and other documents (Arikunto, 1991, p. 131). As a literature study, data collection focused on reviewing and analyzing verbal data in the form of words rather than numbers. The emphasis was on identifying principles, theories, opinions, and ideas regarding the role of pesantren in digital literacy.

B. Result and Discussion

1. The Urgency of Integrating Digital Technology in the Islamic Boarding School Curriculum

The traditional pesantren curriculum emphasizes the deepening of Islamic sciences such as tafsir, hadith, fiqh, nahwu, and tasawuf. This curriculum has proven successful in forming the religious and intellectual character of Islamic students for centuries. However, the reality of the 21st century demands that students not only excel in mastering religious knowledge, but also have digital competence as part of modern century literacy, especially in facing the challenges of the Industrial Revolution 4.0 and Society 5.0.

a. Increasing The Competitiveness Of Students In The Digital Work World

In the World Economic Forum report (2020), 21st-century skills such as critical thinking, digital literacy, and technology-based problem solving are key in various modern fields of work. Without mastery of technology, students will be left behind in global competition, especially in the digital economy and creative industry sectors which are now growing rapidly.

b. Facilitating Distance Learning (Online Learning)

The COVID-19 pandemic has become real evidence of how important it is for educational institutions to be prepared to organize online learning. According to the Indonesian Ministry of Religion (2021), more than 40% of Islamic boarding schools experienced difficulties in the process of digitizing learning during the pandemic due to limited infrastructure and human resources. This shows the urgency of strengthening technology-based curriculum so that students can still access quality education amidst physical limitations.

c. Support Digital Preaching And Islamic Propagation Through Social Media And Other Digital Platforms

In an era where the younger generation spends more time in digital spaces, Islamic preaching must also transform. Research by Zuhdi (2022) shows that social media has great potential as an effective means of preaching and can reach a global audience, as long as it is managed professionally and based on values. Students who master digital content creation can become creative preaching

agents who are able to carry the message of Islam more widely.

d. Strengthening The Efficiency Of Administration And Education Management In Islamic Boarding Schools

Digital technology enables real-time and transparent management of academic, financial, and attendance data. This is in line with the principles of good governance in education management. The implementation of the internal Islamic boarding school management information system (SIMP) or Learning Management System (LMS) can help Islamic boarding schools become more modern, orderly in administration, and efficient institutionally.

2. Challenges of Curriculum and Technology Integration

a. Infrastructure Gap

One of the main challenges in integrating digital technology into the Islamic boarding school curriculum is the infrastructure gap. Many Islamic boarding schools located in rural or remote areas do not yet have stable and fast internet access. In addition, hardware such as computers, projectors, Wi-Fi routers, and computer laboratories are still very limited. According to a report by the Indonesian Ministry of Religion (2021), only around 35% of Islamic boarding schools in Indonesia have adequate information technology facilities. The absence of this infrastructure support makes digital integration difficult to implement optimally.

b. Readiness of Human Resources (HR) for Teachers

The next obstacle is the low readiness of teachers or ustadz in utilizing digital technology in the learning process. Most teachers in Islamic boarding schools are not yet familiar with the use of Learning Management Systems (LMS), interactive presentation applications, or other digital tools that are now the standard for modern learning. According to research results from Siregar & Maulana (2020), more than 60% of Islamic boarding school teachers have never participated in digital literacy training, and only a small number are able to design technology-based learning independently. This causes an imbalance in the quality of learning between Islamic boarding schools that are digital-ready and those that are not.

c. Concerns About Moral Decadence

Among Islamic boarding schools, there is a conservative view that views digital technology as a potential threat to the morality of students. Open access to negative content, Western popular culture, and digital hedonism are of particular concern. According to Rachmat (2021), some Islamic boarding school circles consider technology as a double-edged sword that can damage morals if not properly controlled. This has created internal resistance to digitalization, especially from among kyai or Islamic boarding school administrators who are more focused on protecting classical Islamic values.

d. Absence of Integrated Curriculum

Another major challenge is the lack of a formal curriculum that systematically integrates digital content with core subjects such as tafsir, fiqh, or hadith. Most technology integration initiatives are still incidental, unstructured, and only carried out based on the initiative of individual teachers or donors. According to Yusuf & Azzam (2022), only around 15% of Islamic boarding schools have developed a curriculum that combines classical lessons with digital literacy materials or 21st century skills. Without an official curriculum document, the direction of technology development in Islamic boarding schools will stagnate and be unsustainable.

