
Artificial Intelligence Literacy and Islamic Education: Developing an Ethical Learning Framework for Higher Education in Nigeria

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Abstract

The rapid advancement of Artificial Intelligence (AI) is transforming higher education by reshaping teaching, learning, assessment, and knowledge production. While AI offers significant opportunities to improve educational effectiveness and accessibility, it also raises critical ethical concerns related to academic integrity, data privacy, bias, accountability, and responsible technology use. In the context of Islamic higher education, these challenges necessitate the development of educational frameworks that integrate technological competencies with ethical and moral values. This study aims to develop an ethical learning framework that combines AI literacy and Islamic educational principles in higher education institutions in Nigeria. Using a qualitative approach based on literature review and conceptual analysis, the study examines contemporary perspectives on AI literacy, Islamic educational philosophy, character formation, and ethical learning practices. The findings indicate that AI literacy should extend beyond technical skills to include critical thinking, ethical reasoning, digital responsibility, and awareness of the social implications of AI technologies. Furthermore, Islamic educational values such as honesty (*amanah*), justice (*adl*), responsibility (*mas'uliyah*), wisdom (*hikmah*), and accountability (*muhasabah*) provide a strong ethical foundation for guiding students' interactions with AI-based systems. The proposed framework emphasizes the integration of technological competence, moral character development, ethical decision-making, and sustainable digital citizenship. The study argues that Islamic higher education institutions in Nigeria have a strategic role in preparing graduates who are not only technologically competent but also ethically responsible in navigating the challenges of the digital era. This framework contributes to the growing discourse on AI ethics in education by offering a contextually grounded model that aligns technological innovation with religious and moral values.

Keywords

Artificial Intelligence Literacy; Islamic Education; Ethical Learning Framework; Higher Education; Nigeria; AI Ethics; Character Education; Digital Citizenship; Educational Technology; Moral Development.



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INTRODUCTION

The emergence of Artificial Intelligence (AI) has become one of the most transformative developments of the twenty-first century, significantly influencing various sectors of society, including education.¹ AI technologies have reshaped how knowledge is created, accessed, analyzed, and disseminated, thereby transforming traditional educational practices into more dynamic, personalized, and technology-driven learning experiences. Universities around the world are increasingly adopting AI-powered tools to enhance teaching effectiveness, improve administrative efficiency, facilitate research activities, and support student learning outcomes. Technologies such as intelligent tutoring systems, adaptive learning platforms, automated assessment tools, virtual assistants, and generative AI applications have introduced new opportunities for innovation in higher education. As a result, AI literacy has emerged as a critical competency that students must acquire to participate effectively in contemporary academic, professional, and social environments.

AI literacy refers not only to the ability to understand and use AI technologies but also to the capacity to critically evaluate their functions, limitations, ethical implications, and societal consequences.² Contemporary scholars argue that AI literacy encompasses a combination of technical knowledge, digital competencies, critical thinking skills, ethical awareness, and responsible decision-making. As AI systems become increasingly integrated into everyday life, individuals must be equipped with the knowledge and skills necessary to interact with these technologies responsibly. Consequently, educational institutions face growing pressure to develop curricula and learning environments that prepare students for a future characterized by rapid technological advancement and continuous digital transformation.

Despite the considerable benefits offered by AI technologies, their increasing adoption has generated numerous ethical concerns. Issues related to academic dishonesty, algorithmic bias, misinformation, privacy violations, intellectual property rights, surveillance, and overreliance on automated systems have become prominent topics of discussion among educators and

¹ Aynur Erdoğan Coşkun, "Conceptions of Society and Education Paradigm in the Twenty-First Century," in *Educational Theory in the 21st Century: Science, Technology, Society and Education* (Springer, 2022), 141–71; Mehmet Çağlar, "21st-Century Competencies in the Age of Artificial Intelligence: Reconstructing Education Systems in the Context of Global Transformations," *The Online Journal of New Horizons in Education*-January 16, no. 1 (2026): 1–11.

² Thomas K F Chiu et al., "What Are Artificial Intelligence Literacy and Competency? A Comprehensive Framework to Support Them," *Computers and Education Open* 6 (2024): 100171; Davy Tsz Kit Ng et al., "Conceptualizing AI Literacy: An Exploratory Review," *Computers and Education: Artificial Intelligence* 2 (2021): 100041.

policymakers. The widespread use of generative AI tools, in particular, has raised questions about originality, academic integrity, and the role of human judgment in educational processes. Students may utilize AI systems to complete assignments, generate essays, or solve complex problems without fully engaging in critical learning processes. Such practices can undermine educational objectives and weaken the development of essential intellectual and moral capacities. Therefore, the integration of AI into higher education requires a balanced approach that combines technological innovation with ethical guidance and character development.

