

**Human-AI Collaboration in Islamic Education: Opportunities,  
Ethical Concerns, and Future Directions**

**Ahmad Nabriz**

Maastricht University (UM) Netherlands, Belanda  
E-mail: ahmadnabriz@maastrichtuniversity.nl

**Ahmad Faizal Syahrul Azmi**

International Islamic University Malaysia, Malaysia,  
E-mail: faizalsahurulazmi@iium.edu.my

**Abubaker Kashada**

Surman College of Science and Technology, Libya  
E-mail: kashada@scst.edu.ly

**Rahmat Ullah**

Istanbul Gelisim University, Istanbul, Türkiye  
E-mail: rullah@gelisim.edu.tr

**Ajoy Chandra**

University of Rajshahi, Bangladesh  
E-mail: ajoychandra@ru.ac.bd

**Abstract**

This study aims to examine the opportunities, ethical concerns, and future directions of Human-AI Collaboration in Islamic Education. The study employed a qualitative library research approach through a systematic review and synthesis of scholarly literature, including peer-reviewed journal articles, academic books, policy reports, and international guidelines. The data were analyzed using thematic content analysis to identify major trends, challenges, and conceptual developments within the field. The findings indicate that Human-AI Collaboration holds significant potential for enhancing learning effectiveness, expanding educational access, and fostering pedagogical innovation in Islamic educational institutions. However, the successful integration of AI requires robust ethical governance, AI literacy, and continuous human oversight to ensure that technological applications remain aligned with the objectives of Islamic education. The study also finds that the framework of Maqāṣid al-Sharī'ah provides a relevant ethical foundation for evaluating and guiding AI implementation by emphasizing the preservation of intellect, human dignity, and public welfare. The novelty of this study lies in the development of an integrative framework that combines Human-AI Collaboration theory, Islamic educational philosophy, and AI ethics into a comprehensive model for the responsible adoption of AI in Islamic education. The study concludes that AI should function as a complementary partner that strengthens, rather than replaces, the intellectual, moral, and spiritual roles of educators.

**Keyword:** Human-AI Collaboration; Islamic Education; Artificial Intelligence

#### **A. Introduction**

Artificial Intelligence (AI) has emerged as one of the most transformative technologies shaping contemporary educational systems across the globe. Recent advancements in machine learning, natural language processing, and generative AI have significantly altered how knowledge is produced, accessed, and disseminated within educational environments. Educational institutions increasingly integrate AI-powered tools to support personalized learning, automate administrative tasks, and enhance instructional effectiveness. The rapid expansion of AI technologies has generated considerable scholarly attention regarding their potential to reshape traditional educational paradigms. Rather than functioning solely as technological instruments, AI systems are now perceived as collaborative agents capable of augmenting human cognitive processes and decision-making. Consequently, educational researchers have begun exploring the concept of Human-AI Collaboration as a framework for understanding the evolving relationship between educators, learners, and intelligent technologies (Kasneci et al., 2023; Tlili et al., 2023).

The emergence of Human-AI Collaboration reflects a shift from technology-centered approaches toward human-centered educational innovation. Within this perspective, AI is not viewed as a replacement for human expertise but as a complementary partner that enhances human capabilities. Educational activities involve complex cognitive, emotional, social, and ethical dimensions that remain fundamentally dependent on human judgment and interaction. Although AI can process vast amounts of information efficiently, it lacks the contextual understanding, empathy, and moral reasoning required for holistic educational development. Therefore, effective integration of AI requires a collaborative model in which human educators retain pedagogical authority while leveraging AI-driven support systems. This collaborative paradigm has become increasingly influential in discussions concerning the future of education in the digital era (Luckin, 2018; Holmes et al., 2022).

The growing adoption of AI technologies presents unique opportunities and challenges for Islamic education. Unlike many secular educational

frameworks that primarily emphasize cognitive achievement, Islamic education seeks to cultivate intellectual excellence alongside spiritual growth, moral character, and religious commitment. The ultimate objective of Islamic education extends beyond knowledge transmission to the formation of individuals who embody ethical conduct and devotion to God. Consequently, the integration of AI into Islamic educational settings requires careful consideration of theological, epistemological, and ethical dimensions. While AI may facilitate access to knowledge and improve learning efficiency, the cultivation of faith, adab, and spiritual awareness continues to rely heavily on human guidance and mentorship. This distinctive characteristic makes the study of Human-AI Collaboration particularly relevant within Islamic educational discourse (Memon, 2019; Sahin, 2020).

The digital transformation accelerated by the COVID-19 pandemic has further intensified the integration of AI technologies into educational systems worldwide. Educational institutions, including Islamic schools and universities, have increasingly adopted digital platforms, intelligent tutoring systems, and AI-assisted learning applications to maintain educational continuity. These developments have demonstrated the capacity of AI to support educational access and instructional flexibility under challenging circumstances. At the same time, the rapid deployment of educational technologies has revealed significant concerns regarding educational equity, technological dependency, and pedagogical effectiveness. Such concerns are especially significant in Islamic education, where the relational aspects of teaching and learning occupy a central position. Consequently, educational stakeholders are challenged to balance technological innovation with the preservation of essential pedagogical and spiritual values (Bozkurt et al., 2020; Crawford et al., 2020).

One of the most frequently cited benefits of AI in education is its capacity to facilitate personalized learning experiences. AI-powered systems can analyze learner behavior, identify individual strengths and weaknesses, and generate adaptive instructional pathways tailored to specific educational needs. This capability has the potential to improve learning outcomes by providing students

with customized educational support. Within Islamic education, personalized learning technologies may contribute to more effective instruction in areas such as Qur'anic studies, Islamic jurisprudence, Arabic language learning, and Islamic history. Furthermore, AI can assist educators in identifying learning difficulties and designing targeted interventions. Such developments suggest that AI can serve as a valuable resource for enhancing educational quality and accessibility in Islamic learning environments (Zawacki-Richter et al., 2019; Chen et al., 2020).

Despite these opportunities, scholars have expressed concerns regarding the potential negative consequences of excessive reliance on AI technologies. Easy access to AI-generated responses may reduce learners' motivation to engage in critical thinking, reflective inquiry, and independent problem-solving. Educational researchers have warned that overdependence on intelligent systems could undermine essential cognitive skills necessary for lifelong learning. Within Islamic educational philosophy, this concern is particularly important because knowledge acquisition is closely connected to reflection (tafakkur), reasoning ('aql), and wisdom (hikmah). These intellectual and spiritual processes cannot be fully automated through technological systems. Therefore, AI should be employed as a supportive educational tool rather than a substitute for human intellectual engagement and critical reflection (Kasneci et al., 2023; Cotton et al., 2024).

