



Exploring Artificial Intelligence In Islamic Pedagogy Through a Systematic Literature Review For Cognitive and Character Education

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Abstract

The rapid advancement of Artificial Intelligence (AI) technology presents transformative opportunities for education, particularly in the context of Islamic pedagogy. This systematic literature review explores the integration of AI into Islamic education, focusing on its potential to support character and cognitive development while aligning with Islamic values. The study identifies critical research gaps, analyzes existing literature, and synthesizes findings to propose actionable insights for future advancements. Results reveal that AI can personalize learning experiences, enhance critical thinking, and integrate moral and spiritual principles into the educational process. However, challenges such as ethical concerns, data privacy, and the need for localized AI solutions remain significant barriers. The findings underscore the importance of a holistic approach, combining intellectual, emotional, and spiritual dimensions in education. Recommendations include the development of AI-based curricula aligned with Islamic values, teacher training programs, and ethical frameworks to ensure the responsible application of AI in Islamic education. This research contributes to the growing body of knowledge on AI in education and provides a foundation for further exploration in integrating technology with Islamic pedagogy to enhance educational outcomes.

Keywords: Artificial Intelligence, Islamic Pedagogy, Cognitive, Character Education

INTRODUCTION

The In the rapidly evolving digital era, technology has become a pivotal element influencing nearly every facet of life, including education (Uddin et al., 2024). Artificial Intelligence (AI) as one of the most transformative technological innovations, holds immense potential to revolutionize the way we access, process, and deliver information (Ratten & Jones, 2023). In the context of education, AI has demonstrated its capacity to enhance learning quality through personalized experiences, while also facilitating the development of students' cognitive skills and character formation (George & Wooden, 2023). The concept of Islamic pedagogy, which emphasizes character building and the holistic development of spiritual and intellectual aspects, becomes particularly relevant in leveraging this technology to advance educational quality (Bin Muhammad Yusoff, 2023).

While the application of AI in education has been extensively explored, its integration within the context of Islamic pedagogy remains under-researched. Islamic pedagogy demands a holistic approach that integrates intellectual, emotional, and spiritual dimensions in the learning process. This presents a unique challenge in aligning advanced technologies like AI with such frameworks. Although AI has the potential to optimize learning, its implementation in ways that adhere to Islamic principles and support the development of both religious character and cognitive abilities requires further investigation.

Existing literature reveals that, although studies on AI applications in education are abundant (Soelistiono & Wahidin, 2023), (Achruh, Rapi, Rusdi, & Idris, 2024), (Cathrin & Wikandaru, 2023), (Kelly, Kaye, & Oviedo-Trespalacios, 2023), few specifically address the integration of AI within Islamic pedagogy. Most current research focuses on the use of AI in secular education, often neglecting the foundational Islamic values underpinning pedagogical practices. This gap underscores the necessity for more in-depth exploration into how AI can be ethically and effectively applied in the context of Islamic education, particularly in fostering students' character and cognitive growth.

Previous studies have highlighted that AI can enhance teaching effectiveness through various methods, such as adaptive learning and data-driven instructional systems. However, in the context of Islamic pedagogy, the application of AI must align with relevant moral, ethical, and religious values. For instance, prior research on Islamic education has predominantly focused on conventional teaching methods, with limited attention to the potential of emerging technologies like AI. This calls for further investigation to explore how AI can be adapted and integrated into curricula grounded in Islamic principles.

This study offers a novel perspective by focusing on the application of AI in Islamic pedagogy. Employing a systematic literature review (SLR) approach, it aims to identify, analyze, and synthesize relevant literature on AI in Islamic education, with a particular emphasis on the development of character and cognitive skills. The core innovation of this research lies in providing new insights into how AI can enrich learning processes rooted in Islamic values while addressing the challenges of character and cognitive education in the digital era. Based on the background, this study aims to address the following research questions:

RQ₁: How can the application of Artificial Intelligence (AI) in Islamic pedagogy support character and cognitive education?

RQ₂: What are the key findings in the literature regarding the implementation of AI in Islamic education?

R-Q₃: What developmental directions can be proposed for the application of AI in Islamic pedagogy to enhance the quality of education?

