EDUKASIA: Jurnal Pendidikan dan Pembelajaran
Vol. 5, 2 (December, 2024), pp. 201-216
ISSN: 2721-1150; EISSN: 2721-1169; DOI: 10.62775/edukasia.v5i2.1373

Why AI is Essential for the Future of Islamic Education: A Call for Ethical and Effective Implementation

M. Sukron Djazilan[1], Afib Rulyansah[2], Jauharotur Rihlah[3]

[1] Universitas Nahdlatul Ulama Surabaya, Indonesia; syukrondjazilan@unusa.ac.id
[2] Universitas Nahdlatul Ulama Surabaya, Indonesia; afibrulyansah@unusa.ac.id
[3] Universitas Nahdlatul Ulama Surabaya, Indonesia; rihlahjauhara@unusa.ac.id

ARTICLE INFO

Keywords:

Artificial Intelligence;
Islamic education;
hard skills;
soft skills;
ethical AI governance

Article history:

Received 2024-08-16
Revised 2024-10-14
Accepted 2024-12-29

ABSTRACT

The integration of Artificial Intelligence (AI) in Islamic-based elementary schools presents both opportunities and challenges in balancing hard skills and soft skills while preserving Islamic educational values. This qualitative case study explores how AI supports religious education, ethical development, and STEM learning in two Islamic schools in Gresik, East Java. Using semi-structured interviews, classroom observations, and document analysis, the study examines the impact of AI on teacher-student interactions, personalized learning, and character formation. The findings indicate that AI enhances Quranic learning, ethical discussions, and academic proficiency by providing adaptive feedback, interactive learning tools, and automated assessments. However, while AI improves hard skills development, it requires additional pedagogical strategies to cultivate soft skills such as ethical reasoning, leadership, and communication. Educators emphasized that AI must complement rather than replace traditional teacher-led instruction to maintain the spiritual and moral aspects of Islamic education. Despite its benefits, AI implementation in Islamic schools faces several challenges, including technological infrastructure limitations, teacher readiness, and ethical concerns related to AI alignment with Islamic principles. The study highlights the importance of contextual AI customization, comprehensive teacher training, and ethical AI governance to ensure effective and culturally appropriate AI adoption. This study contributes to the growing discourse on AI in religious education and offers policy recommendations for integrating AI into Islamic curricula while maintaining the integrity of faith-based education. Future research should explore long-term impacts of AI on moral education, cross-cultural AI adoption, and strategies for ethical AI governance in faith-based learning environments.

Corresponding Author:
M. Sukron Djazilan
Universitas Nahdlatul Ulama Surabaya, Indonesia; syukrondjazilan@unusa.ac.id

1. INTRODUCTION

The integration of Artificial Intelligence (AI) in education has significantly transformed teaching and learning methodologies worldwide. AI has the potential to enhance educational quality by enabling more adaptive learning experiences, streamlining administrative processes, and fostering collaboration and innovation (Abubakari et al., 2024; Achruh et al., 2024). However, in Islamic-based education, this integration presents unique challenges. Traditional Islamic pedagogy is deeply rooted in teacher-student interactions, emphasizing not only academic excellence but also the spiritual and moral development of students. While AI offers opportunities for efficiency and personalized learning, its application in Islamic education must be critically examined to ensure alignment with religious values and ethical considerations (Achruh et al., 2024).

This study contributes uniquely to the development of Islamic education science in several ways. First, it addresses a critical gap in understanding how AI can be effectively integrated while preserving core Islamic educational values. Second, it provides empirical evidence from Indonesian Islamic schools, offering insights relevant to the world's largest Muslim population. Third, it develops a framework for ethical AI implementation that aligns with Islamic principles while advancing educational outcomes.

In Indonesia, a country with the largest Muslim population, Islamic-based schools play a crucial role in shaping students' character while preparing them for future challenges. The adoption of AI in these institutions is still in its early stages, yet its potential to support religious education and skill development is undeniable. AI-powered learning platforms can provide tailored educational content, adaptive assessments, and interactive experiences that cater to individual student needs (Sujee et al., 2024). Despite these advantages, concerns about ethical AI implementation, data privacy, algorithmic biases, and equitable access remain critical (Abubakari et al., 2024; Achruh et al., 2024). Additionally, the digital divide continues to be a barrier to AI adoption, necessitating investments in improved infrastructure, digital literacy, and teacher training (Achruh et al., 2024).

