

Human-Centered Artificial Intelligence in Islamic Religious Education: A Systematic Literature Review

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ABSTRACT

The rapid development of Artificial Intelligence (AI) has significantly influenced the transformation of digital learning across various educational contexts. However, the integration of AI in Islamic Religious Education remains limited, particularly when viewed from the perspective of Human-Centered Artificial Intelligence, which emphasizes ethical values, human well-being, and meaningful learning experiences. Islamic Religious Education focuses not only on knowledge transfer but also on the development of moral character, spirituality, and ethical awareness among learners. Therefore, the implementation of AI in this field requires approaches that align technological innovation with humanistic and Islamic values. This study aims to systematically review and analyze existing research on the implementation of Human-Centered Artificial Intelligence in Islamic Religious Education, particularly in relation to the digital transformation of learning. The study employs a Systematic Literature Review (SLR) method to identify, evaluate, and synthesize relevant scholarly articles published within the last five years. The selected studies were analyzed to identify research trends, technological applications, pedagogical approaches, and challenges associated with the use of AI in Islamic Religious Education. The findings indicate that AI has been utilized in various forms, including digital learning platforms, adaptive learning systems, and AI-supported educational tools that enhance interactive and personalized learning experiences. However, several challenges remain, including limited pedagogical frameworks that integrate AI with Islamic educational values, insufficient digital competencies among educators, and ethical concerns related to the use of AI technologies in religious learning environments. This review provides an overview of current research developments and highlights opportunities for future studies on integrating human-centered artificial intelligence in Islamic Religious Education.

Keywords: *Human-Centered Artificial Intelligence, Islamic Religious Education, Digital Transformation in Learning, Systematic Literature Review.*

1. INTRODUCTION

The rapid advancement of digital technologies, particularly Artificial Intelligence (AI), has significantly transformed educational practices across diverse learning contexts. AI is no longer merely a supporting tool but has evolved into an intelligent system capable of facilitating adaptive learning, personalizing instructional content, and enhancing data-driven decision-making in education (Holmes et al., 2019). This transformation has led to the emergence of more flexible, interactive, and learner-centered educational environments. However, existing implementations of AI in education tend to be predominantly techno-centric, focusing primarily on efficiency, automation, and system performance, often neglecting critical human dimensions such as ethics, values, and meaningful learning experiences (Luckin et al., 2019).

In response to these concerns, the concept of Human-Centered Artificial Intelligence (HCAI) has emerged as a paradigm that places human values, well-being, and agency at the

core of AI development and implementation. HCAI emphasizes ethical considerations, transparency, inclusivity, and the enhancement of human capabilities rather than their replacement (Shneiderman, 2020). Within the educational domain, this approach is particularly relevant as it ensures that technological innovations align with pedagogical goals and support holistic human development. Nevertheless, scholarly discussions on the application of HCAI in education remain limited, especially in value-based and religious education contexts.

Islamic Religious Education (IRE) presents a distinctive educational framework that extends beyond knowledge transmission to encompass moral development, spiritual growth, and ethical awareness. It aims to cultivate well-rounded individuals grounded in Islamic values and principles (Halstead, 2004). Consequently, the integration of AI into IRE cannot be approached in the same manner as in secular or technical disciplines. Instead, it requires a value-sensitive framework that aligns technological innovation with Islamic ethical and spiritual foundations. Previous studies indicate that the digitalization of religious education often encounters challenges in maintaining the authenticity of religious values while adopting modern technologies (Hashim, 2020; Lubis et al., 2022). This highlights the need for a more contextualized and human-centered approach in integrating AI into IRE.

Furthermore, the digital transformation of education has accelerated the adoption of AI-driven technologies such as adaptive learning systems, intelligent tutoring systems, and AI-supported digital platforms that enhance learner engagement and personalization (Chen et al., 2020; Holmes & Tuomi, 2022). Despite these advancements, most existing research has focused on STEM and general education contexts, with limited attention given to religious education, particularly IRE. Moreover, there is a lack of pedagogical frameworks that explicitly integrate AI technologies with religious values and human-centered principles, resulting in a fragmented body of knowledge.