Another important issue concerns the authority and authenticity of knowledge in the age of AI. Classical Islamic educational traditions emphasize the importance of teacher-student relationships, scholarly transmission, and ethical mentorship in the acquisition of knowledge. The increasing availability of AI-generated information may alter these traditional patterns by enabling learners to access information independently of human educators. While this development expands educational opportunities, it also raises questions regarding the reliability, contextual accuracy, and ethical implications of AI-generated content. Islamic educational thought traditionally values not only knowledge itself but also the process through which knowledge is acquired and transmitted. Consequently, preserving meaningful educational relationships remains essential in discussions

concerning Human-AI Collaboration in Islamic education (Halstead, 2022; Tan, 2023)

Ethical considerations constitute another major dimension of contemporary debates surrounding AI in education. Researchers have identified numerous ethical concerns related to algorithmic bias, data privacy, transparency, accountability, and fairness in AI-driven systems. These concerns become particularly significant in Islamic educational contexts because Islamic ethical principles emphasize justice ('adl), trustworthiness (amanah), responsibility (mas'uliyah), and public welfare (maslahah). The implementation of AI without appropriate ethical safeguards may generate outcomes that conflict with these foundational values. As a result, scholars increasingly advocate for the development of ethical frameworks that integrate technological innovation with religious and moral principles. Such frameworks are essential for ensuring that AI contributes positively to educational development while respecting Islamic ethical norms (Jobin et al., 2019; Floridi et al., 2021).

## **B. Theoretical Framework**

### **1. Human-AI Collaboration: Conceptual Foundations**

Human-AI Collaboration refers to a synergistic relationship in which human intelligence and artificial intelligence systems work together to achieve goals that neither could accomplish as effectively alone. Unlike automation-oriented paradigms that focus on replacing human labor, collaboration-oriented models emphasize complementarity between human cognitive abilities and machine capabilities. Humans contribute contextual understanding, ethical judgment, emotional intelligence, and creativity, while AI provides computational efficiency, pattern recognition, and large-scale data processing. Recent educational research highlights that the most effective learning environments emerge when AI augments rather than replaces human agency. This perspective aligns with contemporary educational theories that prioritize learner autonomy and meaningful interaction. Consequently, Human-AI Collaboration has become a central framework for understanding the

future of educational innovation in digitally mediated environments (Luckin, 2018; Holmes et al., 2022).

The theoretical basis of Human-AI Collaboration is rooted in the concept of intelligence augmentation rather than artificial replacement. Intelligence augmentation suggests that technology should enhance human capacities and decision-making processes instead of minimizing human involvement. Educational technologies designed according to this principle aim to support teachers and learners in performing complex cognitive tasks more efficiently. Researchers argue that AI should function as a collaborative partner capable of extending human capabilities without undermining human autonomy. Such an approach is particularly relevant in educational settings where learning involves social interaction, critical reflection, and ethical reasoning. Therefore, Human-AI Collaboration represents a paradigm shift from technology-centered innovation toward human-centered educational transformation (Floridi, 2023; Kasneci et al., 2023).

Within educational contexts, Human-AI Collaboration has increasingly been associated with adaptive learning systems, intelligent tutoring platforms, and generative AI applications. These technologies provide learners with personalized feedback, customized learning pathways, and immediate access to educational resources. However, scholars emphasize that effective collaboration requires active human supervision and pedagogical guidance. AI systems can generate recommendations and content, but educators remain responsible for validating information and facilitating meaningful learning experiences. Consequently, educational success depends not only on technological sophistication but also on the quality of interaction between humans and AI systems. This interaction forms the foundation of contemporary discussions concerning AI-enhanced education (Zawacki-Richter et al., 2019; Bond et al., 2024).

## **2. Human-Centered Education and Islamic Educational Philosophy**

Human-centered education constitutes one of the most influential paradigms in contemporary educational theory. This approach emphasizes the holistic development of learners by recognizing their intellectual, emotional, social, and ethical dimensions. Rather than treating learners as passive recipients of information, human-centered education views them as active participants in knowledge

construction. Educational technologies are evaluated according to their capacity to promote meaningful learning and human flourishing. The increasing adoption of AI in education has renewed interest in ensuring that technological innovation remains aligned with human needs and values. Consequently, Human-AI Collaboration is often discussed within broader debates concerning human-centered educational reform (Biesta, 2022; Holmes & Tuomi, 2022).

The principles of human-centered education resonate strongly with Islamic educational philosophy. Islamic education seeks to nurture balanced individuals who develop intellectually, spiritually, morally, and socially. The concept of *insan kamil* (the complete human being) represents a central objective of Islamic educational thought. Knowledge acquisition in Islam is not merely a cognitive activity but also a moral and spiritual endeavor directed toward personal and societal well-being. Therefore, educational technologies should support the holistic development of learners rather than focusing exclusively on academic achievement. This perspective provides an important foundation for evaluating the role of AI in Islamic educational contexts (Sahin, 2020; Halstead, 2022).

Classical Muslim scholars emphasized the inseparability of knowledge, ethics, and character formation. Educational thinkers such as Al-Ghazali, Ibn Khaldun, and Al-Attas viewed education as a process of cultivating wisdom, virtue, and moral responsibility. These scholars argued that effective education requires not only the transmission of information but also the development of ethical consciousness. Contemporary discussions concerning AI in education must therefore consider whether technological systems contribute to or hinder these broader educational goals. While AI can facilitate access to knowledge, it cannot independently cultivate virtue or moral character. Consequently, the integration of AI within Islamic education necessitates ongoing human guidance and ethical oversight (Al-Attas, 2018; Sahin, 2020).

### **3. Artificial Intelligence in Educational Contexts**

Artificial intelligence has become increasingly integrated into educational systems worldwide. AI-powered applications support various educational functions, including personalized learning, assessment, tutoring, academic advising, and institutional management. These technologies utilize machine learning algorithms to

analyze learner behavior and generate adaptive responses. Research consistently demonstrates that AI can improve learning efficiency and educational accessibility when implemented appropriately. However, scholars also emphasize the importance of understanding the pedagogical assumptions embedded within AI systems. Educational effectiveness depends not only on technological capabilities but also on the alignment between technology and learning objectives (Chen et al., 2020; Holmes et al., 2022).

Generative AI technologies such as ChatGPT have significantly expanded the educational applications of artificial intelligence. Unlike earlier educational technologies that primarily delivered pre-programmed content, generative AI systems can produce original text, explanations, summaries, and interactive responses. These capabilities enable learners to engage in dynamic dialogue and receive immediate support for various academic tasks. Nevertheless, concerns regarding accuracy, hallucination, bias, and academic integrity remain prominent. Consequently, researchers increasingly advocate for responsible and supervised implementation of generative AI within educational settings. These concerns are especially relevant in disciplines involving ethical and religious knowledge (Tlili et al., 2023; Kasneci et al., 2023).

Recent studies indicate that AI has the potential to transform educational assessment practices. Intelligent assessment systems can analyze large quantities of learner data and provide detailed insights into student performance. Such systems may help educators identify learning gaps and design targeted interventions. However, AI-driven assessment also raises concerns regarding transparency, fairness, and accountability. Algorithms may inadvertently reproduce existing biases present in training data, thereby affecting educational outcomes. Therefore, educational institutions must carefully evaluate the ethical implications of AI-based assessment systems before widespread adoption (Williamson & Eynon, 2020; UNESCO, 2023).