This study seeks to bridge the existing gap in the literature concerning the application of AI within Islamic pedagogy. Through a systematic review of relevant literature, it is anticipated that this research will contribute significantly to understanding the potential of AI in Islamic education and offer actionable recommendations for the development of more effective and contextually relevant educational practices in the future

RESEARCH METHODS

This study employs the Systematic Literature Review (SLR) method, a structured and systematic approach to identifying, evaluating, and synthesizing literature relevant to the research topic (Alfonso, Garcés, Castro, & Cabot, 2021). The SLR method provides a

comprehensive overview of the application of Artificial Intelligence (AI) in Islamic pedagogy, aiming to identify patterns, findings, and gaps within the existing body of literature. This method facilitates the acquisition of up-to-date and in-depth information on the development of character and cognitive education in the context of Islamic pedagogy, leveraging the potential of AI.

Research Protocol

The SLR protocol begins with formulating clear and specific research questions regarding the application of AI in Islamic pedagogy. The research process includes:

1. Comprehensive literature search,
2. Selection of literature based on predefined inclusion and exclusion criteria,
3. Data extraction from relevant articles, and
4. Analysis of the collected data.

Each step is conducted transparently and systematically to ensure the validity and reliability of findings. The procedure adheres to SLR standards, which include systematic documentation of methods, results, and conclusions to maintain transparency in the selection and analysis processes.

Table 1. Inclusion and Exclusion Criteria

Category	Criteria Inclusion	Criteria Exclusion
Subject Study	Articles that discuss implementation intelligence artificial in context education, especially that which integrates aspect Islamic pedagogy.	Articles that are not discuss intelligence artificial in context Islamic education.
Publication Type	Published articles in peer-reviewed journals, books, or proceedings relevant and leading conferences.	Articles that are not through a peer review process.
Focus Study	Articles that discuss development education character, cognitive, or moral in context Islamic education with use AI technology.	Articles that are not give contribution significant to understanding the use of AI in Islamic pedagogy.
Relevance Content	Literature that has relevance direct with development education character and cognitive in framework Islamic pedagogy.	Articles that are not relevant or own inadequate methodology transparent.
Accessibility	Articles that can accessed in a way full for data analysis and extraction processes.	Articles that are not can accessed in a way full.
Year Publication	Published articles between 2020 to 2025.	Published articles before 2020.
Types of research	Research articles empirical which presents primary data or secondary and indexed in Scopus.	Articles that are not study empirical or No indexed in Scopus.
Language	Articles written in English.	Articles written in Language other than English.

Compliance	Relevant articles with question research, namely related application of AI in Islamic pedagogy for education character and cognitive.	Articles that are not relevant with question study.
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Table 2. Data Extraction

No	Article Information	Description
1	Article Title	Title complete article.
2	Writer	Author's name or team researchers who compile article.
3	Year Publication	Year publication article.
4	Source Publication	Name of journal, book, or proceedings place article published.
5	Indexation	Indication whether article indexed in Scopus or other.
6	Types of research	Description whether study nature empirical, review literature, study cases, etc.
7	Research methods	research methods used, such as surveys, interviews, experiments, etc.
8	Population Sample	/ If there is, please describe it. population or sample used in study.
9	Key Results	Summary results main from study related application of AI in Islamic pedagogy.
10	Contribution Study	Contribution article to development education character, cognitive, or moral.
11	Challenges and Limitations	Challenge or identified limitations in study.
12	Recommendation	Suggestions or direction development proposed by the article.
13	Relevance with Question	Relevance article to question study in context Islamic pedagogy and AI.
14	Language	Language used in article.

Literature Search Process

The literature search is conducted using reputable and relevant databases, including Scopus, Web of Science, and Google Scholar, to ensure the quality and relevance of the sources. To narrow down the search, specific and relevant keywords related to the research topic are utilized. These keywords include terms such as "artificial intelligence," "Islamic pedagogy," "character education," "cognitive education," "AI in education," and "Islamic education technology." Boolean logic is applied to combine these keywords using operators like AND, OR, and NOT, optimizing the search results. Additionally, search strings are customized for each database, ensuring that the retrieved literature is as relevant and focused as possible for the research topic.