3. Development Opportunities and Strategies

a. Digitization of the Yellow Book

The digitization of yellow books opens up great opportunities to facilitate access and learning of classical materials that have so far been limited to physical copies and face-to-face. The use of e-books, book learning applications such as Al-Maktabah Al-Syamilah and interactive interpretation platforms such as Quran.com allows students to learn independently anytime and anywhere. According to Fatimah (2020), the digitization of yellow books not only preserves classical manuscripts but also increases students' interest in reading and understanding more effectively through digital search and annotation features. This is also an important step in the modernization of Islamic boarding schools without abandoning traditional values.

b. Collaboration with Technology Institutions

Collaboration between Islamic boarding schools and universities, related ministries, or private institutions is a key strategy in strengthening digitalization. According to the report

of the Ministry of Education and Culture (2022), partnership programs between Islamic boarding schools and technology institutions have been proven to accelerate technology transfer, HR training, and procurement of digital devices. This collaboration can be in the form of providing teacher training, building computer laboratories, and developing e-learning platforms that are tailored to the characteristics of Islamic boarding schools, so that digital learning can run effectively and sustainably.

c. Teacher and Student Training

Human resource capacity development is key to successful technology integration. Regular workshops and training for teachers and students on the use of educational technology, such as Google Workspace for Education, Canva design applications, basic programming (coding), and digital literacy that is in accordance with Islamic values, are essential. According to the results of a study by Hasan & Rahman (2021), this kind of intensive training improves teacher competence in compiling digital teaching materials and motivates students to actively learn independently using technology, while building critical awareness of digital content.

d. Creating an Islamic STEAM-Based Curriculum

The development of a curriculum that integrates religious knowledge with STEAM (Science, Technology, Engineering, Arts, Mathematics) from an Islamic perspective is a strategic opportunity to make Islamic boarding schools centers of modern knowledge based on Islamic values. According to Putra & Sari (2023), the Islamic STEAM approach is able to foster creative, critical, and solution-oriented thinking patterns, while maintaining the faith and morals of students. The implementation of this curriculum encourages Islamic boarding schools not only as traditional places of study, but also as innovative educational institutions that are ready to face global challenges.

e. Digital Preaching by Santri

In the digital era, social media, blogs, podcasts, and video channels such as YouTube have become strategic platforms for preaching and spreading Islamic values. Encouraging active students as digital preaching agents not only expands the reach of the Islamic message but also improves their communication and technology skills. A study by Ramadhan (2022) shows that digital preaching carried out by the younger generation is able

to reach a wider and more dynamic audience, especially among millennials and generation Z, so that Islamic boarding schools can play a bigger role in shaping opinions and social values through digital media.

C. Conclusion

The development of digital technology has brought significant changes in various aspects of life, including in the world of Islamic education, especially in Islamic boarding schools which are traditional educational institutions in Indonesia. The integration of digital technology into the Islamic boarding school curriculum is an urgent need so that Islamic boarding schools remain relevant and able to answer the challenges of the times without losing the moral and spiritual values that are their identity.

Islamic boarding schools, which have so far focused on teaching yellow books and classical Islamic knowledge, need to develop the competence of students who are not only superior in religious knowledge, but also have digital skills and 21st century skills. This is important to increase the competitiveness of students in the increasingly technology-based world of work and to face the challenges of the Industrial Revolution 4.0 and Society 5.0 era. The COVID-19 pandemic has further emphasized the urgency of implementing online learning, while technology has also opened up new opportunities in preaching and managing the administration of Islamic boarding school education more efficiently and transparently.

However, this integration process faces a number of significant challenges, such as the gap in technological infrastructure in many Islamic boarding schools, the low readiness of human resources, especially teachers, in mastering technology, concerns about the negative impact of technology on the morals of students, and the absence of an integrated curriculum that combines religious knowledge and digital literacy systematically. These limitations cause the implementation of digitalization in Islamic boarding schools to still be sporadic and uneven.

On the other hand, there are various strategic opportunities that Islamic boarding schools can utilize to overcome these obstacles, including the digitization of yellow books that facilitate access and learning, collaboration with technology institutions for the transfer of knowledge and facilities, ongoing training for teachers and students to improve digital competence, and the development of a STEAM (Science, Technology, Engineering, Arts, Mathematics)-based curriculum combined with Islamic values. In addition, the active role of students as digital da'wah agents through various social and digital media platforms also has the potential to expand the reach of the

Islamic message while improving their communication and technology skills.

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