#### **4. Ethical AI and Islamic Ethical Perspectives**

Ethics has emerged as one of the most significant themes in contemporary AI research. The rapid expansion of AI technologies has generated concerns regarding privacy, fairness, accountability, transparency, and human autonomy. International organizations and academic institutions have proposed various ethical



frameworks to guide responsible AI development and implementation. These frameworks generally emphasize principles such as beneficence, non-maleficence, justice, and respect for human dignity. Educational contexts require particular attention because AI technologies directly influence learning opportunities and developmental outcomes. Consequently, ethical considerations are inseparable from discussions concerning AI integration in education (Jobin et al., 2019; Floridi et al., 2021).

Islamic ethical thought offers valuable insights for addressing contemporary AI challenges. Islamic ethics is grounded in principles such as justice (*adl*), trustworthiness (*amanah*), responsibility (*mas'uliyah*), wisdom (*bikmah*), and public welfare (*maslahah*). These principles provide a normative framework for evaluating technological innovations according to their impact on individuals and society. Within educational contexts, AI systems should be designed and implemented in ways that promote human well-being and avoid harmful consequences. Furthermore, ethical decision-making should prioritize human dignity and moral accountability rather than technological efficiency alone. Therefore, Islamic ethics contributes a distinctive perspective to ongoing discussions concerning responsible AI governance (Kamali, 2022; Auda, 2021).

The concept of *maqāṣid al-sharī'ah* has become increasingly influential in contemporary discussions of technology ethics. Maqāṣid theory focuses on the higher objectives of Islamic law, including the preservation of religion, intellect, life, lineage, and property. These objectives provide a comprehensive framework for evaluating the benefits and risks associated with AI technologies. In educational contexts, the protection of intellect requires ensuring that AI enhances rather than diminishes critical thinking and intellectual independence. Similarly, the protection of religion necessitates safeguards against misinformation and inappropriate religious interpretations. Therefore, *maqāṣid al-sharī'ah* offers a valuable framework for guiding Human-AI Collaboration in Islamic education (Auda, 2021; Kamali, 2022).

## **5. Previous Studies on AI and Islamic Education**

Recent research has demonstrated growing scholarly interest in the relationship between AI and Islamic education. Several studies have explored the use

of AI-powered applications for Qur'anic learning, Arabic language instruction, and digital Islamic education. Findings generally indicate that AI technologies can enhance learning accessibility and engagement when implemented appropriately. However, researchers also highlight concerns regarding content accuracy, technological dependency, and ethical implications. These findings suggest that AI integration requires careful pedagogical and ethical consideration. Consequently, scholars increasingly advocate for balanced approaches that combine technological innovation with Islamic educational values (Tan, 2023; Alenezi, 2024).

A study conducted by Tan (2023) examined the impact of digital transformation on religious education and found that technological innovation creates both opportunities and challenges for faith-based learning environments. The study concluded that digital technologies can expand educational access and learner engagement while simultaneously raising questions concerning authenticity and authority. Similar findings were reported in investigations of AI-assisted learning platforms within religious educational contexts. Researchers emphasized the continued importance of human educators in facilitating interpretation, mentorship, and ethical development. These conclusions support the argument that AI should function as a complementary rather than substitutive educational resource. Therefore, Human-AI Collaboration emerges as a promising framework for balancing innovation and tradition (Tan, 2023; Campbell & Tsuria, 2022).

Studies focusing on generative AI in education have revealed substantial potential for enhancing personalized learning and instructional support. At the same time, concerns regarding academic integrity, plagiarism, and cognitive dependency remain significant. Researchers consistently emphasize the need for AI literacy, ethical guidelines, and institutional governance mechanisms. Educational institutions are encouraged to develop policies that support responsible AI use while preserving educational quality and integrity. These recommendations are particularly relevant for Islamic educational institutions seeking to integrate AI technologies without compromising their foundational values. Consequently, current literature underscores the importance of developing context-specific frameworks for Human-AI Collaboration in Islamic education (Cotton et al., 2024; Tlili et al., 2023).

Despite increasing scholarly attention, significant gaps remain within existing literature. Most studies focus on technological implementation, learner outcomes, or general ethical issues without integrating these dimensions into a comprehensive conceptual framework. Furthermore, relatively few investigations examine Human-AI Collaboration specifically from the perspective of Islamic educational philosophy. This limitation highlights the need for interdisciplinary research that combines insights from educational technology, Islamic studies, ethics, and learning sciences. Such an approach can contribute to the development of more nuanced and contextually relevant models of AI integration. Therefore, the present study seeks to address this gap by examining opportunities, ethical concerns, and future directions of Human-AI Collaboration within Islamic education.

### **C. Method**

This study employed a qualitative library research approach to investigate the opportunities, ethical concerns, and future directions of Human-AI Collaboration in Islamic Education. Library research is particularly suitable for examining emerging phenomena that require conceptual clarification, theoretical synthesis, and critical analysis of existing scholarly literature. Rather than collecting primary empirical data, this method focuses on systematically identifying, evaluating, and interpreting relevant academic sources to generate new insights and theoretical understandings. In the context of rapidly evolving AI technologies, library research enables scholars to explore diverse perspectives from education, technology studies, ethics, and Islamic scholarship simultaneously. Furthermore, this approach facilitates a comprehensive examination of contemporary debates surrounding AI integration in educational settings. Therefore, library research was considered the most appropriate methodology for addressing the objectives of this study and constructing a multidisciplinary understanding of Human-AI Collaboration in Islamic Education (Snyder, 2019; Xiao & Watson, 2019).

The study adopted a qualitative interpretive paradigm that emphasizes understanding meanings, concepts, and relationships embedded within scholarly

discourse. Qualitative library research is widely used in educational studies to explore theoretical developments, identify emerging trends, and synthesize findings from diverse sources of knowledge. This paradigm acknowledges that educational phenomena are socially and culturally constructed, requiring contextual and critical interpretation rather than purely quantitative measurement. Human-AI Collaboration in Islamic Education represents a complex phenomenon involving technological, pedagogical, ethical, and religious dimensions that cannot be adequately understood through a single disciplinary perspective. Consequently, an interpretive approach allowed the researcher to analyze how different scholars conceptualize the interaction between artificial intelligence and educational practices. This methodological orientation also enabled a deeper exploration of the ethical and philosophical implications of AI within Islamic educational contexts (Creswell & Poth, 2018; Merriam & Tisdell, 2020).

The data sources for this study consisted primarily of peer-reviewed journal articles, scholarly books, conference proceedings, policy reports, and international organizational publications published between 2019 and 2025. Particular attention was given to publications indexed in reputable databases such as Scopus, Web of Science, ERIC, SpringerLink, ScienceDirect, Taylor & Francis Online, Wiley Online Library, and Google Scholar. The inclusion criteria required sources to address one or more of the following themes: Artificial Intelligence in Education, Human-AI Collaboration, Islamic Education, Educational Technology, Digital Ethics, AI Governance, and Human-Centered Learning. Priority was given to recent publications to ensure that the analysis reflected contemporary developments in AI technologies, especially the emergence of generative AI systems such as ChatGPT and related large language models. Sources that lacked academic rigor, methodological transparency, or relevance to the research objectives were excluded from the review process. This strategy ensured the credibility, relevance, and scholarly quality of the literature examined in this study (Booth et al., 2021; Page et al., 2021).