Literature Selection Process

The selection of literature is conducted in two stages to ensure relevance and quality. First, during the Initial Screening stage, titles and abstracts are carefully reviewed to confirm alignment with the research topic. This helps in identifying potentially relevant studies. In the second stage, the Full-Text Review, articles that passed the initial screening undergo a more detailed evaluation. The focus is on assessing their adherence to the inclusion criteria and overall relevance to the research topic. Articles that do not meet these criteria or provide insignificant information are excluded from the study.

Data Extraction Process

Data extraction from the selected literature focuses on capturing several critical elements to provide a comprehensive analysis. These elements include the year of publication, which helps contextualize the timeframe of the research, and the research methods used, which outlines the methodologies employed in each study. The key findings are summarized to highlight the main results of the research, while insights on AI applications in Islamic education reveal how artificial intelligence is being integrated within this specific field. Additionally, the contributions to character and cognitive education development are noted, emphasizing the impact on both character-building and cognitive learning. Finally, the limitations and recommendations for future research are considered, offering a perspective on potential areas for further exploration. These data points are then analyzed to identify significant findings and suggest developmental directions for advancing research in this area.

Data Analysis Process

Thematic analysis is employed to identify recurring patterns within the collected literature. This technique uncovers key themes related to the application of AI in Islamic pedagogy, as well as connections between AI technology and character and cognitive education. Additionally, meta-synthesis is applied to integrate findings from various studies, providing a holistic perspective on the implementation of AI in Islamic education. This analysis offers novel insights into the potential of AI to enrich Islamic pedagogy and its contribution to character and cognitive development in the digital era

RESULTS AND DISCUSSION

The distribution of articles indicates that Islamic Pedagogy dominates with 6 articles (31.6%) exploring Islamic-based teaching methods, such as liberation pedagogy, narrative pedagogy, and context-based approaches. Meanwhile, Education Cognitive comprises 6 articles (31.6%), focusing on character education, students' cognitive development, and value-based moral education. The topic of AI in Education centers on the application of artificial intelligence in learning, represented by 4 articles (21.1%). Additionally, Islamic Education Technology, with 3 articles (15.8%), discusses the integration of technology into Islamic education to achieve more meaningful learning outcomes. This research focus highlights that value-based Islamic teaching and character development remain key priorities, despite the increasing significance of educational technology themes.

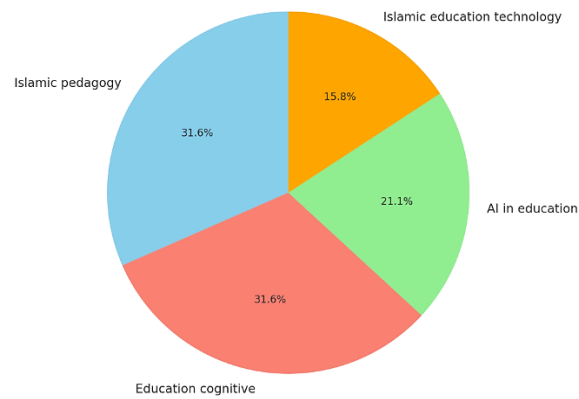


Figure 1. Distribution of Articles by Domain

The distribution of articles by year of publication reflects a dynamic trend over the past five years. In 2021, there were 2 articles (10.5%), followed by a decline in 2022 with only 1 article (5.3%). The trend rebounded in 2023, with 3 articles (15.8%), before peaking in 2024 with 8 articles (42.1%), signifying a surge in interest in the integration of Islamic values and educational technology. The year 2025 continued this positive trend with 5 articles (26.3%). This distribution confirms the growing interest in this research theme, with 2024 emerging as the most productive period.