In addition to conceptual gaps, practical challenges also persist in the implementation of AI in education. These include limited digital competencies among educators, inadequate technological infrastructure, and ethical concerns such as data privacy, algorithmic bias, and the potential dehumanization of learning processes (Zhai et al., 2021; UNESCO, 2021). Within the context of IRE, these challenges become more complex due to the sensitive nature of religious content and the necessity to preserve ethical and spiritual integrity. Therefore, a comprehensive framework that integrates HCAI principles with Islamic educational values is essential to ensure that AI supports holistic educational objectives.

Based on the preceding discussion, this Systematic Literature Review addresses the following research questions:

1. What are the publication trends and research characteristics of studies on Human-Centered Artificial Intelligence in Islamic Religious Education?
2. How have Human-Centered AI principles been conceptualized and implemented in Islamic Religious Education?

3. What educational benefits, ethical concerns, and implementation challenges have been reported regarding the use of Human-Centered AI in Islamic Religious Education?

2. METHODS

Research Design

This study employed a Systematic Literature Review (SLR) to comprehensively identify, evaluate, and synthesize existing evidence regarding the implementation of Human-Centered Artificial Intelligence (HCAI) in Islamic Religious Education (IRE) within the broader context of digital learning transformation. The SLR approach was selected because it provides a rigorous, transparent, and reproducible method for integrating findings from multiple studies while minimizing researcher bias through a structured review process. Moreover, this method enables the identification of research trends, conceptual developments, and existing knowledge gaps, thereby providing a comprehensive understanding of how HCAI principles have been integrated into educational practices, particularly within value-based and religious learning environments.

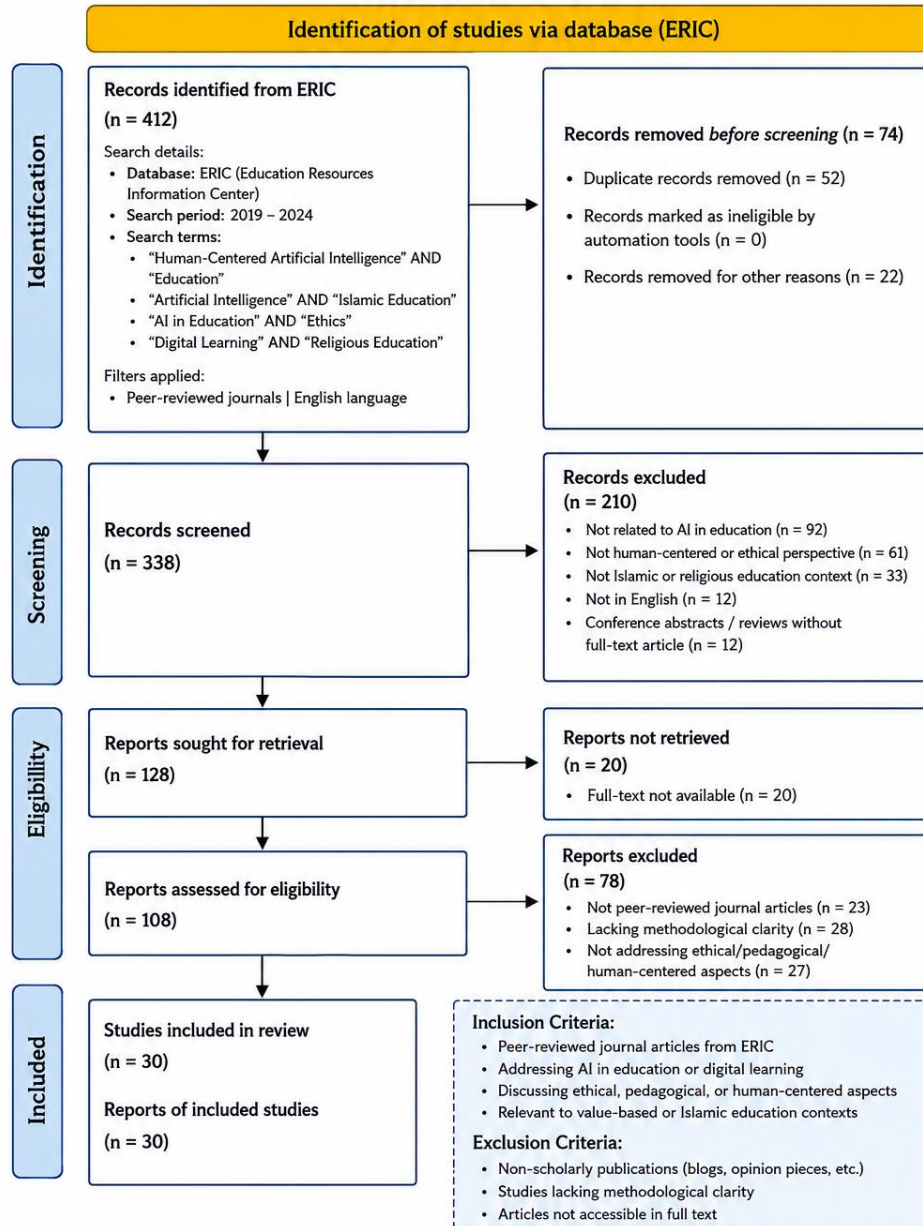
The review process followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines (Page et al., 2021), which offer internationally recognized standards for conducting and reporting systematic reviews. Applying the PRISMA framework ensured methodological consistency through a transparent sequence of study identification, screening, eligibility assessment, and final inclusion. To maintain the academic quality of the review, only peer-reviewed journal articles were considered for analysis, ensuring that the synthesized findings were derived from credible and scientifically rigorous sources.