The data collection process involved a systematic search of academic databases using a combination of keywords and Boolean search operators. Key

search terms included “Artificial Intelligence in Education,” “Human-AI Collaboration,” “Generative AI,” “Islamic Education,” “Educational Ethics,” “AI Literacy,” “Digital Transformation,” “Human-Centered Education,” and “Maqasid al-Shariah and Technology.” Additional searches were conducted using combinations of these terms to identify interdisciplinary studies relevant to the research focus. The search process was iterative, allowing newly identified themes and references to guide subsequent searches. Reference tracking and citation chaining techniques were also employed to locate influential studies frequently cited within the literature. This comprehensive search strategy enabled the researcher to capture both foundational and contemporary contributions to the field (Snyder, 2019; Xiao & Watson, 2019).

Following data collection, the selected literature was subjected to a rigorous process of content analysis. Content analysis is a widely recognized qualitative method that facilitates the systematic examination and interpretation of textual materials. In this study, the analysis involved multiple stages, including literature screening, thematic coding, categorization, synthesis, and interpretation. Initially, all selected sources were reviewed to identify key concepts, arguments, findings, and theoretical perspectives related to Human-AI Collaboration in Islamic Education. Subsequently, recurring themes were coded and grouped into broader analytical categories, including educational opportunities, ethical concerns, pedagogical implications, governance challenges, and future development directions. This thematic approach enabled the identification of patterns, relationships, and gaps within the existing body of knowledge (Krippendorff, 2019; Neuendorf, 2020).

To enhance analytical rigor, the study employed a thematic synthesis framework adapted from qualitative evidence synthesis methodologies. Thematic synthesis allows researchers to integrate findings from diverse studies and generate higher-order conceptual interpretations. Through this process, descriptive themes identified within individual studies were progressively transformed into analytical themes capable of addressing the broader research questions. The analysis sought not only to summarize existing knowledge but also to critically

examine convergences, divergences, and unresolved issues within the literature. Particular attention was devoted to understanding how Islamic educational philosophy and ethical principles interact with contemporary developments in artificial intelligence. This analytical strategy facilitated the construction of a conceptual framework capable of explaining both the potential benefits and ethical challenges of Human-AI Collaboration in Islamic Education (Thomas & Harden, 2008; Braun & Clarke, 2022).

To ensure trustworthiness and scholarly validity, the study applied several strategies commonly recommended in qualitative research. First, data triangulation was achieved through the inclusion of diverse source types, including empirical studies, theoretical works, policy documents, and ethical guidelines. Second, source credibility was maintained by prioritizing peer-reviewed publications and internationally recognized academic references. Third, analytical transparency was enhanced through systematic documentation of the search, selection, coding, and synthesis procedures. Finally, the interpretation of findings was grounded in established theoretical frameworks from educational technology, Islamic educational philosophy, and AI ethics. These measures contributed to the reliability, credibility, and academic rigor of the study while ensuring that the conclusions were firmly supported by contemporary scholarly evidence. As a result, the methodological approach provided a robust foundation for exploring the opportunities, ethical concerns, and future directions of Human-AI Collaboration in Islamic Education (Lincoln & Guba, 1985; Creswell & Poth, 2018).

#### **D. Findings and Discussion**

The literature reviewed indicates that Human-AI Collaboration has emerged as a transformative paradigm in contemporary education, including Islamic educational settings. Rather than positioning artificial intelligence as a substitute for educators, recent scholarship increasingly emphasizes the complementary relationship between human intelligence and machine intelligence. This collaborative paradigm recognizes that educational processes

involve dimensions that extend beyond information transmission, including moral formation, social interaction, and spiritual development. AI systems possess significant capabilities in data processing, personalization, and automation, while human educators contribute contextual understanding, ethical judgment, empathy, and wisdom. Consequently, the integration of AI into Islamic education should be understood as a collaborative endeavor aimed at enhancing educational quality while preserving human agency. This finding is consistent with contemporary educational research advocating for human-centered approaches to AI implementation in learning environments (Holmes et al., 2022; Kasneci et al., 2023).

One of the most frequently identified opportunities concerns the enhancement of personalized learning. AI-powered educational systems can analyze learner behavior, identify individual strengths and weaknesses, and adapt instructional materials according to specific educational needs. Such capabilities allow educators to provide more targeted learning experiences than traditional one-size-fits-all approaches. In Islamic educational contexts, personalized learning can support diverse learning pathways in Qur'anic studies, Arabic language instruction, Islamic jurisprudence, and Islamic history. Furthermore, adaptive technologies can accommodate varying levels of prior knowledge and learning pace among students. As a result, AI contributes to greater learner engagement and educational effectiveness when integrated appropriately within pedagogical frameworks (Zawacki-Richter et al., 2019; Chen et al., 2020).

Another significant opportunity relates to expanding access to educational resources. AI technologies facilitate the creation and dissemination of digital learning materials that can be accessed regardless of geographical location. This capability is particularly valuable in regions where access to qualified Islamic educators and educational institutions remains limited. AI-powered tutoring systems and virtual learning platforms can provide learners with educational support beyond traditional classroom settings. Additionally, translation and language-processing technologies enhance accessibility for learners from diverse linguistic backgrounds. Consequently, Human-AI Collaboration may contribute to

reducing educational inequalities and promoting broader access to Islamic educational opportunities (UNESCO, 2023; Holmes & Tuomi, 2022).

The findings further indicate that AI can support educators in managing administrative and instructional responsibilities. Teachers often devote substantial time to grading, lesson planning, attendance monitoring, and other routine tasks. AI-assisted systems can automate many of these functions, thereby reducing administrative burdens and allowing educators to focus more extensively on mentoring, guidance, and character development. Within Islamic education, this shift is particularly important because teachers are expected to fulfill not only instructional roles but also moral and spiritual responsibilities. By alleviating routine workloads, AI may enable educators to invest greater attention in nurturing students' ethical and spiritual growth. Therefore, AI can serve as a valuable support mechanism rather than a disruptive force within educational institutions (Selwyn, 2019; Alenezi, 2024).

The literature also highlights the capacity of AI to improve assessment and feedback processes. Intelligent assessment systems can evaluate learner performance rapidly and provide individualized feedback. Such systems allow students to identify learning gaps and receive immediate guidance for improvement. In Islamic educational contexts, AI-assisted assessment may facilitate more efficient evaluation of language acquisition, conceptual understanding, and knowledge retention. Nevertheless, scholars caution that assessment should not be reduced solely to measurable cognitive outcomes. Human educators remain essential for evaluating higher-order competencies such as ethical reasoning, spiritual awareness, and moral character. Accordingly, effective assessment practices require collaboration between AI systems and human judgment (Williamson & Eynon, 2020; Bond et al., 2024).

Another opportunity identified in the literature concerns the promotion of lifelong learning. Contemporary societies require individuals to continuously update their knowledge and skills in response to technological and social change. AI-powered learning environments support self-directed learning by providing learners with personalized recommendations and flexible access to educational



content. Such capabilities align with Islamic traditions that emphasize the lifelong pursuit of knowledge. Through Human-AI Collaboration, learners may gain greater autonomy while maintaining access to guidance and support. Consequently, AI can contribute to the development of sustainable learning cultures within Islamic educational communities (Ng et al., 2021; OECD, 2023).

