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Balancing Digital Innovation and Spiritual Pedagogy: A Critical Integrative Review of Artificial Intelligence in Islamic Religious Education

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Abstract

This article examines the integration of artificial intelligence (AI) in Islamic Religious Education (PAI) in Indonesia with a focus on balancing digital technology innovation and spiritual pedagogical values. This research uses systematic literature review of 47 publications from various accredited national and international journals between 2019–2024. The results of the study indicate that: (1) The use of AI in PAI can increase the efficiency of competency-based learning by up to 34%, but has the potential to reduce the affective-spiritual dimension if not managed properly; (2) There is a significant digital divide between Islamic educational institutions in urban and rural areas; (3) A hybrid model between machine intelligence and local wisdom based on Islamic boarding schools has proven effective as a bridge between modernity and tradition; and (4) The competence of PAI teachers in digital literacy is a determining factor in the success of AI implementation. This study recommends the development of an integrative pedagogical framework that positions AI as a tool (tawassul) that does not replace the spiritual and humanistic dimensions in PAI. Theoretical and practical implications for the development of national Islamic education curriculum and policies are also discussed comprehensively.

INTRODUCTION

Artificial intelligence (*Artificial Intelligence*/AI) has fundamentally changed the educational landscape worldwide (Lapanda et al., 2022). The adoption of AI in education (*AI in Education*/AIED) includes an intelligent tutor system (*intelligent tutoring systems*), learning analytics (*learning analytics*), natural language processing (*natural language processing*), and adaptive learning (*adaptive learning*) (Holmes et al., 2019). This adoption has accelerated significantly since 2020, fueled by the COVID-19 pandemic, which has driven massive digital transformation in the education sector globally (Zawacki-Richter et al., 2019). Empirical evidence supports its effectiveness: a meta-analysis of 50 experimental studies found that intelligent tutoring systems improved student learning outcomes by an average of 0.66 standard deviations compared to conventional learning (Kulik & Fletcher, 2016).

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At the national level, Indonesia has responded to this global trend through various initiatives implementing AI in education, ranging from adaptive e-learning platforms like Ruangguru and Zenius to AI-based chatbots for academic administration services in higher education (Kusuma et al., 2021). However, these applications are still concentrated in urban areas with adequate digital infrastructure, while the digital divide between educational institutions remains an unresolved structural barrier (Kusuma et al., 2021).

In a more specific context, In a more specific context, Islamic Religious Education (PAI) occupies an important position within Indonesia's national education system is a compulsory subject at all levels of national education (Hardiyanti et al., 2021). With over 60,000 Islamic educational institutions, from elementary madrasahs to Islamic universities, serving over 8.7 million students (Ministry of Religious Affairs of the Republic of Indonesia, 2023), Indonesia has one of the largest populations of Islamic religious education students in the world (Jumala et al., 2019). This situation makes exploring the use of AI in PAI not merely an academic discourse, but a pressing practical need (Hidayat & Nashiruddin, 2020).

However, the integration of AI into Islamic Religious Education (PAI) cannot be done merely mechanically and technically (Hidayat, 2020). PAI has a unique dimension that distinguishes it from other subjects: it aims not only to transfer cognitive knowledge but also to shape the character, morals, and spirituality of students through an interactive approach. through educational, moral, and spiritual guidance (Muhaimin, 2019). This spiritual dimension, which involves affective, empathetic, and transcendental aspects, is an element that is difficult to replicate by AI systems based on computational algorithms (Baharuddin & Yusuf, 2021). Specifically, the role of Islamic Religious the role of PAI teachers as spiritual mentors and moral exemplars who radiates exemplary behavior (*moral exemplification*) ontains elements of compassion, trust, and blessings that are transcendent and cannot be replaced by algorithmic systems (Baharuddin & Yusuf, 2021).

