Artificial Intelligence in Islamic Education: Implications for Pedagogy and Teacher Development

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Abstract

The rapid development of artificial intelligence (AI) is reshaping education worldwide, yet its implications for Islamic education, where knowledge transmission is inseparable from moral and spiritual formation, remain insufficiently synthesized. This study aims to examine how AI is used in Islamic education and what it implies for pedagogy and teacher development. A qualitative library research design was applied. Scholarly articles, conference proceedings, and policy documents on AI in Islamic education, pedagogy, and teacher competence were identified through keyword searches, screened using inclusion and exclusion criteria, and analyzed through content and thematic analysis, with the technological pedagogical content knowledge (TPACK) framework and the UNESCO AI competency framework for teachers serving as analytical lenses. The findings show that AI is being explored for Quranic learning, the preparation of learning materials, and wider access to Islamic learning, offering gains in access, interaction, and efficiency. For pedagogy, AI shifts the teacher toward a facilitating role, while the cultivation of adab and moral exemplarity still depends on human relationships. For teacher development, the literature points to the need for AI literacy, ethical competence, training, and policy support. Persistent challenges include data misuse, reduced human interaction, and the erosion of spiritual and moral awareness. The study concludes that AI should be integrated as a supporting tool, guided by Islamic ethical values and continuous teacher professional development, so that innovation strengthens rather than replaces the educational and moral mission of Islamic education.

Keywords: artificial intelligence, islamic education, pedagogy, teacher development, library research

Introduction

AI is changing how education is planned, delivered, and managed. UNESCO (2019) reviewed ways in which AI could raise learning outcomes and widen equity, and it flagged the policy questions that follow from bringing AI into education systems. Research syntheses now cover AI applications in higher education (Zawacki-Richter et al., 2019) and in education generally (Chen et al., 2020), while Kasneci et al. (2023) weigh the promise and the risks of large language models in learning settings. For teachers this means a different working reality. In UNESCO's reading, classroom interaction is no longer a two-way exchange between teacher and student but a three-way one that includes AI, so teachers' roles and the skills they require need to be reconsidered (Miao & Cukurova, 2024).

These shifts matter even more for Islamic education. Halstead (2004) portrays an Islamic conception of education that is rooted in revelation and aimed at the well-rounded development of the person, including moral and spiritual growth. In this view, seeking knowledge also involves right intention and right conduct, that is, adab (Ningsih & Sufiyan, 2026). Al-Zarnuji's *Ta'lim al-Muta'allim*, a classical text on the ethics of learning, stresses respect for the teacher, sincerity (*ikhlas*), and proper manners in study (Rahman & Mala, 2025). When technology takes over parts of teaching and learning, the concern therefore reaches beyond efficiency.

Scholars have begun to take up these concerns. A systematic review of AI in Quranic education finds that adoption is still low even though AI could widen access and deepen engagement and understanding; its authors call for ethical, interdisciplinary cooperation so that tools respect the epistemological basis of Quranic knowledge ("Artificial Intelligence (AI) in Quranic Education", 2025). Mapping work on the wider field found that publications on AI and Islamic education between 2003 and 2023 peaked in 2023 (Alhammad et al., 2025), and further reviews have charted research trends (Abdussyukur, 2025) and examined AI in Islamic pedagogy with attention to cognitive and character education (Iqbal & Maulana, 2025). Drawing on 39 empirical studies from Scopus and Web of Science, Zainadun et al. (2025) report that AI can support Quranic teaching through automated assessment, recitation feedback, interactive materials, and tracking of progress, but that accuracy and the treatment of spiritual and moral values remain open concerns.