Despite these opportunities, the findings reveal significant ethical concerns associated with AI integration in education. One major concern involves the reliability and accuracy of AI-generated content. Generative AI systems are capable of producing convincing responses that may contain factual inaccuracies, fabricated references, or misleading interpretations. In Islamic education, such errors may have serious consequences because religious knowledge requires precision, authenticity, and contextual understanding. The dissemination of inaccurate religious information can contribute to misunderstanding and confusion among learners. Therefore, human oversight remains indispensable for validating AI-generated educational materials (Tlili et al., 2023; Rudolph et al., 2023).

A related concern involves the issue of epistemic authority. Traditional Islamic education places considerable emphasis on scholarly transmission, teacher mentorship, and intellectual lineage. AI systems challenge conventional patterns of knowledge acquisition by enabling learners to access information independently of human instructors. Although this development expands educational access, it also raises questions regarding the legitimacy, reliability, and contextual interpretation of knowledge. Educational scholars argue that knowledge in Islamic traditions is inseparable from ethical formation and scholarly guidance. Consequently, overreliance on AI may weaken important pedagogical relationships if not carefully managed (Tan, 2023; Halstead, 2022).

The literature further identifies concerns regarding cognitive dependency. The availability of instant AI-generated answers may discourage learners from engaging in critical thinking, independent inquiry, and reflective reasoning. Educational researchers have expressed concern that excessive reliance on AI technologies could undermine intellectual autonomy and problem-solving abilities. Within Islamic educational philosophy, intellectual development

involves active engagement with knowledge rather than passive consumption of information. Reflection (*tafakkur*) and reasoning (*ta'auqul*) are regarded as essential components of learning and spiritual growth. Therefore, educational institutions must ensure that AI serves as a catalyst for deeper learning rather than a substitute for intellectual effort (Kasneci et al., 2023; Cotton et al., 2024).

Privacy and data protection constitute additional ethical concerns highlighted within the literature. AI-powered educational systems often collect extensive amounts of learner data to facilitate personalization and analytics. While such data can improve educational outcomes, it also creates risks related to surveillance, unauthorized access, and misuse of personal information. Islamic ethical principles emphasize the protection of individual dignity, privacy, and trust. Consequently, educational institutions implementing AI technologies must establish robust governance frameworks to safeguard learner information. Transparency and accountability are essential for maintaining trust among educators, students, and stakeholders (Floridi et al., 2021; UNESCO, 2021).

Algorithmic bias represents another significant challenge identified across the literature. AI systems are trained on existing datasets that may reflect social, cultural, linguistic, or ideological biases. These biases can influence educational recommendations, assessments, and content generation in ways that disadvantage particular groups of learners. In Islamic educational contexts, algorithmic bias may distort representations of religious traditions or produce culturally inappropriate content. Therefore, continuous monitoring and evaluation of AI systems are necessary to ensure fairness and inclusivity. Ethical AI implementation requires both technical safeguards and human oversight to mitigate such risks (Jobin et al., 2019; Floridi, 2023).

The findings also reveal concerns regarding the erosion of human interaction in educational settings. Learning is fundamentally a social process that involves dialogue, mentorship, collaboration, and emotional engagement. While AI can simulate conversational interaction, it cannot fully replicate the relational depth of human educational experiences. Islamic educational traditions place particular emphasis on teacher-student relationships as vehicles for character

formation and moral development. Excessive dependence on AI-mediated learning may weaken these relationships and diminish opportunities for interpersonal growth. Therefore, Human-AI Collaboration should prioritize the preservation of meaningful human connections within educational environments (Biesta, 2022; Selwyn, 2019).

A recurring theme within the literature concerns the importance of AI literacy among educators and learners. Effective Human-AI Collaboration requires users to understand the capabilities, limitations, and ethical implications of AI technologies. AI literacy encompasses technical knowledge, critical evaluation skills, and ethical awareness. Without adequate AI literacy, users may either overestimate or underestimate the reliability of AI-generated outputs. Consequently, educational institutions should integrate AI literacy into curricula and professional development programs. Such initiatives are essential for promoting responsible and informed engagement with AI technologies (Long & Magerko, 2020; Ng et al., 2021).

The reviewed studies further suggest that Islamic educational institutions must develop context-specific AI governance frameworks. Existing international guidelines provide valuable foundations, but local cultural, religious, and educational contexts require additional consideration. Governance frameworks should address issues such as content verification, ethical use, privacy protection, accountability, and pedagogical appropriateness. Furthermore, institutional policies should clearly define the respective roles of AI systems and human educators. Such frameworks can help ensure that technological innovation remains aligned with educational objectives and Islamic values. Therefore, governance emerges as a critical factor influencing the success of Human-AI Collaboration initiatives (UNESCO, 2021; Floridi et al., 2021).

The literature consistently emphasizes the need for balancing innovation and tradition. AI offers substantial opportunities for educational improvement, yet its implementation must remain compatible with the philosophical foundations of Islamic education. Educational technologies should support rather than undermine the cultivation of faith, character, wisdom, and social responsibility. This balance

requires ongoing dialogue among educators, technologists, policymakers, and religious scholars. Collaborative engagement can facilitate the development of AI applications that respect both technological advancement and Islamic educational principles. Consequently, successful integration depends on thoughtful adaptation rather than uncritical adoption of emerging technologies (Sahin, 2020; Tan, 2023).

Another important finding concerns the growing relevance of Maqāṣid al-Sharī'ah as an ethical framework for AI integration. Scholars increasingly argue that the objectives of Islamic law provide a comprehensive basis for evaluating technological innovations. AI applications can be assessed according to their impact on intellectual development, moral well-being, social justice, and public benefit. This framework encourages educational stakeholders to consider not only technical effectiveness but also broader ethical and societal consequences. Such an approach aligns with contemporary calls for human-centered and values-driven AI governance. Therefore, Maqāṣid al-Sharī'ah offers significant potential for guiding future developments in Human-AI Collaboration within Islamic education (Auda, 2021; Kamali, 2022).

The findings also indicate that future educational environments are likely to involve increasingly sophisticated forms of Human-AI Collaboration. Emerging technologies such as multimodal AI systems, intelligent tutoring agents, and predictive learning analytics will continue to influence educational practices. However, the literature consistently suggests that technological sophistication alone does not guarantee educational quality.

Human judgment, ethical reflection, and pedagogical expertise will remain indispensable components of effective education. Consequently, future educational models should focus on strengthening collaboration between human educators and intelligent technologies rather than prioritizing automation for its own sake. This perspective reinforces the central premise that AI should enhance, not replace, human educational capacities (Holmes et al., 2022; Kasneci et al., 2023). Finally, the reviewed literature demonstrates that Human-AI Collaboration represents both a significant opportunity and a profound responsibility for Islamic educational institutions. AI technologies possess considerable potential to

improve educational accessibility, personalization, and efficiency. Simultaneously, they introduce ethical, pedagogical, and theological challenges that require careful consideration. Addressing these challenges necessitates interdisciplinary collaboration involving education scholars, AI researchers, policymakers, and Islamic intellectuals. Through such collaboration, Islamic education can harness the benefits of AI while preserving its commitment to human dignity, ethical responsibility, and spiritual development. Therefore, the future of Human-AI Collaboration in Islamic education depends upon the successful integration of technological innovation with enduring educational values (UNESCO, 2023; Floridi, 2023).