Within this context, Islamic education offers a valuable framework for addressing the ethical challenges associated with AI adoption. Islamic educational philosophy has historically emphasized the harmonious development of intellectual, spiritual, moral, and social dimensions of human life. Education in Islam is not merely concerned with the transmission of knowledge but also with the cultivation of virtuous character, ethical behavior, and social responsibility. Classical and contemporary Islamic scholars consistently emphasize that knowledge should be accompanied by wisdom, accountability, and moral consciousness. Consequently, the integration of AI literacy into Islamic education provides an opportunity to develop learners who are technologically competent while remaining guided by ethical and spiritual values.

Several fundamental Islamic values possess significant relevance to contemporary discussions concerning AI ethics. The concept of *amanah* (trustworthiness) emphasizes honesty and responsibility in the use of knowledge and technology. The principle of *adl* (justice) encourages fairness and equity in decision-making processes, including those mediated by AI systems. The value of *ihsan* (excellence) promotes the pursuit of quality and ethical conduct in all human activities. Similarly, *mas'uliyah* (responsibility) and *muhasabah* (self-accountability) encourage individuals to reflect upon the consequences of their actions and maintain ethical standards in personal and professional life. These principles provide a moral foundation that can guide students in navigating the opportunities and challenges presented by AI technologies.³

The relevance of this discussion is particularly significant in Nigeria, a country characterized by a large youth population, expanding digital infrastructure, and a growing higher education sector. Nigeria has witnessed substantial growth in information and communication

³ Benny Prasetya, "Spiritual Foundations of Islamic Educational Leadership: Revisiting Al-Ghazali, Ibn Taymiyyah, and Syed Naquib Al-Attas," *Al-Hikmah: International Journal of Islamic Studies* 1, no. 1 (2025): 39–54; Moses Adeleke Adeoye, "Integrating Islamic Religious Values in Coordinated Early Childhood Education Systems for Achieving Sustainable Development Goals (SDGs)," *ASEAN Journal of Religion, Education, and Society* 5, no. 1 (2026): 27–36.

technology adoption over the past decade, creating new opportunities for educational innovation and economic development. At the same time, Nigerian universities face challenges related to educational quality, digital inequality, academic integrity, and graduate employability. As AI technologies become increasingly accessible, higher education institutions must ensure that students develop not only technical competencies but also ethical awareness regarding the responsible use of digital technologies.

Islamic higher education institutions in Nigeria occupy a unique position in addressing these challenges. These institutions combine religious values with academic learning and therefore possess the potential to develop educational models that integrate technological competence with moral and spiritual development. However, existing discussions regarding AI integration in higher education often focus primarily on technological capabilities, digital skills, and innovation outcomes while giving limited attention to ethical and religious dimensions. Similarly, studies on Islamic education frequently emphasize moral development and character formation but rarely address the implications of emerging AI technologies. This gap highlights the need for a comprehensive framework capable of connecting AI literacy with Islamic educational values.

The growing importance of ethical AI literacy has attracted increasing scholarly attention worldwide. Researchers have emphasized that future educational systems should move beyond teaching students how to use technology and instead focus on helping them understand its broader social, ethical, and cultural implications. Educational institutions are expected to prepare graduates who can critically evaluate technological innovations, identify ethical risks, and contribute to sustainable societal development. Such expectations align closely with the objectives of Islamic education, which seeks to develop individuals who contribute positively to society while upholding moral principles.

This study responds to these challenges by proposing an ethical learning framework that integrates AI literacy and Islamic educational values within the context of higher education in Nigeria. Rather than viewing technology and ethics as separate domains, the study argues that both dimensions should be addressed simultaneously to support holistic student development. The proposed framework seeks to balance technological proficiency with character education, ethical reasoning, social responsibility, and spiritual awareness. Through this approach, students can become responsible users and creators of AI technologies while maintaining commitment to ethical principles and societal well-being.

