

The Transformation of Islamic Boarding School Education in the Digital Era: Systematic Literature Review

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ABSTRACT

This research aims to explore the transformation of Islamic boarding school education in the digital era. Using the Systematic Literature Review method. This study identified 15 articles out of a total of 100 that were relevant between 2022-2024, with the keywords "Transformation AND Education of Islamic Boarding Schools AND the Digital Era". The results of the study show that digitalization has a positive impact on the pesantren education system, including increasing access to learning, flexibility of time, increasing student interest, and strengthening collaboration between teachers and students. Innovations such as digital talaqqi, TPACK integration, digital literacy training, and the use of social media are part of the pesantren adaptation strategy. The role of kiai has proven to be important in maintaining a balance between traditional values and the modernization of education. However, challenges such as limited infrastructure, uneven internet access, and a lack of competent educators in the field of technology are still major obstacles. Therefore, digital transformation in Islamic boarding schools needs to be supported through technology training for teachers, improving facilities, and developing contextual curriculum without ignoring Islamic values. This study recommends strengthening collaboration between stakeholders to ensure that the digitalization of Islamic boarding schools runs inclusive and sustainable in the face of the digital era 4.0.

Keywords: Transformation, Islamic Boarding School Education, Digital Era

1 Introduction

Islamic education in Indonesia has strong roots in the tradition of Islamic boarding schools as traditional Islamic educational institutions. Along with technological and communication advances, digital transformation is the key to improving the quality and access of Islamic education in order to be able to compete with other modern educational institutions [1].

Therefore, Islamic boarding schools need to be actively involved in the digital transformation process because this institution has a strategic role in producing the nation's next generation. Although pesantren focuses on teaching religious science, in reality pesantren also teach general science as a provision for students to face future challenges [2]. This shows that pesantren have the flexibility to adapt to the times.

However, in the midst of technological advances, Islamic boarding schools face a big challenge in the form of changing the educational paradigm in the digital era 4.0. Traditional face-to-face learning methods must begin to adapt to the online learning system which is now increasingly accessible to students. In this context, technological integration is very important, although on the other hand it is still necessary to maintain the Islamic values that are the hallmark of Islamic boarding schools [3].

In addition, other challenges faced are limited infrastructure, such as inadequate internet access and technological devices. These limitations hinder the optimization of the use of technology in the learning process. Therefore, adequate technology investment is needed so that pesantren can effectively optimize digital potential [4]. In an effort to support this transformation, pesantren managers and educators are required to have adequate digital competencies.

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These competencies include the ability to use learning technology, communication applications, and data management. Mastery of digital skills by educators is an important factor in supporting the smooth process of technology-based learning [5]. Thus, the integration of science and technology in the pesantren environment is a strategic step in responding to the development of an all-digital era. Based on this background, this study formulates a main question, namely: How is the transformation of Islamic boarding school education in the digital era?

2 Research Methods

This study uses a systematic literature review, namely according to (Briner et al., 2009; Garg et al., 2008; Kitchenham, 2004), is a procedure that is carried out in a strict and structured manner to identify, evaluate, and combine findings from various studies relevant to a particular research question, topic, or phenomenon, with the aim of minimizing bias through the application of certain strategies [6]. The article search uses the publish or perish application, using the source Google Scholar. Data collection uses data documentation techniques from existing sources [7]. Articles were taken from the 2022-2024 time frame, then articles were selected based on inclusion criteria In the data search, the keyword "Islamic Boarding School Education AND Digital Era Transformation" was used. Articles were selected based on five inclusion criteria to ensure the quality and validity of the reviews conducted, as described in the following table.5

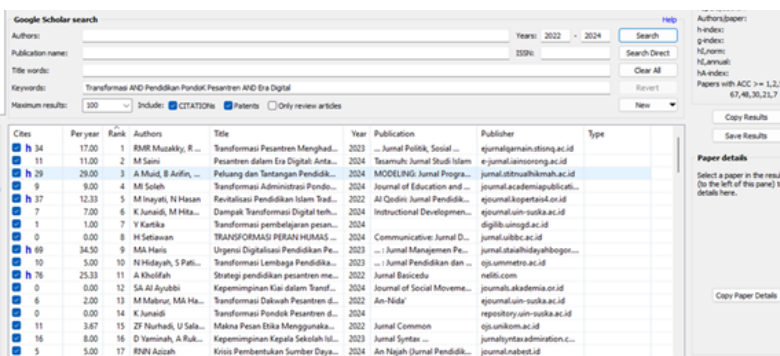
Tabel 5. Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
1. Scientific papers in the form of articles and national proceedings	1. Scientific papers are not national articles and proceedings
2. Publication range 2022–2024	2. Publications before 2022
3. Speak Indonesian and English	3. Not in Indonesian or English
4. Accessible in full-text	4. Not accessible in full-text
5. As per the research topic	5. Not appropriate for the research topic

The data analysis in this study was carried out through four stages. First, search for data to find articles related to the research topic. Second, article selection based on inclusion criteria to ensure the suitability of articles with the set criteria. Third, digitizing articles or storing data from selected articles. Fourth, data analysis uses thematic methods to identify and describe aspects of the literature relevant to the research objectives.