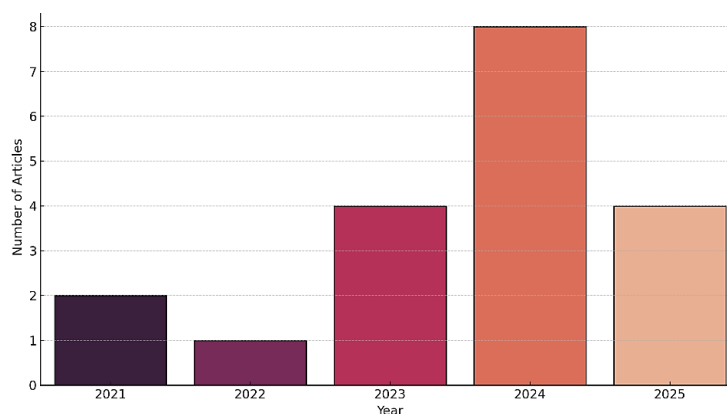


Figure 2. Publications Trends by Year

The methodological analysis underscores the multifaceted nature of scholarly inquiries into the intersection of Islamic education and technology, illustrating the richness and depth of these explorations. Quantitative methodologies were employed in 7 articles (36.8%), emphasizing rigorous empirical data collection to assess the efficacy of educational interventions and elucidate statistical relationships between key variables. Similarly, qualitative methodologies were featured in 7 articles (32%), leveraging techniques such as ethnography, case studies, narrative analysis, and interpretive-hermeneutical frameworks to unravel the nuanced meanings underpinning specific phenomena within this domain.

In addition, 4 articles (16%) adopted mixed-method approaches, seamlessly integrating quantitative precision with qualitative depth. This integrative strategy enables researchers to juxtapose empirical evidence with interpretive insights, fostering a more holistic understanding of the complex dynamics at play. Meanwhile, the inclusion of methodologies such as case studies, ethnographic inquiries, and systematic or literature reviews-though less frequent-further enriches the methodological diversity, demonstrating a deliberate effort to approach the subject matter from multiple scholarly perspectives.

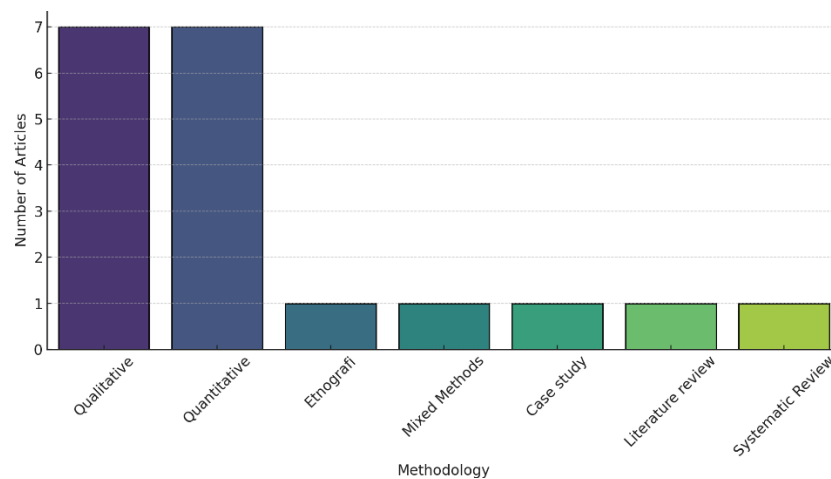


Figure 3. Methodologies Used in Articles

The findings from this analysis reveal significant dynamics in Islamic education research over the past five years. Islamic Pedagogy and Education Cognitive remain the primary research domains, while topics like AI in Education and Islamic Education Technology continue to grow, reflecting the relevance and potential of technology in enriching Islamic education. This research not only provides insights into the development of these themes but also lays a solid foundation for further studies in the future. A complete list of journals is presented in Table 4.

Tabel 3. Profile Journal

ID	Journal Topics	Research Focus	Year Publication	Methodologies
1	Challenges and Tensions in Enacting Culturally Responsive Pedagogy - A Case Study in Teaching International Baccalaureate Diploma Visual Arts at an Islamic School in Australia (Yusoff, 2024)	Islamic pedagogy	2024	Qualitative
2	The Dynamics of Makondoro's Arabic-Islamic Pedagogy in Western Nigeria (Alagunfon, 2023)	Islamic pedagogy	2023	Etnografi
3	Context-responsive pedagogy in English language teaching in Indonesian Islamic boarding schools (Madkur et al., 2024)	Islamic pedagogy	2024	Qualitative
4	Reflecting on Teaching Practice: Adopting Islamic Liberatory Pedagogies within Muslim Institutes of Higher Education in UK (MIHEUK) (Suddahazai, 2023)	Islamic pedagogy	2023	Qualitative