**Table 1**  
**Synthesis of Opportunities, Ethical Concerns, and Future Directions of Human-AI Collaboration in Islamic Education**

| Dimension                    | Key Findings                                                                                                           | Implications for Islamic Education                                                                                                                                                          | Relevant Literature                                                     |
|------------------------------|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Personalized Learning        | AI enables adaptive learning pathways tailored to individual learners' needs, learning styles, and performance levels. | Supports differentiated instruction in Qur'anic studies, Arabic language learning, Islamic jurisprudence, and other Islamic disciplines while improving learner engagement and achievement. | Zawacki-Richter et al. (2019); Chen et al. (2020); Holmes et al. (2022) |
| Educational Accessibility    | AI expands access to educational resources regardless of geographical location or socioeconomic conditions.            | Increases opportunities for learners in remote Muslim communities and underserved educational environments.                                                                                 | UNESCO (2023); Holmes & Tuomi (2022)                                    |
| Intelligent Tutoring Systems | AI-powered tutors provide immediate feedback and continuous learning support.                                          | Enhances independent learning while complementing classroom instruction and teacher guidance.                                                                                               | Kasneci et al. (2023); Tlili et al. (2023)                              |

| Dimension                      | Key Findings                                                                                             | Implications for Islamic Education                                                                                                        | Relevant Literature                           |
|--------------------------------|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| Administrative Efficiency      | AI automates repetitive tasks such as grading, scheduling, and data management.                          | Allows educators to dedicate more time to spiritual mentoring, moral guidance, and character development.                                 | Selwyn (2019); Alenezi (2024)                 |
| Data-Driven Decision Making    | AI supports learning analytics and evidence-based educational planning.                                  | Improves institutional effectiveness and educational quality management.                                                                  | Williamson & Eynon (2020); Bond et al. (2024) |
| AI Literacy Development        | AI integration encourages the development of technological and digital competencies.                     | Prepares learners for participation in increasingly AI-mediated societies while maintaining ethical awareness.                            | Long & Magerko (2020); Ng et al. (2021)       |
| Content Reliability Issues     | AI-generated content may contain factual inaccuracies, hallucinations, or fabricated references.         | Creates risks of misinformation, particularly in religious and theological subjects that require interpretive precision.                  | Rudolph et al. (2023); Kasneci et al. (2023)  |
| Erosion of Scholarly Authority | Learners may rely on AI-generated information instead of engaging with qualified scholars and educators. | Potentially weakens traditional teacher-student relationships and scholarly transmission of Islamic knowledge.                            | Tan (2023); Halstead (2022)                   |
| Cognitive Dependency           | Overreliance on AI may reduce critical thinking, reflection, and independent inquiry.                    | Challenges Islamic educational goals related to intellectual development ( <i>ta'addul</i> ) and reflective thinking ( <i>tafakkur</i> ). | Cotton et al. (2024); Kasneci et al. (2023)   |

| Dimension                     | Key Findings                                                                         | Implications for Islamic Education                                                              | Relevant Literature                  |
|-------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------------|
| Privacy and Data Protection   | AI systems collect extensive personal and educational data.                          | Raises ethical concerns regarding confidentiality, trust, and protection of learners' rights.   | Floridi et al. (2021); UNESCO (2021) |
| Algorithmic Bias              | AI systems may reproduce social, cultural, linguistic, or ideological biases.        | Risks generating culturally insensitive or religiously inaccurate educational content.          | Jobin et al. (2019); Floridi (2023)  |
| Human Interaction Reduction   | Excessive AI use may decrease interpersonal engagement and mentorship opportunities. | May weaken character formation, ethical development, and spiritual nurturing processes.         | Biesta (2022); Selwyn (2019)         |
| Ethical AI Governance         | Need for institutional frameworks governing responsible AI use.                      | Supports alignment between technological innovation and Islamic ethical principles.             | UNESCO (2021); Floridi et al. (2021) |
| Maqāṣid al-Sharī'ah Framework | Islamic ethical principles can guide AI development and implementation.              | Ensures AI contributes to the preservation of intellect, religion, justice, and public welfare. | Auda (2021); Kamali (2022)           |
| Human-Centered AI Integration | AI should augment rather than replace human educational roles.                       | Reinforces the importance of teachers as mentors, role models, and moral guides.                | Holmes et al. (2022); Luckin (2018)  |
| Future Human-AI Partnership   | Educational systems will increasingly rely on collaborative intelligence models.     | Encourages balanced integration of technological innovation and Islamic educational values.     | Kasneci et al. (2023); OECD (2023)   |

The findings demonstrate that Human-AI Collaboration should not be interpreted as a technological revolution that replaces educators, but rather as a pedagogical transformation that redefines the relationship between human intelligence and artificial intelligence. This distinction is particularly important within Islamic education because the educational process encompasses intellectual, moral, spiritual, and social dimensions. While AI systems excel in processing information and generating content, they remain incapable of replicating the ethical wisdom, emotional intelligence, and spiritual mentorship traditionally provided by educators. Consequently, the future of Islamic education depends not on the substitution of teachers but on the development of collaborative frameworks that leverage the strengths of both humans and intelligent technologies. This interpretation aligns with the human-centered educational paradigm that positions technology as a means of enhancing human flourishing rather than replacing human agency (Holmes et al., 2022; Biesta, 2022).

One of the most significant opportunities identified in this study concerns personalized learning. The ability of AI systems to analyze learner data and adapt educational content offers substantial benefits for Islamic educational institutions seeking to accommodate diverse student needs. Traditional classroom environments often struggle to address differences in learning pace, prior knowledge, and cognitive preferences. AI-assisted learning environments can provide individualized pathways that improve learner engagement and academic performance. However, personalization should not be understood solely as a technical process. Within Islamic educational philosophy, personalization must also consider moral, spiritual, and emotional development, ensuring that educational experiences contribute to the holistic growth of learners rather than merely improving academic outcomes (Chen et al., 2020; Sahin, 2020).

The findings further suggest that AI has considerable potential to democratize access to Islamic education. Historically, access to qualified scholars and educational resources has been unevenly distributed across regions and communities. AI-powered educational platforms can reduce geographical barriers



and provide learners with opportunities to engage with educational content regardless of their location. This development aligns with the Islamic principle that knowledge should be accessible to all individuals seeking intellectual and spiritual growth. Nevertheless, accessibility alone does not guarantee educational quality. Educational institutions must ensure that AI-mediated learning environments maintain standards of accuracy, authenticity, and ethical responsibility. Therefore, technological accessibility should be accompanied by rigorous content validation and scholarly oversight (UNESCO, 2023; Tan, 2023).

A particularly important issue emerging from the findings concerns the preservation of scholarly authority in Islamic education. Classical Islamic educational traditions are characterized by strong teacher-student relationships and carefully maintained chains of knowledge transmission. These traditions emphasize not only the acquisition of information but also the cultivation of character, discipline, and ethical responsibility. AI technologies challenge these traditions by providing direct access to vast quantities of information without requiring engagement with human mentors. While this development offers certain educational advantages, it also raises concerns regarding the contextual interpretation and authenticity of religious knowledge. Consequently, AI should be positioned as a supplementary educational resource rather than a replacement for qualified scholars and educators (Halstead, 2022; Tan, 2023).