A comprehensive review of existing literature reveals several key gaps this research aims to address. While studies have examined AI in general education settings (Zhang et al., 2022) and in higher education contexts (Kumar et al., 2022), there is limited research specifically focused on AI integration in Islamic elementary education. Additionally, most existing studies emphasize either technical implementation or religious preservation, but few examine how to effectively balance both aspects. This study builds upon and extends previous work by examining the specific challenges and opportunities of AI integration in Islamic elementary education, developing practical frameworks for maintaining religious values while leveraging AI benefits, providing empirical evidence from real-world implementations in Indonesian Islamic schools, and contributing to the theoretical understanding of how AI can support both religious and academic development.

Furthermore, AI-driven education must strike a balance between developing hard skills—such as computational thinking, problem-solving, and subject-specific knowledge—and soft skills—including adaptability, communication, collaboration, and ethical reasoning. Research indicates that soft skills contribute significantly to students' academic achievement and long-term success, often more than hard skills (Feraco et al., 2023; Wats & Wats, 2009). In fact, studies suggest that soft skills account for 85% of success, compared to 15% for hard skills (Wats & Wats, 2009). The importance of soft skills is further emphasized in research linking them to academic achievement, self-regulated learning, and motivation (Feraco et al., 2023). Additionally, teacher training programs play a crucial role in ensuring that educators can effectively integrate AI into the classroom while fostering both academic and interpersonal skills among students (Chekour et al., 2022).

This study examines how AI is being implemented in two Islamic elementary schools in Gresik, East Java, and how it supports both religious values and skill development. It seeks to understand the opportunities and challenges faced by these institutions in integrating AI into their curricula while maintaining the core principles of Islamic education.

The urgency of this research is underscored by the rapid digital transformation in education and the increasing role of AI in shaping learning experiences. Many Islamic schools in Indonesia have begun incorporating technology into their curriculum, yet the integration of AI remains largely unexplored. Islamic education is designed to foster moral integrity, spirituality, and ethical conduct in students. AI-driven tools must be carefully designed to support, rather than replace, the values instilled by traditional Islamic pedagogy. Ensuring that AI aligns with Islamic ethical principles—such as fairness, accountability, and inclusivity—is crucial for its successful adoption in religious-based education (Abubakari et al., 2024; Achruh et al., 2024).

While AI is effective in enhancing academic achievement and cognitive skill development, its role in cultivating soft skills—such as emotional intelligence, leadership, and teamwork—must also be considered. Despite its potential benefits, AI adoption faces significant barriers, including limited digital infrastructure, lack of teacher training, and disparities in technology access (Achruh et al., 2024). Many Islamic schools, particularly in rural areas, struggle with digital literacy and funding constraints. Addressing these challenges through policy interventions and capacity-building initiatives is essential for ensuring inclusive AI integration in Islamic education.

Although existing research has explored AI applications in education, few studies have examined its role within the specific context of Islamic schools. Prior studies have focused on AI's potential in higher Islamic education (Abubakari et al., 2024; Achruh et al., 2024), but little attention has been given to its application in elementary-level religious schooling. Additionally, most research has emphasized AI's contributions to STEM education and computational thinking, while its impact on moral education and soft skill development in religious schools remains underexplored (Kumar et al., 2022); Zhang et al., 2022). This study seeks to bridge these gaps by investigating how AI can support both hard skills (academic excellence) and soft skills (character development) in Islamic elementary schools.

This research focuses on two private Islamic elementary schools in Gresik, East Java, which have recently adopted AI tools in their curriculum. These schools aim to integrate AI while preserving Islamic teachings and fostering a balanced development of hard and soft skills. Key aspects of their AI adoption include AI-assisted Quranic learning, which provides interactive recitation guidance and memorization support; AI-based educational platforms for math, science, and language learning, using adaptive learning technologies; and teacher training programs to enhance digital literacy and AI proficiency while maintaining Islamic pedagogical integrity. By studying these schools, this research aims to identify best practices, challenges, and recommendations for AI integration in Islamic education.

The main objectives of this study are to examine how AI is being utilized to support Islamic education and character development in elementary schools, analyze how AI contributes to balancing hard skills (academic abilities) and soft skills (ethical and social competencies), and explore the challenges and opportunities faced by Islamic schools in adopting AI.