5	Tracing the Tracts of Qas.as: Towards a Theory of Narrative Pedagogy in Islamic Education (Bin Muhammad Yusoff, 2023)	Islamic pedagogy	2023	Qualitative
6	Improving Students' Inquiry Skills in Islamic Education Through Hikmah Pedagogy and Community of Inquiry (Hussien, Wahab, & Hashim, 2021)	Islamic pedagogy	2021	Mixed Methods
7	Implementation of class-based character education strengthening: A case study at SMAIT Nur Hidayah Sukoharjo (Setiyatna, Harun, Kumaidi, Supianto, & Mualim, 2024)	Education cognitive	2024	Case study
8	Urgency of Noble Characters' Education and Building Students' Prosocial Behaviors (Setiyatna et al., 2024)	Education cognitive	2024	Literature review
9	International comparison of vocational pre-service teachers' character education in Indonesia and Malaysia (Jaedun et al., 2024)	Education cognitive	2024	Quantitative
10	The Gusjigang model for strengthening local wisdom-based character education in digital era (Jaedun et al., 2024)	Education cognitive	2024	Qualitative
11	The Relationship of Local Wisdom-Based Character Education on Young Females' Reproductive Health in Parigi Moutong (Afrianto & Yusuf, 2024)	Education cognitive	2024	Quantitative
12	Character education content in science textbook for senior high school students (Limiansi, Suranto, Paidi, & Zuchdi, 2025)	Education cognitive	2025	Quantitative
13	The Relationship Between the Application of Artificial Intelligence Technology and the Job Performance Quality in the Education Administration Office in Hebron (Iwadi, Ali, & Jabari, 2025)	AI in education	2025	Quantitative
14	Artificial Intelligence in Education: A Systematic Review of Machine Learning for	AI in education	2025	Systematic Review

	Predicting Student Performance (Rahman, Wang, Ng, & Ghoneim, 2025)			
15	The Effect of Generative Artificial Intelligence on Cognitive Thinking Skills in Higher Education Institutions: A Systematic Literature Review (Moongela, Matthee, Turpin, & van der Merwe, 2025)	AI in 2024	education	Quantitative
16	Artificial intelligence in higher education: Modelling students' motivation for continuous use of ChatGPT based on a modified self-determination theory (Annamalai, Bervell, Mireku, & Andoh, 2025)	AI in 2025	education	Quantitative
17	Trends of Educational Technology (EdTech): Students' Perceptions of Technology to Improve the Quality of Islamic Higher Education in Indonesia (Annamalai et al., 2025)	Islamic 2022	education technology	Quantitative
18	Integration of Science, Technology, And Islamic Values to Enhance Expected Learning Outcomes in French Higher Education (Annamalai et al., 2025)	Islamic 2021	education technology	Qualitative
19	Corrigendum: Challenges of Islamic Education in the New Era of Information and Communication Technologies (Dalimunthe et al., 2024)	Islamic 2023	education technology	Qualitative

The Application of Artificial Intelligence in Islamic Pedagogy to Support Character and Cognitive Education

This finding addresses the first research question **RQ1** regarding how the application of AI in Islamic pedagogy can support character and cognitive education by demonstrating that artificial intelligence has significant potential in promoting education based on Islamic values. Articles such as ID 13 and ID 14 highlight how AI can personalize learning materials according to the cognitive needs of individual students. AI-based learning systems help students to understand material more deeply while fostering character development through the integration of Islamic values.

The inquiry-based approach is also strengthened by AI, as explained in ID 15, where this technology is used to enhance students' critical thinking skills while internalizing

Islamic moral values. In this context, ID 16 notes that generative technologies can improve students' critical thinking abilities through adaptive, data-driven feedback.

Additionally, ID 17 emphasizes that AI can be used to create learning materials tailored to individual needs, while ID 18 highlights that AI-supported local wisdom-based education can enrich the learning process. Article ID 19, which discusses technology in Islamic pedagogy, further reinforces the importance of integrating spiritual and moral values into educational technology to support cross-cultural learning.