Ultimately, the integration of AI literacy and Islamic education represents a strategic pathway toward preparing future generations for the complexities of the digital age. As AI continues to influence educational systems, labor markets, and social interactions, universities must develop learning models that cultivate both intellectual excellence and moral integrity. By exploring the intersection of AI literacy, ethics, and Islamic educational philosophy, this study contributes to ongoing discussions concerning the future of higher education and offers practical insights for educators, policymakers, and institutional leaders seeking to promote responsible technological innovation in Nigeria and beyond.

METHOD

This study employed a qualitative research approach based on a conceptual and literature-based methodology. A qualitative design was considered appropriate because the study aimed to explore, interpret, and synthesize theoretical perspectives related to artificial intelligence literacy, Islamic education, ethics, character development, and higher education. Unlike quantitative studies that focus on numerical measurement and statistical relationships, qualitative inquiry emphasizes understanding meanings, concepts, values, and contextual interpretations. This approach enabled the researchers to develop a comprehensive ethical learning framework by examining existing knowledge and identifying conceptual connections between AI literacy and Islamic educational principles.

The research was conducted through an extensive review of scholarly literature obtained from reputable academic sources. Relevant publications were identified from peer-reviewed journals, conference proceedings, academic books, policy reports, and institutional publications focusing on artificial intelligence in education, digital literacy, AI ethics, Islamic educational philosophy, character education, and higher education development. Particular attention was given to studies published within the last decade to ensure that the analysis reflected contemporary discussions surrounding technological transformation and educational innovation. However, classical and foundational works in Islamic educational thought were also included to provide a strong theoretical foundation for the ethical dimensions of the proposed framework.

Data collection involved a systematic process of identifying, selecting, and reviewing relevant literature. Sources were selected based on their academic relevance, credibility, and contribution to the themes under investigation. The literature review focused on several key areas, including definitions and dimensions of AI literacy, ethical challenges associated with AI adoption

in higher education, principles of Islamic education, character formation processes, and emerging models of ethical learning. The collected literature was then organized according to thematic categories to facilitate analysis and interpretation.

Data analysis was conducted using thematic analysis. This analytical technique enabled the researchers to identify recurring concepts, patterns, relationships, and themes across different sources of literature. The analysis began with repeated reading of the collected materials to gain a comprehensive understanding of the content. Subsequently, key concepts and ideas were coded and categorized into broader thematic groups. These themes included technological competence, ethical awareness, critical thinking, digital responsibility, Islamic moral values, character education, and sustainable learning practices. Through this process, the researchers identified areas of convergence between contemporary AI literacy frameworks and Islamic educational principles.

To enhance the credibility and rigor of the study, a process of theoretical triangulation was employed. Multiple perspectives from educational technology, ethics, Islamic studies, and higher education research were compared and integrated throughout the analysis. This approach allowed the researchers to examine the phenomenon from different viewpoints and reduce the risk of relying on a single theoretical perspective. In addition, the study maintained transparency by clearly documenting the processes of literature selection, thematic coding, and conceptual synthesis.

The development of the ethical learning framework represented the final stage of the research process. Based on the findings of the thematic analysis, the researchers constructed a conceptual model that integrates AI literacy competencies with Islamic ethical values. The framework was designed to address cognitive, ethical, social, and spiritual dimensions of learning, thereby promoting a holistic approach to student development in higher education. The model emphasizes responsible technology use, moral accountability, critical engagement with AI systems, and the cultivation of character traits that support ethical decision-making in digital environments.

Although this study did not involve direct fieldwork or human participants, ethical considerations remained important throughout the research process. All sources were appropriately acknowledged, and academic integrity principles were strictly observed. The study aimed to contribute responsibly to scholarly discussions by presenting balanced interpretations

supported by credible evidence. Through this qualitative conceptual approach, the research provides a theoretically grounded framework that may guide future empirical investigations and educational practices concerning AI literacy and Islamic education in Nigerian higher education institutions.

RESULTS AND DISCUSSION

The findings of this study reveal that artificial intelligence literacy and Islamic education are not mutually exclusive domains but complementary components that can collectively contribute to the development of ethical, responsible, and future-ready graduates in higher education. The analysis of contemporary literature indicates that AI literacy has become an essential educational competency in the twenty-first century. Universities are increasingly expected to prepare students not only to use AI-powered technologies but also to understand their implications for society, ethics, and human development.⁴ However, the review also demonstrates that many existing AI literacy initiatives primarily emphasize technical proficiency while paying limited attention to moral and ethical considerations. This imbalance creates a risk that technological competence may advance more rapidly than ethical awareness, potentially leading to irresponsible or harmful uses of AI.