Research Procedure

The systematic review was conducted through four sequential stages following the PRISMA framework, namely identification, screening, eligibility assessment, and inclusion.

PRISMA 2020 Flow Diagram for Systematic Literature Review

*Human-Centered Artificial Intelligence in Islamic Religious Education:
A Systematic Literature Review*



Source: Adapted from Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al.
The PRISMA 2020 statement: an updated guideline for reporting systematic reviews.
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During the identification stage, a comprehensive literature search strategy was developed to capture studies relevant to Human-Centered Artificial Intelligence in educational contexts. Searches were performed across four major academic databases ERIC to ensure broad interdisciplinary coverage. The search was limited to publications published between 2019 and 2024, reflecting the rapid advancement of artificial intelligence technologies and their

increasing application in digital education. Boolean operators were employed to construct search strings, including “Human-Centered Artificial Intelligence” AND “Education”, “Artificial Intelligence” AND “Islamic Education”, “AI in Education” AND “Ethics”, and “Digital Learning” AND “Religious Education.” All retrieved references were exported into a reference management application, where duplicate records were identified and removed prior to further analysis.

The screening stage involved examining the titles and abstracts of all retrieved studies to determine their relevance to the research objectives. Studies were excluded if they did not discuss artificial intelligence within educational settings, lacked a human-centered or ethical perspective, were not published in English, or consisted only of conference abstracts without accessible full-text versions. This preliminary filtering process ensured that only studies directly aligned with the scope of the review progressed to the next stage.

In the eligibility stage, the full texts of the remaining articles were carefully assessed using predetermined inclusion and exclusion criteria. Eligible studies were required to be peer-reviewed journal articles addressing artificial intelligence in education or digital learning while discussing ethical, pedagogical, or human-centered dimensions. Studies focusing on value-based education, including Islamic Religious Education and related religious learning contexts, were considered particularly relevant. Conversely, non-academic publications such as blogs or opinion articles, studies with unclear research methodologies, and publications without full-text access were excluded. At this stage, each article was critically evaluated for methodological quality, relevance, and contribution to the research objectives.

The final inclusion stage resulted in the selection of 30 journal articles that met all eligibility requirements. These studies were considered the most relevant and methodologically robust sources for examining the implementation of Human-Centered Artificial Intelligence in Islamic Religious Education and formed the basis for the subsequent synthesis and thematic analysis.