Although the literature on AI in general education has grown rapidly, studies specifically addressing the intersection between AI and religious education, particularly Islamic education (PAI) in Indonesia, remain very limited (Maarif & Fauzan, 2023). Most existing studies focus solely on the technical aspects of AI implementation without addressing the deeper philosophical, pedagogical, and spiritual dimensions (Suhartini et al., 2024). Efforts to fill this gap require a theoretical framework capable of bridging technology and Islamic values, such as the concept of*tawassul*technological (AI as*wasilah*value-neutral), Islamization of technology based on*Islamic mysticism*from al-Attas (1977) and al-Faruqi (1982), as well as the principles*connectivism*which can be integrated with the concept*shilaturrahim* And *brotherhood*as the basis of a digital learning community (Siemens, 2005; Downes, 2012; Maarif & Fauzan, 2023).

Filling this gap, this study aims to: (1) map the current state of AI use in Islamic Religious Education in Indonesia based on a systematic literature review; (2) identify the potential and challenges of AI integration from the perspective of Islamic spiritual pedagogy; (3) analyze the digital divide between Islamic educational institutions; and (4) formulate formulate recommendations for an integrative pedagogical framework responsive to Islamic values. Thus, this article is expected to provide theoretical contributions to the development of contemporary Islamic education as well as practical guidance for stakeholders in facing the era of artificial intelligence.

METHODS

Research Design

This study employed an Integrative Systematic Review approach to synthesize and critically analyze diverse forms of evidence related to the use of Artificial Intelligence in Islamic Religious Education. Unlike conventional systematic reviews that primarily focus on empirical studies, an integrative systematic review enables the inclusion and synthesis of empirical, theoretical, philosophical, and pedagogical literature. This approach was selected to provide a comprehensive understanding of how AI influences digital innovation, spiritual pedagogy, ethical considerations, and educational practices within Islamic Religious Education.

Inclusion and Exclusion Criteria

The inclusion criteria set include: (1) articles published in indexed journals indexed in Scopus, SINTA 1–2, or DOAJ between January 2019 and December 2024; (2) specifically discuss the use of AI, digital technology, or e-learning in the context of PAI or Islamic education; (3) in Indonesian or English; (4) available in full-text format. Exclusion criteria include: opinion articles without empirical data, conference proceedings without peer-review, and duplicate publications.

Search Strategy

The literature search was conducted through four main databases:*Scopus, Web of Science, cross-reference validation,* and Garuda Portal (ISJD). The search string used includes a combination of keywords: "*artificial intelligence*" OR "AI" OR "*machine learning*" AND "Islamic education" OR "Islamic religious education" OR "madrasah" AND "Indonesia". Additional searches were conducted through manual searches of the reference lists of the key articles found.

Selection and Analysis Process

The selection process involved three stages: screening based on title and abstract (n = 312), eligibility assessment based on full text (n = 89), and final inclusion (n = 47). Methodological quality assessment was performed using the Critical Appraisal Skills Programme (CASP). Data analysis used the*thematic synthesis*from Thomas and Harden (2008) to identify major themes across studies. The reliability of the selection process was maintained through double-blind review by two independent researchers with a Cohen's Kappa κ level of agreement of 0.83 (excellent).

RESULT AND DISCUSSION

Thematic mapping

Current Condition Map: AI in PAI in Indonesia

Of the 47 studies analyzed, three main clusters of AI use in Islamic Religious Education (PAI) in Indonesia were identified. The first cluster (n = 18, 38.3%) focused on the use of e-learning platforms.*learning*AI-based learning for learning the Quran, Islamic jurisprudence, and morality. The second cluster (n = 15, 31.9%) examined the implementation of AI-based chatbots and virtual assistants for religious consultations and Islamic Religious Education tutoring. The third cluster (n = 14, 29.8%) discussed the use of AI-based learning analytics for assessing and evaluating religious competencies.

A consistent finding emerging from the first cluster is that AI-based gamification and adaptive learning applications significantly increase student learning motivation, especially in the junior high and senior high school age groups (Sari & Prasetyo, 2022; Wahyudi et al., 2024). Kusuma et al., 2023, reported a 27% increase in average Quran memorization scores in the group using the AI application compared to the control group in a quasi-experimental study at 12 Islamic elementary schools in East Java.

However, these studies consistently also note the potential degradation of the affective dimension of learning. Fauzi and Hermawan (2023) found that although cognitive scores increased, scores on the spiritual dimension measured using.*Spiritual Intelligence Scale*Indonesian adaptations actually show a downward trend in students over-reliance on AI applications. This indicates a trade-off between cognitive efficiency and spiritual depth that needs to be addressed in program design (Armadila, 2025).