Work closer to teachers' everyday practice shows the same mixture of opportunity and caution. Widiana et al. (2026) looked at how teachers draw on AI when preparing Islamic Religious Education materials and at what helps or hinders them. Owoyale-Abdulganiy (2025) examined how aware Islamic studies teachers in Kwara State, Nigeria, are of AI in teaching. In madrasah ibtidaiyah, pupils taught with ChatGPT improved their conceptual understanding more than pupils taught conventionally (Hasan et al., 2023), and Nun et al. (2025) present AI as a partner for the Islamic Religious Education teacher, conditional on teacher training and ethical policy. For Indonesian madrasah, Nuraini and Mashuri (2025) highlight training, supportive policy, and curriculum integration as routes to stronger professional and pedagogical competence among religious teachers. Ethical concerns are also prominent. Indriani (2025) names misuse of data, weaker human interaction, and a decline in spiritual and moral awareness, while Al-Jayyousi and Al Khatib (2026) and Mustapha et al. (2025) propose Islamic ethical frameworks for AI policy and responsible use.

These studies are informative, yet each tends to concentrate on a single application, a single subject, or a single ethical question. Few of the reviewed works tie AI use to both pedagogy and teacher development within one analytical frame while keeping Islamic educational values at the centre. This article attempts to fill that gap through a library research synthesis. It aims to describe how AI is used in Islamic education and to analyze what this means for pedagogy and for teacher development. Three research questions guide it: (1) How does the literature describe the use of AI in Islamic education? (2) What does AI imply for pedagogy and teacher development in Islamic education? (3) Which ethical and moral challenges does the literature raise, and how are they addressed from an Islamic standpoint? As a qualitative literature study, it did not test statistical hypotheses.

Methods

Research Design

The study followed a qualitative library research design (Zed, 2004), carried out as a narrative literature review (Snyder, 2019). Library research draws on written material instead of field data, which fits the goal of pulling together what is already known about AI in Islamic education, pedagogy, and teacher development.

Participants and Data Sources

As a library research study, it involved no human participants. The data consisted of published documents. The main sources were journal articles and conference papers on AI in Islamic education, pedagogy, or teacher competence. Policy and framework documents (UNESCO, 2019; Miao & Cukurova, 2024) and foundational works on teacher knowledge and on Islamic education (Halstead, 2004; Mishra & Koehler, 2006; Shulman, 1986) served as supporting sources.

Research Procedures

Six steps were followed: (1) setting the research questions; (2) searching the literature; (3) screening the results against inclusion and exclusion criteria; (4) reading the selected sources and noting their key findings; (5) grouping the findings into themes; and (6) interpreting the themes with the TPACK framework (Mishra & Koehler, 2006) and the UNESCO AI competency framework for teachers (Miao & Cukurova, 2024).

Data Collection Technique(s)

Data were gathered through documentation, meaning a structured search of scholarly literature on academic search engines and open-access journal portals. English and Indonesian search terms were combined with Boolean operators: artificial intelligence, Islamic education, Islamic religious education, pedagogy, teacher development, teacher competence, kecerdasan buatan, pendidikan Islam, and guru. A source was kept if it (a) dealt with AI in Islamic education, pedagogy, or teacher competence, (b) was a scholarly article, conference paper, or institutional report, and (c) was written in English or Indonesian. Opinion pieces with no identifiable author and sources outside the research focus were left out.

Data Analysis Technique

Content analysis and thematic analysis (Braun & Clarke, 2006) were used. After close reading, key findings were coded and the codes were gathered into themes that matched the research questions: applications of AI, implications for pedagogy and teacher development, and ethical and moral challenges. The themes were then interpreted through TPACK and the UNESCO competency framework. To support credibility, only traceable scholarly or institutional sources were used, and findings were compared across several sources.

Results

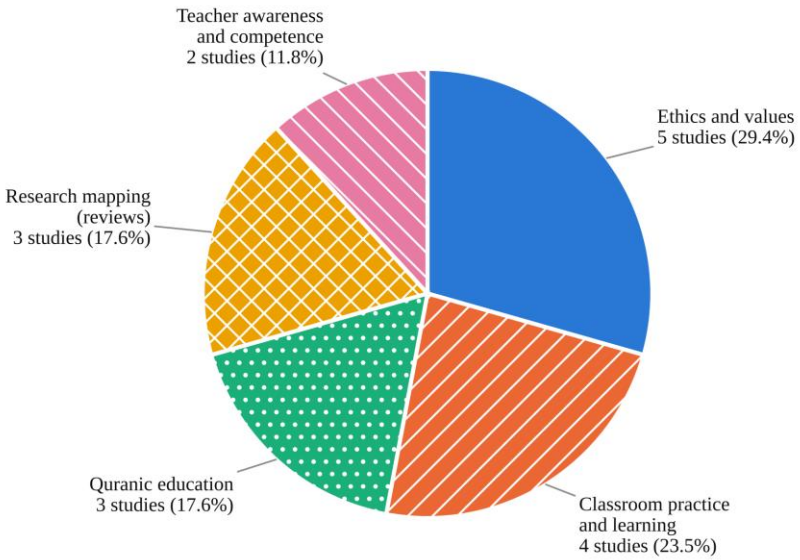
Outcome 1: Applications of AI in Islamic Education