Data Analysis

The extracted data were analyzed using a thematic analysis approach to identify recurring concepts and develop a coherent synthesis of the existing literature. The analysis began with open coding, in which significant concepts, keywords, and findings from each study were identified. Similar codes were subsequently grouped into broader conceptual categories through an iterative categorization process. Finally, these categories were synthesized into overarching analytical themes that represented the dominant patterns within the literature.

The thematic analysis generated four principal themes. The first theme explored the role of artificial intelligence in supporting educational innovation and digital transformation. The second examined the implementation of Human-Centered Artificial Intelligence principles, particularly regarding ethics, transparency, fairness, and human agency in educational environments. The third focused specifically on the application of AI within Islamic Religious Education, highlighting opportunities to improve learning while preserving religious values and pedagogical integrity. The fourth theme addressed the ethical,

technological, pedagogical, and institutional challenges associated with AI adoption in religious education. Collectively, these themes enabled the identification of current research trends, existing knowledge gaps, and future directions for Human-Centered Artificial Intelligence in Islamic Religious Education.

Reliability and Validity

Several measures were implemented to enhance the reliability and validity of the systematic review. First, transparency was ensured by documenting every stage of the review process in accordance with the PRISMA 2020 guidelines, allowing readers to trace each decision made during study selection and analysis. Second, replicability was strengthened through the use of clearly defined search strategies and explicit inclusion and exclusion criteria, enabling future researchers to reproduce the review process. Third, data consistency was maintained by applying a standardized coding and data extraction framework across all selected studies. Finally, source credibility was ensured by restricting the review exclusively to peer-reviewed journal articles, thereby enhancing the trustworthiness and academic rigor of the synthesized findings. Collectively, these methodological strategies contribute to the robustness and reliability of the review while providing a comprehensive evidence base for understanding the implementation of Human-Centered Artificial Intelligence in Islamic Religious Education.

3. RESULTS AND DISCUSSIONS

Publication Trends and Research Characteristics of Human-Centered Artificial Intelligence in Islamic Religious Education

The systematic review demonstrates that scholarly interest in Artificial Intelligence (AI) within educational contexts has increased substantially over the past five years, particularly between 2020 and 2023. This growth coincides with the rapid digital transformation of education following the COVID-19 pandemic, during which educational institutions accelerated the adoption of technology-supported learning environments. Most of the selected studies focused on AI applications designed to improve instructional efficiency through adaptive learning systems, intelligent tutoring systems, automated assessment, and personalized learning environments. These findings indicate that AI research in education has primarily evolved in response to the growing demand for digital learning solutions and educational innovation.

Despite this increasing volume of publications, the review reveals a significant imbalance in research distribution. Most studies examined AI within general educational contexts, whereas considerably fewer focused explicitly on Human-Centered Artificial Intelligence (HCAI). Research specifically addressing Islamic Religious Education (IRE) represented only a small proportion of the reviewed literature. This distribution suggests that contemporary AI research remains largely technology-oriented, with relatively limited attention devoted to educational contexts where ethical, cultural, and spiritual dimensions are fundamental. Consequently, Human-Centered AI in Islamic Religious Education remains an emerging area of inquiry with substantial opportunities for future investigation.

The methodological characteristics of the reviewed studies further reinforce this observation. Conceptual and theoretical papers dominated the literature, while empirical investigations constituted a considerably smaller proportion. This pattern indicates that discussions surrounding AI, ethics, and human-centered educational design remain primarily theoretical, with limited evidence demonstrating practical implementation in authentic learning environments. The scarcity of empirical research suggests that many proposed HCAI principles have yet to be systematically evaluated within Islamic Religious Education settings, creating a gap between conceptual development and educational practice.