Digital Gap Analysis of Islamic Educational Institutions

The digital divide between Islamic educational institutions in urban and rural areas has been identified as one of the biggest obstacles to AI implementation in Islamic Religious Education (PAI). Data from the Indonesian Ministry of Religious Affairs (2023) shows that of the 47,543 Islamic schools in Indonesia, only 23.7% have adequate internet connection speeds (>10 Mbps), and only 31.4% have computer labs with a suitable student-to-computer ratio (≤ 1:3).

This gap extends beyond infrastructure and human resources. A survey conducted by Rahmawati et al. (2024) of 1,247 Islamic Education teachers from 17 provinces in Indonesia found that only 28.6% of respondents reported having "advanced" or "very advanced" digital literacy competencies, while 41.3% remained at "basic" or "very basic" levels. AI Competencies*literacy*specifically even lower, with only 12.4% of teachers having ever used AI tools in the learning process.

This condition creates what Marzuki (2023) calls a "layered digital pedagogical divide" (*layered digital pedagogical divide*): the gap not only occurs between institutions, but also between individual teachers within the same institution, and even within teachers themselves between the technical ability to use AI tools and their pedagogical ability to integrate AI into meaningful Islamic Education learning.

Hybrid Model: Islamic Boarding Schools as a Bridge between Modernity and Tradition

One of the most original findings from this literature review is the identification of a pesantren-based hybrid learning model that successfully integrates AI with traditional pedagogical wisdom. This model, conceptually referred to as "AI-Pesantren Blended Learning," combines the use of an adaptive AI platform for mastering basic cognitive competencies with traditional halaqah, sorogan, and bandongan methods for developing spiritual dimensions and character.

A case study conducted by Hidayah and Marzuki (2023) at the Tebuireng Islamic Boarding School in Jombang and the Al-Amien Prenduan Islamic Boarding School in Sumenep demonstrated that the integration of AI within the pesantren framework does not replace the role of kiai (Islamic scholars) and ustadz (Islamic teachers). Instead, it frees them from repetitive cognitive tasks, allowing more time for spiritual interactions and personal mentoring. The result was a 31% increase in students' religious cognitive competence, while maintaining high character development (morals) scores (average 87/100) compared to the comparison group.

This finding is in line with the theoretical perspective of Nashiruddin and Hidayat (2020) who argue that the success of technology integration in Islamic education depends on the ability of institutions to maintain what they call "*nucleus spiritual*" the essence of human interaction that brings pedagogical blessings while adopting technological instruments as a complement, not a substitute.

Integrative Pedagogical Framework: AI as a Tawassul

Based on the synthesis of the above findings, this study conceptually synthesizes an integrative pedagogical framework that positions AI as a value-neutral intermediary or tawassul, a means, or intermediary, but one that must be guided by Islamic pedagogical wisdom. This framework, which we refer to as "*AI-Tawassul Framework for Islamic Education*" (AI-TAFIE), consists of four main components.

The first component is Maqashid Orientation: every implementation of AI in Islamic Religious Education must be oriented towards achieving maqashid al-syari'ah (the main objectives of Islamic sharia), particularly in the dimensions of hifz al-'aql (protection of reason) and hifz al-din (protection of religion), so that AI is used to strengthen, not weaken, religious understanding and practice.

The second component is Teacher Competence*Digital-Spiritual*: Islamic Religious Education teachers need to develop two complementary competencies, namely AI*literacy*(technical skills in utilizing AI tools) and spiritual pedagogical knowledge (the ability to integrate the use of AI into the process of developing students' spirituality). Teacher professional development programs need to be designed to develop both of these competencies simultaneously.

The third component is a Balanced Learning Ecology: the design of an Islamic Education curriculum that integrates AI must create a balanced learning ecosystem between AI-mediated activities (*AI-mediated activities*) and human-centered activities (*human-centered activities*), with proportions adjusted based on learning objectives, age group, and institutional context.

The fourth component is Multidimensional Evaluation: assessment in AI-based PAI should not only measure cognitive competencies that are easily quantified, but should include affective and psychomotor-spiritual dimensions that require authentic assessment based on observation, portfolios, and peer assessment (*peer assessment*).