Key Findings in the Literature on AI Application in Islamic Education

These findings address the second research question **RQ2** regarding the key insights from the literature on AI application in Islamic education:

- a. Personalized Learning: AI supports personalized learning, as evidenced by ID 13, where AI technology helps predict students' learning needs based on learning data.
- b. Integration of Islamic Values: Articles ID 15 and ID 16 explain how inquiry-based and generative approaches can integrate Islamic values into the learning process.
- c. Challenges in Implementation: Article ID 18 identifies challenges in implementing AI, including ethical concerns, data privacy issues, and infrastructure gaps. These challenges are also illustrated in ID 14 through a systematic review of AI-based learning.
- d. Holistic Approach: Article ID 17 demonstrates how integrating local wisdom and technology can result in education grounded in Islamic moral values while remaining relevant to modern needs.

Furthermore, articles ID 1, ID 7, and ID 8 underscore the importance of approaches that combine cognition, character, and spirituality in the development of technology-based learning.

Future Directions for the Application of Artificial Intelligence in Islamic Pedagogy to Enhance Education Quality

This addresses the third research question **RQ3** concerning future directions for the application of AI in Islamic pedagogy to enhance education quality, emphasizing the importance of holistic and sustainable approaches:

- a. Integrative Curriculum: Articles ID 17 and ID 19 recommend the development of AI-based curricula that comprehensively integrate Islamic values into the learning process.
- b. Ethical Approaches: Findings from ID 14 and ID 15 highlight the importance of ethical algorithms that are responsive to students' data privacy and their impact on teacher-student relationships.
- c. Development of Local Technology: ID 18 emphasizes the need to develop locally relevant technologies that align with the context of Islamic education and are accessible to educational institutions.
- d. Teacher Training: Articles ID 16 and ID 19 stress the importance of intensive training for educators to adopt AI in teaching, particularly in supporting character education based on Islamic principles.

Other articles, such as ID 3 and ID 5, provide additional insights into how narrative-based Islamic pedagogy can be enhanced through technology to create more profound learning experiences. This analysis is further supported by ID 10, which highlights the relevance of local wisdom-based education in the context of the digital era.

The conclusions from this analysis indicate that the application of AI in Islamic education has significant potential to support cross-cultural learning, personalized education, and the integration of moral and spiritual values. However, achieving these goals requires investments in local technology, teacher training, and the development of integrated curricula rooted in Islamic values.

CONCLUSION

This systematic literature review highlights the significant potential of Artificial Intelligence (AI) in advancing Islamic pedagogy by supporting both character and cognitive education. By aligning with Islamic values, AI fosters personalized learning experiences while emphasizing moral and spiritual growth. The key conclusions are as follows:

- a. **The Role of AI in Islamic Pedagogy:** AI demonstrates its capability to enhance education by tailoring learning materials to individual cognitive needs and integrating Islamic principles for character development. It also supports critical thinking and moral understanding through inquiry-based approaches.
- b. **Research Gaps:** While extensive research exists on the use of AI in education, its integration into Islamic pedagogy remains underexplored. This highlights the need for further investigations into how AI can be ethically and effectively adapted to align with Islamic educational frameworks.
- c. **Key Findings:** The review emphasizes the importance of a holistic approach that incorporates intellectual, emotional, and spiritual dimensions in learning. The analyzed studies reveal that AI can facilitate the creation of locally relevant and ethically sound learning tools, ensuring adherence to Islamic moral principles and safeguarding data privacy.
- d. **Future Directions:** The study underscores the necessity of developing AI-based curricula that integrate Islamic values, providing intensive teacher training, and creating localized AI technologies tailored to the context of Islamic education. These steps aim to optimize educational outcomes in the digital era while preserving the integrity of Islamic traditions.

In conclusion, the application of AI in Islamic pedagogy presents transformative opportunities for fostering value-based, character-driven, and cognitively enriching education. Achieving these objectives requires strategic investments in teacher training, ethical AI development, and curriculum innovation to ensure sustainable and effective implementation in line with Islamic principles

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