Conceptualization and Implementation of Human-Centered AI in Islamic Religious Education (RQ2)

The analysis reveals that Human-Centered Artificial Intelligence is commonly conceptualized as an approach that positions human values, ethical responsibility, transparency, fairness, and meaningful human interaction at the center of AI development and implementation. Across the reviewed studies, HCAI is consistently presented as an alternative to purely technology-driven educational innovation by emphasizing that AI should function as a supportive tool that enhances rather than replaces human decision-making and pedagogical relationships.

However, although the conceptual discussion of HCAI has become increasingly prominent, its implementation within Islamic Religious Education remains limited. Most studies discuss human-centered principles at a theoretical level without translating them into concrete instructional models or AI-supported learning frameworks specifically designed for religious education. Existing AI applications in Islamic educational contexts are generally limited to supporting administrative tasks, digital learning resources, or adaptive instructional systems, while explicit integration of Islamic educational values into AI design is rarely addressed.

The review further indicates that no study provides a comprehensive framework integrating AI technological capabilities, Human-Centered AI principles, and Islamic educational values simultaneously. Instead, these three components are typically examined independently. As a result, the literature has yet to establish a holistic model demonstrating how AI systems can simultaneously promote technological innovation, ethical responsibility, and the spiritual objectives of Islamic education. This finding highlights an important conceptual gap that requires interdisciplinary collaboration among educational researchers, AI developers, ethicists, and Islamic education scholars.

Educational Benefits, Ethical Concerns, and Implementation Challenges of Human-Centered AI in Islamic Religious Education (RQ3)

The reviewed studies consistently report several educational benefits associated with the use of AI in learning environments. AI technologies are widely recognized for improving learning personalization, providing adaptive instructional support, increasing student engagement, facilitating automated feedback, and enabling more efficient assessment processes. Within Islamic Religious Education, these technologies also offer opportunities to

expand access to religious learning resources, facilitate individualized learning experiences, and support more flexible digital instruction.

Nevertheless, the review identifies significant ethical concerns accompanying AI implementation. Many studies emphasize issues related to algorithmic bias, transparency, privacy, data security, and accountability. Beyond these technical concerns, researchers also highlight pedagogical challenges, including reduced teacher–student interaction, excessive dependence on automated systems, and the potential erosion of meaningful human relationships in education. Such concerns become particularly significant in Islamic Religious Education, where learning extends beyond knowledge acquisition to encompass character formation, moral development, and spiritual guidance.

The findings further reveal tensions between technological efficiency and the educational values embedded within Islamic pedagogy. While AI offers considerable advantages for improving instructional effectiveness, several studies caution that excessive reliance on intelligent technologies may weaken authentic educational experiences if ethical and religious considerations are overlooked. Human-centered implementation is therefore viewed as essential for maintaining the balance between technological innovation and the cultivation of empathy, moral reasoning, compassion, and spiritual growth.

Overall, the synthesis suggests that the successful implementation of Human-Centered AI in Islamic Religious Education depends not only on technological advancement but also on the integration of ethical principles and Islamic educational values throughout the design, development, and implementation of AI-supported learning systems. Future research should therefore prioritize the development and empirical validation of integrative frameworks that combine AI technological capabilities, human-centered design principles, and Islamic educational philosophy. Such frameworks would contribute to ensuring that AI supports educational transformation while preserving the humanistic, ethical, and spiritual foundations that characterize Islamic Religious Education.

Discussion

The findings demonstrate that research on Human-Centered Artificial Intelligence in Islamic Religious Education is progressing but remains fragmented. Although AI has become an important catalyst for educational transformation, current scholarship continues to prioritize technological innovation over human-centered educational objectives. This observation aligns with previous studies emphasizing AI's potential to personalize learning and improve educational efficiency while simultaneously raising ethical concerns regarding transparency, fairness, and human agency (Holmes et al., 2019; Zawacki-Richter et al., 2019; Shneiderman, 2020).

From a conceptual perspective, Human-Centered AI has gained increasing recognition as a framework for ensuring that AI systems support rather than replace human roles in education. However, the review indicates that this perspective remains largely conceptual, with limited evidence of systematic implementation within Islamic Religious Education. This finding supports previous arguments that human-centered educational AI requires greater

operationalization through pedagogical models, instructional design, and empirical evaluation in authentic educational contexts (Floridi et al., 2018).