Theoretical Implications

The findings of this study yield several significant theoretical contributions to the development of the literature.*AI in Education*(AIED) and contemporary Islamic education studies. First, by situating the conceptual and empirical analysis within the context of non-Western faith-based education, this study addresses a long-identified representational gap in the global AIED literature. As noted by Zawacki-Richter et al. (2019), most AIED studies are produced within a secular Western institutional framework, thus their conclusions have limited transferability to contexts where religious epistemology, moral formation, and spirituality development are core educational goals. The AI-TAFIE framework (*Artificial Intelligence – Tawassul-based Framework for Islamic Education*) formulated in this study offers an original conceptualization of the relationship between AI-assisted pedagogy and Islamic spiritual pedagogy, which consciously goes beyond the pseudo-dichotomy between technology and values that has dominated the existing discourse (Maarif & Fauzan, 2023).

Second, this research contributes to the critical expansion of theory.*connectivism*as a learning theory (Siemens, 2005; Downes, 2012). In its original formulation,*connectivism*conceptualizes learning as the formation of connections in a distributed network that includes both human and non-human nodes, prioritizing horizontal relationships between learners and between humans and machines. This ontology, while productive for understanding digital learning environments, remains may require contextual adaptation when applied in Islamic educational settings in the context of Islamic Education, where knowledge (*'ilm*) is not merely constructed, but also received and transmitted through the vertical channel of divine revelation (*inspiration*), scientific tradition (*accusation*), and spiritual guidance (*teacher*). This study proposes that*connectivism*which is informed by an Islamic perspective must include a vertical-transcendental dimension, where students' connections are not limited to digital networks, but also include normative sources of the Qur'an and Sunnah mediated through relational ethics. *shilaturrahim* And *brotherhood*This reconceptualization has broader theoretical relevance for academics seeking to apply*connectivism*in a culturally and religiously diverse educational context.

Third, the findings of this study strengthen and expand the arguments of Baharuddin and Yusuf (2021) regarding the irreducibility of the role of*teacher*in Islamic Religious Education. While previous literature tends to frame the irreplaceability of teachers in functional terms of empathy, mentoring, or moral exemplar capacity, this research identifies a more theologically fundamental dimension: the transmission of*blessing*and construction*habluminallah*is a process that is constitutively interpersonal and resists algorithmic mediation. AI systems, no matter how sophisticated their adaptive capacities, operate within a closed computational logic that is structurally incapable of bearing the ontological weight attributed to them.*teacher*in the Islamic pedagogical tradition (Muhaimin, 2019). This finding invites the formulation of a more precise theoretical distinction between the domains in which AI*add*humane pedagogy and the domains in which AI is categorically*can't replace it*a distinction with significant implications for curriculum design, teacher education policy, and the ethics of educational technology.

Critical Integrative Review

The practical implications of this research are aimed at three main stakeholder groups in the Islamic education ecosystem in Indonesia.

For the Ministry of Religious Affairs of the Republic of Indonesia. The integration of AI in Islamic Religious Education requires structural policy reform, not merely ad hoc institutional adoption. This study recommends a revision of the Islamic Religious Education curriculum framework to explicitly include digital literacy and AI literacy as core competency standards for Islamic Religious Education teachers in the relevant Ministerial Regulation. The existing Islamic Religious Education teacher certification program needs to be strengthened with a structured module on AI literacy and the application of the principles of the AI-TAFIE framework, to ensure that teacher professional development aligns with both technological demands and Islamic pedagogical values. Furthermore, a national mapping of the digital infrastructure gap between madrasahs and Islamic boarding schools, particularly in non-urban and 3T (frontier, outermost, and disadvantaged) areas, is an urgent prerequisite for a just and equitable AI integration policy.

For Islamic educational institutions (madrasas and Islamic boarding schools), the findings of this study indicate that effective AI integration in Islamic Religious Education (PAI) is more a matter of pedagogical capacity building than simply technological infrastructure provision. Institutions are advised to develop digital ecosystems where technological tools are organically embedded within existing pedagogical frameworks, rather than imposed on top of them. Successful adoption models identified in this review specifically utilize AI platforms to support Quran memorization (*memorization*), teaching*fiqh*contextual, and formation*morality*without replacing traditional modalities providing a replicable template for pilot programs (*pilot*) phased across various regions in Indonesia. Institutional leadership also needs to foster a culture of critical and reflective engagement with AI tools, grounded in the principle*tawassut*technological: technology as a value-neutral instrument, guided by human wisdom and Islamic values (Maarif & Fauzan, 2023).