Previous Research Relevant to the Topic and Case

The integration of AI in education has garnered increasing attention, particularly in its role in supporting character education and religious values. AI has been widely recognized for its ability to personalize learning experiences, optimize instructional methodologies, and enhance student engagement. Research highlights that AI-powered tools, such as adaptive learning systems and chatbots, have been implemented to support religious education by facilitating Quranic learning,

Islamic jurisprudence (fiqh), and hadith studies. These technologies offer interactive and tailored learning pathways, allowing students to deepen their religious knowledge at an individualized pace (Kurata et al., 2025; Sulistio et al., 2024).

Despite these advancements, several ethical concerns arise regarding AI-generated religious content and potential algorithmic biases. Studies suggest that AI-driven religious figures, such as robotic imams or AI-based religious counselors, may be perceived as less credible than human religious leaders. This lack of credibility can, in turn, reduce trust in AI-mediated religious education and lower student engagement (Jackson et al., 2023). Moreover, some scholars argue that AI's increasing role in religious education could lead to the dilution of spiritual depth and authenticity, especially in Muslim-majority contexts, where traditional methods of knowledge transmission emphasize personal mentorship and direct engagement with religious scholars (Abusharif, 2023).

To address these concerns, researchers emphasize the importance of integrating AI as a supplementary tool rather than a replacement for human educators. Hybrid models that combine AI-enhanced learning with traditional religious instruction have been proposed to ensure that religious teachings remain authentic while benefiting from AI's efficiency and adaptability. This approach underscores the need for AI-driven learning environments that maintain a balance between technological innovation and religious traditions, preserving the integrity of Islamic education while leveraging AI's capabilities for enhanced learning outcomes (Abubakari et al., 2024).

Another critical aspect of AI in education is its role in balancing hard and soft skills development. AI-driven education models have traditionally focused on developing hard skills, such as computational thinking, problem-solving, and domain-specific knowledge. However, researchers argue that soft skills, including emotional intelligence, adaptability, communication, and ethical reasoning, are equally vital for long-term personal and professional success (Rovida & Zafferri, 2022; Wats & Wats, 2009). Studies show that soft skills contribute up to 85% of an individual's overall success, while hard skills only account for 15%, emphasizing the need for an educational approach that fosters both (Wats & Wats, 2009).

Despite the growing acknowledgment of soft skills, AI-driven education often prioritizes hard skills, such as STEM learning and digital literacy, while neglecting the interpersonal and ethical dimensions of learning. Researchers suggest that integrating active learning methodologies, including challenge-based learning (CBL) and the flipped classroom model, into AI-mediated instruction can provide a more holistic approach to student development. These methods encourage students to engage in experiential learning, fostering critical thinking, collaboration, and ethical decision-making alongside their technical competencies (Betti et al., 2022). In Islamic-based education, where soft skills such as ethical leadership, community engagement, and moral reasoning play a fundamental role, AI-based educational models must be carefully designed to ensure that students not only develop technical expertise but also maintain their ethical and moral foundations (Jaedun et al., 2024).

AI has also been examined in the broader context of Islamic-based education. Various studies highlight the potential of AI to improve accessibility to religious teachings, enhance religious literacy, and optimize administrative processes in Islamic schools. AI applications have been successfully deployed in several Muslim-majority countries, assisting in Quranic memorization, automated religious counseling, and the instruction of Islamic ethics. However, these technological advancements necessitate careful ethical considerations to ensure that AI remains aligned with Islamic values and teachings (Abubakari et al., 2024). Scholars argue that AI integration in Islamic education must be governed by ethical frameworks grounded in Shariah principles, ensuring that AI applications are developed and utilized in ways that respect religious teachings and moral standards (Gorian & Osman, 2024). Consequently, efforts to regulate AI implementation in Islamic education should prioritize

human-AI collaboration, ethical oversight, and alignment with pedagogical traditions (Syukur et al., 2024).

Theoretical Framework

The theoretical framework for this study is grounded in three key perspectives: Islamic education theory, educational technology theory, and cognitive and affective development theory. The concept of tarbiyah in Islamic education is central to this study, as it embodies a holistic educational philosophy that integrates spiritual, moral, intellectual, and physical development (Yo, 2010). Historically, tarbiyah has been a foundational framework in Islamic schooling, emphasizing the role of teachers as moral and ethical guides. The implementation of AI in Islamic education must therefore align with the principles of tarbiyah, ensuring that technology supports, rather than replaces, the vital teacher-student relationship (Arimbi, 2018).

Technology can enhance tarbiyah-based education by providing digital Quranic recitation tools, AI-assisted moral reasoning applications, and personalized Islamic education platforms. These technologies allow students to engage with religious teachings in interactive and adaptive ways while reinforcing core Islamic values. However, scholars caution against an overreliance on technology, as the presence of human educators is crucial in guiding students through ethical dilemmas and character development (Zakiyyah et al., 2024).