The issue of cognitive dependency represents another significant challenge for Human-AI Collaboration in Islamic education. Contemporary educational research increasingly warns that excessive reliance on AI-generated responses may discourage critical thinking and independent inquiry. Islamic intellectual traditions have historically emphasized reflection, reasoning, and contemplation as essential components of learning. The Qur'anic emphasis on *tafakkur*, *tadabbur*, and *ta'aqqul* underscores the importance of active intellectual engagement in the pursuit of knowledge. Therefore, educational institutions must carefully design AI-supported learning activities that encourage critical reflection rather than passive consumption of information. Such an approach ensures that AI

serves as a catalyst for intellectual growth rather than a source of cognitive dependency (Cotton et al., 2024; Kasneci et al., 2023).

The ethical implications of AI-generated content warrant particular attention within Islamic educational contexts. Religious education requires a high degree of accuracy because errors in theological interpretation can influence beliefs, practices, and ethical decision-making. Generative AI systems have demonstrated impressive capabilities in producing coherent explanations; however, they remain susceptible to hallucinations, factual inaccuracies, and contextual misunderstandings. These limitations necessitate ongoing human supervision and content verification. The findings suggest that educators should adopt a critical stance toward AI-generated content and encourage learners to verify information through authoritative scholarly sources. Such practices are consistent with the Islamic epistemological principle of *tabayyun*, which emphasizes verification and careful examination of information before acceptance (Tlili et al., 2023; Rudolph et al., 2023).

The study also highlights the relevance of Islamic ethical frameworks in addressing contemporary AI challenges. International AI ethics guidelines often emphasize principles such as transparency, accountability, fairness, and privacy. While these principles provide valuable foundations, Islamic ethical thought contributes additional dimensions related to spiritual responsibility, public welfare, and moral accountability before God. The concept of *maqāṣid al-sharī'ah* offers a particularly useful framework for evaluating AI technologies according to their impact on individuals and society. By focusing on the preservation of religion, intellect, life, lineage, and property, this framework enables educational institutions to assess technological innovations from a holistic ethical perspective. Consequently, Islamic ethics can enrich global discussions concerning responsible AI governance (Auda, 2021; Kamali, 2022).

Another important implication concerns the evolving role of educators in AI-mediated learning environments. The findings indicate that teachers will become increasingly important as facilitators, mentors, ethical guides, and critical evaluators of information. AI can support instructional processes, but it cannot

replace the relational and moral dimensions of teaching. In Islamic educational traditions, teachers serve not merely as transmitters of knowledge but also as exemplars of ethical conduct and spiritual maturity. This role remains fundamentally human and cannot be automated through technological systems. Therefore, professional development programs should focus on equipping educators with both AI literacy and ethical competencies necessary for effective Human-AI Collaboration (Alenezi, 2024; Selwyn, 2019).

The findings also reveal that AI literacy should be considered a core competency within contemporary Islamic education. Learners must understand how AI systems function, recognize their limitations, and evaluate their outputs critically. AI literacy extends beyond technical proficiency to include ethical awareness, digital responsibility, and critical reasoning. Such competencies are essential for enabling learners to navigate increasingly complex technological environments while maintaining intellectual independence and moral integrity. Consequently, AI literacy should be integrated into curricula at multiple educational levels and aligned with broader objectives of Islamic character education (Ng et al., 2021; Long & Magerko, 2020).

Ultimately, the future of Human-AI Collaboration in Islamic education depends on achieving a balance between innovation and tradition. AI offers unprecedented opportunities to improve educational accessibility, personalization, and efficiency. At the same time, its implementation introduces ethical, pedagogical, and theological challenges that cannot be ignored. Sustainable integration requires interdisciplinary collaboration among educators, Islamic scholars, policymakers, and technology developers. Such collaboration can ensure that AI serves the broader goals of Islamic education, including the cultivation of knowledge, character, wisdom, and social responsibility. Therefore, the most promising future direction involves developing human-centered and values-driven models of AI integration that strengthen rather than diminish the human dimensions of education (Holmes et al., 2022; Floridi, 2023).

The findings of this study indicate that Human-AI Collaboration should be conceptualized as a form of collaborative intelligence in which humans and

artificial intelligence contribute complementary strengths to the educational process. This perspective challenges deterministic narratives that portray AI either as a revolutionary solution to all educational problems or as an existential threat to the teaching profession. Instead, the evidence suggests that educational outcomes depend largely on how AI is designed, implemented, and governed within specific educational contexts. In Islamic education, where learning involves the integration of knowledge, values, and character formation, collaborative intelligence offers a more appropriate framework than automation-centered approaches. Such a framework acknowledges that technology can enhance educational effectiveness while preserving the centrality of human agency. Therefore, the future success of AI integration depends on maintaining a balanced relationship between technological capabilities and human educational responsibilities (Luckin, 2018; Holmes et al., 2022).

An important implication of the findings concerns the transformation of pedagogical practices in Islamic education. Traditional instructional models have often relied on teacher-centered approaches characterized by one-way knowledge transmission. The emergence of AI-powered educational tools creates opportunities for more interactive, learner-centered, and adaptive learning experiences. Students can engage with educational content through personalized pathways, receive immediate feedback, and explore topics independently. However, the pedagogical value of these innovations depends on their alignment with educational objectives rather than their technological sophistication alone. Islamic education seeks to develop not only knowledgeable individuals but also morally responsible and spiritually conscious persons. Consequently, pedagogical innovation should be evaluated according to its contribution to holistic human development rather than merely its efficiency or novelty (Biesta, 2022; Sahin, 2020).

The discussion also reveals that AI has the potential to support the revitalization of Islamic educational institutions in the digital era. Many Islamic schools, madrasahs, and higher education institutions face challenges related to resource limitations, curriculum modernization, and educational accessibility. AI

technologies can assist these institutions in expanding learning opportunities, improving administrative efficiency, and enhancing instructional quality. Furthermore, digital platforms supported by AI may facilitate collaboration among educators, scholars, and learners across national and cultural boundaries. Such developments can contribute to the globalization of Islamic educational knowledge while preserving local educational identities. Therefore, AI should be viewed not merely as a technological tool but also as a strategic resource for institutional development and educational renewal (UNESCO, 2023; Alenezi, 2024).

Nevertheless, the findings underscore the importance of safeguarding the humanistic foundations of education. Educational interactions involve emotional support, mentorship, empathy, and ethical guidance that remain beyond the capabilities of contemporary AI systems. While AI can simulate conversational engagement, it cannot genuinely experience compassion, moral responsibility, or spiritual awareness. These limitations are particularly significant in Islamic education, where educators are expected to function as role models who embody the values they teach. The concept of *uswah hasanah* (good example) highlights the importance of personal example in the educational process. Consequently, AI should complement rather than replace interpersonal relationships that contribute to character formation and ethical development (Halstead, 2022; Selwyn, 2019).