The literature describes AI activity in several areas of Islamic education, summarized in Table 1: Quranic education, teachers' preparation of learning materials, and access to Islamic learning. Figure 1 shows how the 17 studies on AI in Islamic education that were reviewed are distributed by their main focus; each study was assigned to one category on the basis of its primary topic, and general AI-in-education, methodological, and theoretical sources were not counted.

Table 1 Applications of AI in Islamic education reported in the reviewed literature

No	Focus area	Source	Main finding
1	Quranic education	"Artificial Intelligence (AI) in Quranic Education" (2025)	Adoption is still limited, though AI could widen access and strengthen engagement and understanding; calls for ethical, interdisciplinary cooperation.
2	Preparation of learning materials	Widiana et al. (2026)	Investigates how teachers use AI to prepare Islamic Religious Education materials and the opportunities and obstacles they meet.
3	Accessibility of Islamic learning	Rahman & Mala (2025)	AI can make Islamic learning easier to reach and to scale up.
4	Quranic recitation review	Ahmad & Musa (2025)	ChatGPT produced verse-continuation prompts for revision but also made mistakes such as invented verses and wrong juz' labels; it can assist self-directed review but cannot replace a teacher.
5	Quranic teaching	Zainadun et al. (2025)	Across 39 empirical studies, AI supported automated assessment, recitation feedback, interactive materials, progress tracking, and simulated teacher training.
6	Learning achievement	Hasan et al. (2023)	Pupils taught with ChatGPT improved their conceptual understanding more than the comparison group, with a larger gain in procedural fiqh than in abstract aqidah.
7	Teacher support	Nun et al. (2025)	AI may lighten teachers' workload through automated evaluation, offer adaptive materials, and enable VR and AR experiences.
8	Inclusive classrooms	Amjad et al. (2026)	Ten Islamic Studies teachers valued ChatGPT for explaining hard concepts and raising engagement, yet feared factual errors, cultural mismatch, and clashes with Islamic values.
9	Research landscape	Alhammad et al. (2025)	Publication activity between 2003 and 2023 reached its highest point in 2023.

Figure 1 Distribution of the 17 reviewed studies on AI in Islamic education by main focus



Outcome 2: Implications for Pedagogy and Teacher Development

Table 2 gathers what the sources say about pedagogy and teacher development: the teacher's changing role, teacher awareness and competence, and where AI sits in relation to teachers and adab.

Table 2 Implications of AI for pedagogy and teacher development

No	Dimension	Source	Main finding
1	Teacher–student relationship	Miao & Cukurova (2024)	AI turns the teacher–student pair into a teacher–AI–student triad, prompting a rethink of teachers' roles and competencies.
2	Teacher competence framework	Miao & Cukurova (2024)	Fifteen competencies across five dimensions (human-centred mindset, AI ethics, AI foundations and applications, AI pedagogy, AI for professional learning), each at three levels (acquire, deepen, create).
3	Teacher awareness	Owoyale-Abdulganiy (2025)	Measured how aware Islamic studies teachers in Kwara State senior schools are of AI use in teaching.
4	Madrasah teacher competence	Nuraini & Mashuri (2025)	Recommends training, policy backing, and curriculum integration to build teachers' professional and pedagogical competence.
5	AI literacy for educators	Shenoy & Saarela (2026)	Across 28 studies, AI literacy frameworks for educators were fragmented; TPACK was widely used, treatment of ethics varied, teacher preparation was often inadequate, and structured professional development with institutional support helped.
6	Conditions for partnership	Nun et al. (2025)	Gains depend on digital-skills training for teachers, better infrastructure, and ethical policy aligned with Islamic values.
7	Teacher mediation of output	Amjad et al. (2026)	Teachers concluded that ChatGPT output should be reviewed and adapted by the teacher before use.
8	AI and the teacher	Ningsih & Sufiyan (2026)	Generative AI should assist within the bounds of adab and not stand in for the teacher, for thinking, or for scholarly responsibility.