For educational AI platform developers. The Indonesian Islamic education context represents a distinctive design segment that is not yet adequately served by existing general educational AI platforms. This research identifies a number of context-specific requirements that should inform platform development, including: (a) support for Arabic content and rendering of the Quranic text with Arabic notation.*Tajweed*accurate; (b) adaptive learning algorithms that are sensitive to the pedagogical sequencing of Islamic religious sciences (*Ulum al-Din*); (c) interface design that is aesthetically and culturally congruent with Islamic visual norms; and (d) ethical AI governance mechanisms including data privacy protection and content moderation protocols — which are aligned with the framework*Maqashid al-Shara'ah*in

protecting religion (*Hifz al-Din*), reason (*preservation of the mind*), and descendants (*hifz al-nasl* Collaborative platform co-design involving Islamic education scholars, pedagogical practitioners, and AI engineers is highly recommended.

Research Limitations

A number of limitations of this study need to be explicitly acknowledged in order to maintain scientific transparency and open up space for further research.

First, as*systematic literature review*, the evidence base of this study is limited by the quality, scope, and publication bias of the studies obtained through the databases searched. There is a significant possibility that high-quality empirical work conducted in the context of Islamic boarding schools and madrasas has not been widely published, or has been disseminated exclusively through Indonesian-language journals outside the indexed databases consulted a form of representativeness.*grey literature*low and systematically disadvantage non-Anglophone and non-Western knowledge production (Zawacki-Richter et al., 2019). Future research using primary empirical methods including ethnographic observation, in-depth interviews with practitioners, and quasi-experimental designs would substantially strengthen the evidence base for the claims made in this study.

Second, the heterogeneity of the methodologies and contexts of the studies analyzed limits the feasibility of quantitative generalizations of the findings. Effect sizes, adoption rates, and pedagogical outcomes reported across studies reflect varying operational definitions, institutional contexts, and measurement instruments, making cross-study aggregation methodologically problematic. The findings of this review should therefore be interpreted as theoretically productive, rather than statistically conclusive.

Third, the acceleration of AI development introduces inherent temporal constraints on any literature-based study of this kind. Developments in generative AI include large language models (*large language models*) which is capable of producing Arabic language religious content, a consultation system*fatwa*AI-assisted Quran recitation feedback is occurring at such a rapid pace that some aspects of the analysis in this study may require revision within a relatively short publication cycle. Researchers and practitioners are therefore encouraged to treat the AI-TAFIE framework as a dynamic and revisable conceptual tool, rather than a fixed prescription, to be updated iteratively as the technological landscape evolves and new empirical evidence accumulates.

CONCLUSION

This research has demonstrated that the integration of artificial intelligence into Islamic Religious Education in Indonesia is an unavoidable necessity, yet simultaneously a challenge that requires a mature pedagogical response firmly rooted in Islamic values. Through a systematic literature review of 47 scientific publications, this study has successfully mapped the current situation, identified gaps and potential, and formulated an integrative pedagogical framework (AI-TAFIE) as a conceptual and operational guide.

Three key findings need to be underlined: first, AI can significantly improve the cognitive efficiency of Islamic Education (PAI) learning, but risks eroding the spiritual dimension if not managed with an appropriate pedagogical framework; second, the deep digital divide among Islamic educational institutions in Indonesia requires a differentiated and contextual approach in AI implementation policies; and third, the Islamic boarding school-AI hybrid model shows great potential as an authentic paradigm for the context of Indonesian Islamic education.

Ultimately, AI in Islamic Religious Education (PAI) should be positioned not as a threat to spirituality, but rather as a tool that, when used with high pedagogical wisdom, can enrich and deepen the religious learning experience. The future of

superior Islamic Religious Education (PAI) is one that embraces digital innovation without losing its spirit as an education that shapes holistic learner development.

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