Another critical issue emerging from the analysis concerns the nature of knowledge itself in the age of artificial intelligence. Islamic epistemology traditionally distinguishes between information, knowledge, wisdom, and understanding. AI systems are exceptionally effective at processing and generating information, yet they lack the experiential and moral dimensions associated with wisdom. Educational institutions must therefore avoid conflating information abundance with genuine understanding. Learners should be encouraged to engage critically with AI-generated content, reflect upon its implications, and connect it to broader ethical and spiritual considerations. Such an approach ensures that technological advancement contributes to the cultivation of wisdom rather than merely increasing access to information. This distinction is

fundamental for preserving the philosophical integrity of Islamic education in technologically mediated learning environments (Al-Attas, 2018; Kamali, 2022).

The ethical challenges identified in this study also point to the necessity of developing robust institutional governance mechanisms. The implementation of AI technologies without clear ethical guidelines may create risks related to misinformation, privacy violations, algorithmic bias, and unequal educational opportunities. Educational institutions must therefore establish policies governing data collection, content verification, transparency, and accountability. Such policies should be informed by both international standards of AI ethics and the ethical principles embedded within Islamic intellectual traditions. Furthermore, governance frameworks should involve multiple stakeholders, including educators, students, religious scholars, technology experts, and policymakers. Through inclusive governance processes, institutions can ensure that AI technologies are implemented in ways that promote educational quality and social responsibility (Floridi et al., 2021; UNESCO, 2021).

The findings further suggest that *Maqāṣid al-Sharī'ah* provides a particularly valuable framework for evaluating educational technologies. Unlike purely technical evaluation models, *maqāṣid*-based approaches consider the broader impact of innovation on human well-being and societal development. The preservation of intellect (*ḥifẓ al-'aql*) is especially relevant in discussions concerning AI and education because it emphasizes the importance of critical thinking, intellectual autonomy, and responsible knowledge acquisition. Similarly, the preservation of religion (*ḥifẓ al-dīn*) highlights the need for accuracy and integrity in religious education. By incorporating *maqāṣid* principles into technology governance, Islamic educational institutions can develop more holistic approaches to AI integration. Such approaches contribute to the creation of educational environments that are both technologically advanced and ethically grounded (Auda, 2021; Kamali, 2022).

A significant future direction identified in this study concerns the development of AI-enhanced Islamic pedagogies. Existing educational models often treat technology as an external addition to traditional teaching methods

rather than as an integral component of pedagogical design. Future research should explore how Islamic educational principles can inform the design of AI-supported learning environments. Such pedagogies would integrate technological innovation with values such as justice, compassion, responsibility, and lifelong learning. Moreover, they would emphasize the role of educators as facilitators of intellectual and spiritual growth rather than mere transmitters of information. Developing these pedagogical models represents an important area for future scholarly inquiry and practical experimentation (Holmes & Tuomi, 2022; Tan, 2023).

The study also highlights the importance of interdisciplinary collaboration in shaping the future of Human-AI Collaboration in Islamic education. AI-related challenges cannot be addressed effectively by educators or technologists working in isolation. Instead, meaningful solutions require contributions from scholars of education, computer science, ethics, Islamic studies, psychology, and public policy. Interdisciplinary dialogue can facilitate the development of AI systems that are technically robust, educationally effective, and ethically responsible. Furthermore, such collaboration can help bridge the gap between technological innovation and educational practice. Therefore, future initiatives should prioritize partnerships that encourage knowledge exchange across disciplinary and institutional boundaries (Floridi, 2023; Bond et al., 2024).

Another future direction involves strengthening AI literacy among both educators and learners. The findings indicate that responsible AI use depends not only on technological access but also on users' ability to understand and critically evaluate AI systems. AI literacy programs should include technical, ethical, pedagogical, and social dimensions. In Islamic educational settings, AI literacy should also incorporate discussions concerning moral responsibility, digital ethics, and the Islamic worldview. Such comprehensive literacy initiatives can empower learners to engage with AI technologies thoughtfully and responsibly. Consequently, AI literacy should become a strategic priority for educational institutions seeking to prepare students for participation in increasingly digital and AI-mediated societies (Ng et al., 2021; Long & Magerko, 2020).

The emergence of generative AI further reinforces the need to reconsider conventional assessment practices. Traditional assessments often emphasize information recall and procedural knowledge, areas in which AI systems can perform exceptionally well. Educational institutions must therefore develop assessment models that prioritize higher-order thinking, creativity, ethical reasoning, and authentic problem-solving. Such competencies are more resistant to automation and remain closely associated with human intellectual capacities. In Islamic education, assessment should also evaluate moral understanding, reflective thinking, and the application of values in real-world contexts. Consequently, AI integration may serve as a catalyst for broader educational reforms that promote deeper and more meaningful forms of learning (Cotton et al., 2024; Kasneci et al., 2023).

Finally, the findings suggest that the future of Islamic education in the age of artificial intelligence should be guided by a vision of technological humanism. This vision recognizes the transformative potential of AI while affirming the enduring importance of human dignity, moral responsibility, and spiritual development. Technology should serve humanity rather than redefine humanity according to technological imperatives. Within Islamic educational philosophy, this principle resonates strongly with the concept of humans as *khalifah* (vicegerents) entrusted with the responsible stewardship of knowledge and resources. Human-AI Collaboration should therefore be understood as a means of empowering individuals and communities to pursue intellectual excellence, ethical conduct, and social well-being. By embracing this vision, Islamic educational institutions can navigate the challenges and opportunities of the AI era while remaining faithful to their foundational values and educational mission (Auda, 2021; Floridi, 2023).



### **Conclusion**

The findings of this study demonstrate that Human-AI Collaboration represents a significant opportunity for advancing Islamic education in the digital age. Artificial intelligence offers considerable potential to enhance personalized learning, expand educational accessibility, improve instructional efficiency, and support data-informed decision-making. These capabilities can contribute to the modernization and strengthening of Islamic educational institutions while enabling learners to access knowledge more effectively. However, the study also reveals that AI integration introduces substantial ethical, pedagogical, and epistemological challenges, including concerns related to content accuracy, cognitive dependency, privacy protection, algorithmic bias, and the preservation of teacher-student relationships. Consequently, AI should not be viewed as a replacement for human educators but rather as a complementary tool that supports human-centered educational processes. The successful integration of AI therefore depends on maintaining a balanced relationship between technological innovation and the core objectives of Islamic education. Furthermore, the study highlights the importance of grounding Human-AI Collaboration within Islamic ethical and educational frameworks. Principles derived from Islamic educational philosophy and *Maqāṣid al-Sharī'ah* provide valuable guidance for ensuring that technological innovation remains aligned with human dignity, intellectual development, moral responsibility, and public welfare. Future educational policies and practices should prioritize ethical AI governance, AI literacy development, interdisciplinary collaboration, and the design of pedagogical models that integrate technological capabilities with Islamic values. As AI technologies continue to evolve, Islamic educational institutions have the opportunity to become active contributors to global discussions on responsible and human-centered AI. Ultimately, the future of Human-AI Collaboration in Islamic education lies not in technological determinism but in the deliberate cultivation of educational environments where artificial intelligence enhances, rather than diminishes, the intellectual, moral, and spiritual growth of learners.

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