Outcome 3: Ethical and Moral Challenges

The literature also raises ethical, spiritual, and epistemological challenges, shown in Table 3.

Table 3 Ethical and moral challenges of AI in Islamic education

No	Challenge	Source	Main finding
1	Data and human interaction	Indriani (2025)	Points to misuse of data, thinner human interaction, and weakening spiritual and moral awareness; urges building justice, sincerity, responsibility, and empathy into AI-based education.
2	Spiritual integrity and epistemology	Rahman & Mala (2025)	AI strains spiritual integrity, traditional epistemology, and ethical values; the authors offer a normative framework in the spirit of *Ta'lim al-Muta'allim*.
3	Accuracy of AI output	Ahmad & Musa (2025)	In recitation revision tasks, ChatGPT produced faulty markings, nonexistent verses, and incorrect juz' labels.
4	Moral values and dependence	Zainadun et al. (2025)	Concerns include accuracy, thin treatment of spiritual and moral values, and teachers' over-reliance on technology.
5	Academic	Mustapha et al. (2025)	AI helps learning but invites plagiarism and may dull

	integrity		critical and creative thinking; the TAQIT guideline, built on Islamic ethics, is proposed.
6	Policy frameworks	Al-Jayyousi & Al Khatib (2026)	Drawing on maqasid al-shariah, argues that AI integration should safeguard justice, compassion, and human dignity.
7	Epistemological alignment	"Artificial Intelligence (AI) in Quranic Education" (2025)	Tools should fit the epistemological basis of Quranic knowledge.
8	Adab in AI use	Ningsih & Sufiyan (2026)	The dimension of adab should be retained in every learning process, including ChatGPT-assisted ones.

Discussion

AI Applications and the Stage of Development

The evidence points to a field that is promising but young. Adoption is reported as low in Quranic education, and the publication peak in the mapped period came only in 2023, which suggests that research is still gathering pace ("Artificial Intelligence (AI) in Quranic Education", 2025; Alhammad et al., 2025). Wider reviews of AI in education describe a similar expansion (Chen et al., 2020; Zawacki-Richter et al., 2019). The advantages most often cited, namely access, interaction, and scale, are essentially means rather than ends, and they matter most when they serve the broader purposes of Islamic education set out by Halstead (2004). Evidence from classrooms is encouraging but mixed. Pupils taught with ChatGPT gained more in conceptual understanding, and the gain was larger for procedural fiqh than for abstract aqidah (Hasan et al., 2023); at the same time, work on Qur'anic revision and on Islamic Studies teachers records errors that make teacher review necessary (Ahmad & Musa, 2025; Amjad et al., 2026). One cautious reading is that AI currently handles structured material better than abstract or value-laden material, although only a handful of studies support this pattern.

Implications for Pedagogy

Viewed through TPACK, good use of AI rests on how content, pedagogy, and technology work together (Mishra & Koehler, 2006), an idea that extends Shulman's (1986) pedagogical content knowledge. In Islamic education, the reviewed literature suggests that a further, ethical layer is needed. The teacher–student relationship, sincerity, and adab sit at the heart of Islamic learning (Rahman & Mala, 2025), and AI adds a third party to that relationship (Miao & Cukurova, 2024). The pedagogical task is therefore twofold: using AI to deliver content, and doing so without crowding out the human relationship through which adab is passed on. This review accordingly proposes a hybrid pedagogy in which AI helps with access to resources and the preparation of materials, while moral guidance and role-modelling stay with the teacher. The proposal is consistent with the view that generative AI should assist within adab and not replace teachers (Ningsih & Sufiyan, 2026), and with the picture of AI as a partner that lightens workload through automated evaluation and adaptive materials (Nun et al., 2025). It remains an interpretation drawn from the sources and has not been tested empirically.