The review also highlights the limited representation of Islamic Religious Education within AI research. Existing studies rarely integrate Islamic educational philosophy, ethical principles, and technological innovation into a unified conceptual framework. Consequently, AI applications in Islamic education continue to be adapted from general educational technologies rather than developed according to the unique pedagogical objectives of Islamic learning, including character education, moral development, and spiritual formation.

Finally, the synthesis demonstrates that the benefits and challenges of AI implementation cannot be separated from ethical and cultural considerations. While AI contributes to more personalized, accessible, and efficient learning experiences, concerns regarding dehumanization, algorithmic bias, privacy, and diminished interpersonal interaction remain substantial. These challenges are particularly relevant within Islamic Religious Education, where educational success depends not only on cognitive achievement but also on nurturing ethical awareness and spiritual growth. Therefore, this review argues that future research should move beyond fragmented technological discussions toward the development of an integrated Human-Centered AI framework that harmonizes technological capabilities, ethical design principles, and Islamic educational values. Such an approach would provide a stronger theoretical and practical foundation for responsible AI adoption in religious education and contribute to more sustainable, inclusive, and value-oriented educational transformation.

4. CONCLUSION

This study provides a systematic synthesis of recent scholarly work on the integration of Human-Centered Artificial Intelligence (HCAI) within the context of Islamic Religious Education (IRE), particularly in relation to the ongoing digital transformation of learning. The findings indicate that while Artificial Intelligence has been increasingly adopted in educational settings—primarily through adaptive learning systems, intelligent tutoring, and AI-supported digital platforms—its application remains largely techno-centric. Most existing studies emphasize efficiency, automation, and performance enhancement, with limited attention to ethical considerations, human well-being, and meaningful learning experiences.

Furthermore, the analysis reveals that the concept of HCAI, although gaining traction in broader AI discourse, has not been sufficiently operationalized within educational practices, especially in value-based domains such as IRE. Islamic Religious Education, which inherently prioritizes moral development, spiritual growth, and ethical awareness, requires a more nuanced and context-sensitive approach to technology integration. However, current literature demonstrates a clear absence of pedagogical frameworks that effectively align AI technologies with Islamic values and human-centered principles. This highlights a critical gap in both theoretical development and practical implementation.

Based on these findings, this study recommends that future research should focus on developing integrative frameworks that combine HCAI principles with Islamic educational philosophy. Such frameworks should address not only technological innovation but also ethical alignment, cultural sensitivity, and spiritual objectives. Additionally, there is a need for empirical studies that explore the real-world application of AI in IRE settings, particularly in diverse educational contexts. Capacity-building initiatives for educators, especially in enhancing digital and ethical competencies, are also essential to ensure the effective and responsible use of AI technologies.

Despite its contributions, this study is not without limitations. First, the research relies exclusively on a Systematic Literature Review (SLR) methodology, which inherently depends on the availability and quality of existing studies. As a result, the findings may be constrained by publication bias, where studies with positive or significant results are more likely to be published and included. This limitation relates to issues of validity, as the synthesized conclusions may not fully represent the entire spectrum of existing research.

Second, the selection of articles was restricted to publications in English and within a five-year timeframe (2019–2024). While this criterion ensures relevance and recency, it may have excluded important studies published in other languages or prior to the selected period. This limitation is primarily associated with methodological constraints, which may affect the comprehensiveness of the review.

Third, the process of thematic analysis and interpretation of findings involves a degree of subjectivity, particularly in categorizing themes such as ethical considerations, pedagogical approaches, and human-centered principles. Although systematic procedures were followed, the potential for interpretive bias cannot be entirely eliminated. This issue relates to analytical and interpretive validity, which may influence how results are synthesized and presented.

Fourth, the study does not include empirical validation or field-based data, limiting its ability to assess the practical effectiveness of HCAI implementation in Islamic Religious Education. This limitation highlights a gap in external validity, as the conclusions are based on secondary data rather than real-world application.