The findings suggest that Islamic education provides a valuable ethical foundation for addressing this challenge. Islamic educational philosophy emphasizes the holistic development of human beings through the integration of knowledge, morality, spirituality, and social responsibility.⁵ Unlike purely technical approaches to digital education, Islamic education seeks to cultivate individuals who are capable of applying knowledge in ways that benefit society while adhering to ethical principles. This perspective aligns closely with contemporary calls for responsible AI use and ethical digital citizenship. The integration of AI literacy and Islamic educational values therefore offers a balanced approach that combines technological advancement with moral guidance.

A significant finding emerging from the analysis concerns the role of ethical values in shaping students' interactions with AI technologies. The literature consistently highlights concerns

⁴ Anil Balan, "Examining the Ethical and Sustainability Challenges of Legal Education's AI Revolution," *International Journal of the Legal Profession* 31, no. 3 (2024): 323–48; Anil Balan, *AI and Legal Education: Ethical and Sustainable Approaches* (Routledge, 2025).

⁵ Satheesh K P Kunjumon, "The Role of Spirituality: Towards a Biblical Model of Collective Social Responsibility (CSR)," *International Journal of Research and Innovation in Social Science* 9, no. 5 (2025): 1718–31; Iyad Abumoghli, "The Role of Religions, Values, Ethics, and Spiritual Responsibility in Environmental Governance and Achieving the Sustainable Development Agenda," *Religion and Development* 2, no. 3 (2023): 485–95.

related to academic dishonesty, misinformation, plagiarism, algorithmic bias, privacy violations, and excessive dependence on automated systems. These concerns have become particularly relevant with the rapid expansion of generative AI tools capable of producing essays, reports, and various forms of academic content. While such technologies can support learning and productivity, they may also encourage shortcuts that weaken critical thinking and academic integrity. In this context, Islamic values such as *amanah* (trustworthiness), *sidq* (truthfulness), and *mas'uliyah* (responsibility) provide important ethical safeguards. Students who internalize these values are more likely to use AI as a supportive educational tool rather than a substitute for genuine learning and intellectual effort.

The findings further indicate that AI literacy should be understood as a multidimensional competency. Beyond technical knowledge, students require critical thinking skills that enable them to evaluate AI-generated information, recognize biases, question automated outputs, and make informed decisions. The reviewed literature demonstrates that many users tend to accept AI-generated responses without sufficient verification, creating potential risks related to misinformation and poor judgment. Islamic educational traditions encourage critical reflection, intellectual inquiry, and the pursuit of wisdom (*hikmah*), which complement modern concepts of digital literacy. By integrating these perspectives, higher education institutions can encourage students to become reflective learners who engage critically with technology rather than relying on it uncritically.

Another important finding relates to the concept of justice and fairness in AI applications. Contemporary discussions on AI ethics frequently address issues of algorithmic discrimination, unequal access to technology, and the reproduction of social inequalities through automated systems. These concerns are particularly relevant in developing countries such as Nigeria, where disparities in digital access and educational resources remain significant. Islamic teachings emphasize *adl* (justice) as a fundamental principle governing individual and collective behavior. The incorporation of this principle into AI literacy education can help students understand the importance of fairness, inclusivity, and social responsibility when designing, evaluating, or using technological systems. Such awareness is essential for ensuring that technological innovation contributes to social development rather than reinforcing existing inequalities.

The analysis also reveals the importance of character education in the era of artificial intelligence. Rapid technological advancement has transformed educational environments, but it

has not diminished the importance of human values. On the contrary, the increasing presence of AI in everyday life makes character development even more essential. Higher education institutions are expected to prepare graduates who possess integrity, empathy, accountability, and ethical judgment. Islamic education has long emphasized these dimensions through the cultivation of moral virtues and responsible conduct. The findings suggest that integrating character education into AI literacy programs can strengthen students' ability to navigate complex ethical dilemmas associated with emerging technologies.

Within the Nigerian context, the proposed framework appears particularly relevant. Nigeria is experiencing rapid digital transformation alongside significant educational challenges, including graduate unemployment, technological inequality, and concerns regarding academic quality. As universities increasingly adopt digital technologies, there is a growing need to ensure that students possess both technical competence and ethical awareness. Islamic higher education institutions are uniquely positioned to address this need because they combine religious values with academic instruction. The findings suggest that these institutions can serve as important models for integrating AI literacy with ethical and character-based education.