Implications for Teacher Development

UNESCO treats teacher competence as the basis of responsible AI use and observes that few countries have defined such competencies or built training programmes for them (Miao & Cukurova, 2024). Research on Islamic education points the same way. Teachers' awareness of

AI, studied in Nigeria (Owoyale-Abdulganiy, 2025), and the stress on training, policy support, and curriculum integration for madrasah teachers (Nuraini & Mashuri, 2025) both suggest that teacher development is a precondition for meaningful integration. Work on AI literacy, which covers knowing, using, and evaluating AI and understanding its ethics (Ng et al., 2021), gives a workable basis for training. An umbrella review of AI literacy frameworks for educators adds that TPACK is widely used, that ethics receives uneven attention, and that structured professional development and institutional support make a difference (Shenoy & Saarela, 2026). For Islamic education, teacher development would have to join technical skill to ethical grounding in Islamic values so that teachers can judge when and how AI should be used. This also echoes earlier observations that educators are little involved in AI-in-education research and that its risks receive limited critical reflection (Zawacki-Richter et al., 2019).

Ethical and Moral Considerations

The ethical issues raised by Indriani (2025) and Rahman and Mala (2025) show that integrating AI is not only a technical matter. Misuse of data, thinner human interaction, and weaker spiritual and moral awareness all touch the character-forming mission of Islamic education. Justice, sincerity, responsibility, and empathy (Indriani, 2025), together with keeping adab intact in AI-assisted learning (Ningsih & Sufiyan, 2026), offer an Islamic ethical vocabulary for steering how AI is designed and used. The appeal for tools that respect the epistemological basis of Quranic knowledge strengthens the case for care with religious content ("Artificial Intelligence (AI) in Quranic Education", 2025), as do the errors and the thin treatment of moral values reported for Quranic teaching (Ahmad & Musa, 2025; Zainadun et al., 2025). At the policy level, frameworks built on the objectives of Islamic law hold that AI should safeguard justice, compassion, and human dignity (Al-Jayyousi & Al Khatib, 2026), and Islamic-ethics guidelines have been put forward to counter academic misconduct and the erosion of critical thinking (Mustapha et al., 2025).

Limitations and Future Research

Several limitations apply. Because this is a library research study, it synthesizes published work and does not put its propositions to an empirical test. The corpus is small and comes largely from openly accessible sources, and a number of the reviewed studies are small-scale or conceptual, so the findings may not carry over to other countries, madrasah, or pesantren. Future studies could examine AI use and teacher competence empirically, through surveys, interviews, or classroom research in Islamic institutions, and could build and test models of AI use grounded in adab. Such work would also show whether the extra ethical layer proposed here improves on existing frameworks. Even so, the synthesis shows why bringing AI into Islamic education should be treated at once as a pedagogical, a professional, and an ethical question.

Conclusion

This study asked how AI is used in Islamic education and what follows for pedagogy and teacher development. On the first question, the literature describes early but growing use in areas such as Quranic education, the preparation of learning materials, and access to Islamic learning, with real potential but limited uptake. On the second, AI alters the teacher's role and the teacher–student relationship. This calls for a hybrid pedagogy in which AI

supports instruction while moral guidance and role-modelling remain with the teacher, and for teacher development that joins AI literacy, pedagogical skill, and ethical grounding, backed by training and policy. On the third, the main challenges are misuse of data, thinner human interaction, and weakened spiritual and moral awareness, and Islamic values such as adab, justice, sincerity, and responsibility can help meet them.

For theory, the review suggests that frameworks such as TPACK and the UNESCO AI competency framework for teachers could be enriched with an explicit ethical dimension drawn from Islamic educational values. For practice, institutions can build teacher training that pairs technical and pedagogical skills with ethical guidance, and policymakers can bring teachers of religious subjects into national AI competency efforts. Future research should test these implications in madrasah, pesantren, and other Islamic educational settings.

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Conflict of interests

The authors declare that they have no conflict of interest.

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