From an educational technology perspective, AI-based learning models can be structured around frameworks such as the Five-Level AI Model and the DIA4K12 Framework. These models facilitate AI integration by organizing learning into stages that promote perceptualization, digitization, conceptualization, algorithmization, and specialization. Such structured approaches can be adapted for Islamic education to ensure that AI supports both technical proficiency and religious instruction (Labanda-Jaramillo et al., 2022; Lin et al., 2024).

Cognitive and affective development theories further illustrate how AI influences student learning. While AI enhances cognitive abilities by providing personalized and data-driven learning experiences, affective learning theories emphasize the importance of human interaction in shaping emotional intelligence and moral reasoning. Islamic education must therefore leverage AI in ways that enhance knowledge retention and problem-solving skills without diminishing the teacher's role in guiding students toward ethical and spiritual maturity (Martin et al., 2024; Osman & Ahmed, 2024).

Positioning This Study Within the Literature

This study seeks to address existing gaps in AI and Islamic education research by bridging modern AI applications with traditional Islamic pedagogy. While previous studies have explored AI's impact on religious education, limited research has examined its role in balancing hard and soft skills development in Islamic school settings. Furthermore, discussions on AI governance in religious education remain underdeveloped, particularly in the context of Muslim-majority education systems.

By exploring AI's role in supporting religious education and ethical reasoning, this study contributes to the broader discourse on AI governance and ethical AI implementation. Its findings are particularly relevant to educational policies in Indonesia, where AI adoption is increasingly being considered in national education strategies. The study's insights will provide valuable guidance for policymakers seeking to implement AI in religious schools in ways that align with Islamic ethical principles and educational goals (Gorian & Osman, 2024).

2. METHODS

Research Design

This study adopts a qualitative case study approach, which is widely recognized for its effectiveness in exploring complex educational phenomena within real-life settings (Peel, 2020). The case study method allows for an in-depth understanding of how AI is integrated into Islamic elementary schools while maintaining a balance between hard and soft skills within the framework of Islamic educational values. A multiple-case study design is employed, enabling a comparative analysis of two Islamic schools in Gresik, East Java, to explore differences and similarities in their AI adoption processes (Cheek et al., 2018).

The case study research follows a systematic structure, beginning with the identification of the research problem, followed by data collection from multiple sources, thematic data analysis, and interpretation within the broader literature (Thomas, 2013). This research seeks to answer three main questions: how AI is implemented in Islamic elementary education to reinforce religious values, how AI contributes to the development of both hard skills and soft skills in Islamic-based schools, and what challenges and potential solutions exist for integrating AI in Islamic education. A triangulation approach is used by incorporating interviews, classroom observations, and document analysis to enhance the validity and reliability of the findings (Peimani & Kamalipour, 2021).

Research Context

The study takes place in two private Islamic elementary schools in Gresik, East Java, both of which have begun integrating AI technologies into their curricula. These schools were chosen due to their commitment to blending Islamic educational principles with modern technological innovations. Their mission is to preserve Islamic character education while ensuring students develop 21st-century competencies. AI is implemented in various capacities, including adaptive learning platforms, AI-assisted Quranic recitation, and personalized educational assessments. However, each school exhibits a unique approach to AI integration—one primarily emphasizes AI for enhancing STEM education, while the other prioritizes AI's role in ethical and moral development. The distinction between these approaches allows for a comparative analysis that sheds light on how AI is being used to foster both cognitive and character development (Wellner & Pierce-Friedman, 2022).

Participants

The participants in this study include teachers, school administrators, and students who actively engage with AI-assisted learning. The selection of participants follows a purposive sampling method, ensuring that those with direct experience in AI-based learning environments are included (Quintão et al., 2020). The study involves 10 teachers who use AI-powered tools in their classrooms, particularly in Islamic studies, STEM, and language learning. It also includes four school administrators, whose perspectives are essential for understanding the challenges and strategic decisions involved in AI adoption. Additionally, 30 students from Grades 4 to 6 participate, providing insights into how AI is perceived and utilized in their daily learning experiences. To ensure ethical research practices, all participants provided informed consent, and confidentiality was maintained throughout the study (Mabasa & Themane, 2021).