In light of these limitations, readers are encouraged to interpret the findings with a critical perspective, particularly regarding the generalizability and applicability of the conclusions. Future research should aim to address these limitations by incorporating mixed-method approaches, expanding the scope of data sources, and conducting empirical investigations to validate and refine the proposed insights.

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Table: Systematic Literature Review Matrix

No	Author(s)	Year	Focus Area	Method	Key Findings	Research Gap
1	Holmes et al.	2019	AI in Education	Conceptual	AI supports personalized learning	Lack of ethical integration
2	Zawacki-Richter et al.	2019	AI in Higher Education	SLR	AI widely applied in HE	Limited human-centered focus
3	Floridi et al.	2018	AI Ethics	Conceptual	Ethical AI framework proposed	Not education-specific
4	Shneiderman	2020	Human-Centered AI	Conceptual	Emphasizes human control & safety	Limited empirical studies
5	Chen et al.	2020	AI Applications	Review	AI enhances learning outcomes	Focus on technical efficiency
6	Holmes & Tuomi	2022	AI Trends	Review	Rapid AI adoption in education	Limited religious context
7	Lubis et al.	2022	Islamic Education	Empirical	Digital tools used in IRE	No AI-based framework
8	Halstead	2004	Islamic Education	Conceptual	Moral and spiritual emphasis	No integration with technology

No	Author(s)	Year	Focus Area	Method	Key Findings	Research Gap
9	UNESCO	2021	AI Policy	Report	Ethical concerns in AI use	General education focus
10	Zhai et al.	2021	AI Trends	Review	AI research growing rapidly	Lack of pedagogy integration
11	Hashim	2020	Islamic Education	Conceptual	Modernization challenges	No AI discussion
12	Luckin et al.	2016	AI Learning	Conceptual	AI enhances teaching support	Not human-centered
13	Nasr	2012	Islamic Philosophy	Conceptual	Spiritual foundations emphasized	No digital perspective
14	Bond et al.	2020	EdTech	Review	Growth of digital learning	Limited AI ethics focus
15	Roll & Wylie	2016	AI Tutoring	Review	ITS improves outcomes	No value-based approach
16	Baker & Inventado	2014	Educational Data Mining	Review	Data-driven insights in learning	Ethical concerns underexplored
17	Dignum	2019	Responsible AI	Conceptual	AI must align with human values	Limited application in education

No	Author(s)	Year	Focus Area	Method	Key Findings	Research Gap
18	Tegmark	2017	AI Future	Conceptual	AI impacts society broadly	Lacks educational depth
19	Selwyn	2019	AI Critique	Conceptual	Critical view of AI in education	No Islamic context
20	Crawford	2021	AI Ethics	Critical Study	AI bias and power issues	Limited pedagogical link
21	Holmes et al.	2021	AI & Ethics	Report	Need for ethical AI in education	Lack of practical models
22	Kooli	2023	AI in Education	Review	AI improves efficiency	Lacks human-centered design
23	Chassignol et al.	2018	AI in Learning	Review	AI transforms education	Limited ethical discussion
24	Alqahtani et al.	2023	AI Adoption	Empirical	Teachers accept AI tools	Lack of training frameworks
25	Garrell & Onrubia	2021	AI Pedagogy	Review	AI supports collaboration	Limited religious dimension
26	Khan & Abdou	2021	Islamic EdTech	Conceptual	Technology supports IRE	No AI integration

No	Author(s)	Year	Focus Area	Method	Key Findings	Research Gap
27	Huda et al.	2018	Islamic Learning	Empirical	Tech enhances engagement	Lacks AI framework
28	Aydın & Karaarslan	2020	AI Ethics	Review	Ethical risks identified	Not education-focused
29	Ng et al.	2021	Digital Competence	Review	Teachers need AI literacy	Limited IRE context
30	Holmes et al.	2023	Generative AI	Report	AI reshapes learning models	Ethical framework still lacking