The proposed ethical learning framework emerging from this study consists of four interconnected dimensions. The first dimension involves technological competence, which includes understanding AI concepts, applications, opportunities, and limitations. The second dimension focuses on ethical reasoning, enabling students to evaluate the moral implications of technology use and make responsible decisions. The third dimension emphasizes character formation through the cultivation of honesty, responsibility, justice, accountability, and self-discipline.⁶ The fourth dimension concerns social responsibility and sustainable digital citizenship, encouraging students to use technology in ways that contribute positively to society and support sustainable development goals. Together, these dimensions provide a comprehensive approach to preparing students for participation in increasingly technology-driven environments.

The findings further demonstrate that effective AI literacy education requires institutional commitment. Universities must move beyond viewing AI solely as a technological tool and recognize its broader social, ethical, and educational implications. Curriculum development

⁶ Qing Miao and Chibuike Nduneseokwu, "Environmental Philosophy and Ethics," in *Environmental Leadership in a VUCA Era: An Interdisciplinary Handbook* (Springer, 2025), 121–57; Dexin Wang and Shijun Li, "Social Conflicts and Their Resolution Paths in the Commercialized Renewal of Old Urban Communities in China under the Perspective of Public Value," *Journal of Urban Management* 14, no. 2 (2025): 402–17; Marco Innocenti, "Reflexivity and AI Start-Ups: A Collective Virtue for Dynamic Teams," *Journal of Responsible Technology* 22 (2025): 100115.

should integrate discussions of ethics, responsibility, and digital citizenship alongside technical instruction. Faculty members also play a critical role in modeling ethical technology use and facilitating discussions regarding the opportunities and risks associated with AI. Institutional policies promoting academic integrity and responsible AI use are equally important in creating educational cultures that support ethical learning.

Overall, the results indicate that the future of higher education requires a more integrated educational paradigm in which technological innovation and ethical development are treated as complementary objectives. The combination of AI literacy and Islamic educational values provides a meaningful framework for addressing contemporary educational challenges. Rather than positioning technology as a threat to moral development, this approach recognizes the possibility of using technological advancement as a catalyst for strengthening ethical awareness, critical thinking, and social responsibility. Through such integration, higher education institutions can contribute to the development of graduates who are not only technologically capable but also morally grounded and socially responsible citizens.

CONCLUSION

This study explored the relationship between artificial intelligence literacy and Islamic education and proposed an ethical learning framework for higher education in Nigeria. The findings demonstrate that AI literacy should not be limited to technical skills and operational knowledge but must also encompass ethical awareness, critical thinking, social responsibility, and moral accountability. As artificial intelligence becomes increasingly integrated into educational systems and everyday life, higher education institutions face the challenge of preparing students who can engage with technological innovations responsibly and ethically.

The analysis revealed that Islamic educational values provide a strong foundation for addressing many of the ethical concerns associated with AI adoption. Principles such as trustworthiness (*amanah*), justice (*adl*), responsibility (*mas'uliyah*), honesty (*sidq*), and wisdom (*hikmah*) offer valuable guidance for students navigating complex digital environments. These values complement contemporary discussions on AI ethics by emphasizing moral character, accountability, and the responsible use of knowledge. Consequently, the integration of AI literacy and Islamic education represents a holistic approach to student development that balances technological competence with ethical and spiritual growth.

The proposed ethical learning framework highlights four interconnected dimensions:

technological competence, ethical reasoning, character formation, and sustainable digital citizenship. Together, these dimensions support the development of graduates who are capable of understanding AI technologies while maintaining strong ethical commitments and contributing positively to society. The framework also underscores the importance of institutional support, curriculum innovation, and faculty engagement in promoting responsible AI education.

This study contributes to the growing discourse on AI ethics and higher education by offering a contextually relevant framework for Nigerian Islamic higher education institutions. It emphasizes that the future of education should not be defined solely by technological advancement but also by the cultivation of values that guide the responsible application of technology. Future research may expand this work through empirical investigations involving students, educators, and policymakers to evaluate the practical implementation and effectiveness of the proposed framework. Ultimately, integrating AI literacy with Islamic educational principles can help prepare a generation of graduates who are technologically skilled, ethically conscious, and committed to the well-being of their communities and society as a whole.

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