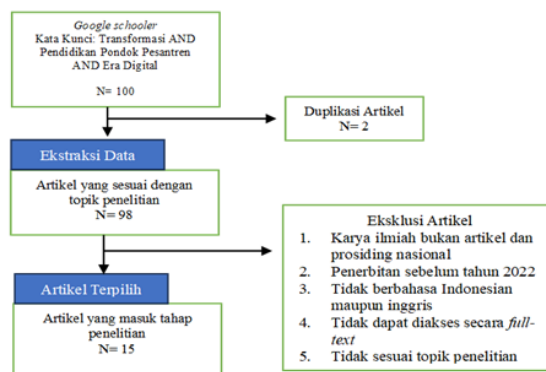
3 Results and Discussion

This study aims to analyze the literature from 2022-2024. Regarding the use of social media as a means of da'wah and Islamic religious education. Based on search data using the keyword, "Transformation of Islamic Boarding School Education AND Digital".



Gambar 5. Article Search Results on Publish or Perish

Data collection in this study was carried out using documentation techniques, which include collecting data from existing sources such as personal notes, books, journal articles, illustrations, or monumental artworks from individuals. The data search in this study focuses on the transformation of Islamic boarding school education in the digital era. The articles included in the inclusion criteria are as many as 15 articles. While the rest are included in the exclusion criteria.



Gambar 6. Article Search Results on Publish or Perish

Departing from the results of the screening and the suitability of the inclusion criteria, there were 15 articles which were summarized based on the year of publication, the title of the article and the results of the discussion in the article.

Various studies show that digital transformation has a significant impact on improving the quality of education in Islamic boarding schools. Junaidi et al. (2024) revealed that the use of digital technology in Kampar Regency Islamic boarding schools increases interest in learning, access to learning resources, flexibility, and collaboration. However, challenges such as technological adaptation and infrastructure limitations still need to be overcome through training and approaches that maintain Islamic values [8]. Liriwati et al. (2024) highlighted the benefits of digital talaqqi in providing flexibility in learning time for students outside the Islamic boarding school. However, technical constraints and internet limitations remain the main obstacles [9]. Meanwhile, Al-Ayyubi (2024) emphasizes the important role of kiai as adaptive leaders who are able to balance tradition and technological innovation in education management [10].

Azizah (2024) noted that technology integration improves students' digital skills, but is still hampered by the lack of technologically literate educators. Teacher training and improvement of supporting facilities are solutions that need to be implemented [11]. An example of good practice is shown by the Al-Amin Sidoarjo Islamic Boarding School, Kinansyah & Pujianto, (2023), which has provided graphic design training, computer labs, as well as the use of social media and websites for pesantren administration and branding [12].

Qodriyah et al. (2024) show the successful implementation of the TPACK (Technological Pedagogical Content Knowledge) approach in PP. Zainul Bahar through teacher training and the development of collaborative teaching materials, which have an impact on increasing technology integration and student enthusiasm [13]. In line with that, Kholifah (2022) stated that digital literacy and teacher capacity building contribute to the sustainability of pesantren in the digital social era [14].

This transformation also touches the realm of da'wah. Mabror & Hairul (2022) and Maskur & Rohman (2024) emphasize the importance of digital da'wah innovation both through practical fiqh content and Pancasila-based cultural approaches [15][16]. Fahmi et al. (2024) and Tantiasih highlight that digital media supports learning inside and outside the classroom, while the pesantren curriculum is beginning to adapt to global demands (Syafiq Fahmi & Imron Rosi, n.d.). Finally, research such as by Satiadharman-to et al. (2024) and Shapiah (2024) strengthens that pesantren are not only able to adapt technologically, but also form critical, religious, and nationally minded students [18][19].

4 Conclusion

Digital transformation has had a significant positive impact on improving the quality of education in Islamic boarding schools, ranging from increasing interest in learning, flexibility in access to learning, to expanding da'wah spaces. The integration of technology in the teaching and learning process encourages the emergence of educational innovations that remain rooted in Islamic values. Despite challenges such as limited infrastructure, technical constraints, and lack of digital literacy among educators, various studies show that Islamic boarding schools are able to adapt through training, leadership strengthening, and modern curriculum development. By utilizing technology wisely, pesantren not only maintain their existence, but also produce a generation of students who are religious, digitally literate, and ready to face global challenges.

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