Data Collection

Data collection relies on semi-structured interviews, classroom observations, and document analysis, following the principles of triangulation to strengthen the credibility of the findings. The semi-structured interviews are conducted with teachers, administrators, and students, exploring their

experiences with AI-based learning. The interviews focus on teachers' perceptions of AI's impact on student learning and character development, administrators' views on the challenges and opportunities of AI integration in Islamic education, and students' reflections on their experiences with AI tools, including their perceived benefits and limitations. Each interview lasts between 30 to 45 minutes, is audio-recorded, and is later transcribed for analysis (Thomas, 2013).

Classroom observations provide direct insights into how AI is integrated into teaching and learning practices. These observations examine teacher-student interactions with AI-powered tools, the effectiveness of AI in enhancing engagement and comprehension, and how AI supports the integration of Islamic values in daily learning activities. Field notes are taken to document key behaviors and recurring patterns (Barnard et al., 2022).

Additionally, document analysis involves the examination of lesson plans, AI-based assessments, school policies, and government guidelines on AI in education. This allows for a contextualized understanding of how AI is institutionalized within the framework of Islamic education (Wellner & Pierce-Friedman, 2022).

To mitigate potential bias in data collection, several specific measures were implemented. The semi-structured interview protocols were reviewed by two independent educational research experts to ensure questions were neutral and non-leading. Researchers conducting classroom observations underwent training to recognize and minimize confirmation bias, using standardized observation rubrics. Two researchers independently conducted each classroom observation, comparing notes afterward to identify and reconcile any subjective interpretations. Interview transcripts and preliminary findings were shared with participants to verify accuracy and allow for clarification, reducing misinterpretation. Researchers maintained reflexivity journals throughout the data collection process, documenting potential biases and how they were addressed. Care was taken to include participants with varying perspectives on AI integration, including those with reservations or critical views, ensuring balanced representation. Detailed contextual information was recorded for each data collection instance, including time of day, physical setting, and recent events that might influence participant responses.

Data Analysis

The study employs a thematic analysis approach, which is particularly suitable for qualitative research in education. Thematic analysis helps identify recurring patterns and themes across different data sources, ensuring that the findings accurately reflect participants' experiences (Barnard et al., 2022). The analysis follows a structured process, beginning with transcription and familiarization, where all interview recordings and observation notes are reviewed. Coding is then performed using NVivo software, allowing data to be categorized based on emerging themes related to AI integration, educational impact, and ethical concerns.

Once coding is complete, data is grouped into major themes, including AI's role in enhancing Islamic moral education, AI's effectiveness in developing hard and soft skills, and ethical and technical challenges in AI adoption. The final step involves interpretation, where the findings are analyzed within the broader literature and theoretical frameworks, providing a comprehensive understanding of AI's role in Islamic education (Quintão et al., 2020).

To further strengthen analytical rigor and minimize bias, an intercoder reliability process was implemented where two researchers independently coded 25% of the data, with discrepancies discussed and resolved to establish a consistent coding framework. Additionally, negative case analysis was employed to actively search for and address data that contradicted emerging patterns, ensuring a more balanced interpretation of findings.

Ethical Considerations

This research prioritizes ethical integrity by adhering to established guidelines in qualitative educational research. Informed consent is obtained from all participants, ensuring they understand the purpose of the study, their rights, and how their data will be used. Confidentiality is strictly maintained, with participants' identities anonymized in research reports (Mabasa & Themane, 2021). Additionally, data security protocols are implemented, ensuring that all collected data is securely stored and used solely for academic purposes. The research also considers cultural and religious sensitivities, particularly in how AI is perceived in an Islamic educational setting (Cheek et al., 2018).

Research Limitations

Although this study provides valuable insights into AI integration in Islamic education, several limitations must be acknowledged. One limitation is the limited generalizability of the findings, as the research focuses solely on two Islamic elementary schools in Gresik. The findings may not fully capture AI adoption in other regions or educational settings with different technological capabilities. Another limitation is the time constraint, which prevents the study from collecting longitudinal data on AI's long-term effects on student learning and character development. Furthermore, disparities in access to AI resources between the two schools may influence the study's outcomes, highlighting the need for future research to examine a broader range of institutions with varying levels of AI implementation (Wellner & Pierce-Friedman, 2022).

3. FINDINGS AND DISCUSSION

3.1 AI Integration in Islamic Elementary Education to Reinforce Religious Values

3.1.1 AI-Assisted Quranic Learning and Religious Studies

The integration of AI in Islamic education has demonstrated significant impact in enhancing both hard and soft skills development through Quranic recitation, hadith memorization, and Islamic jurisprudence (fiqh). AI-powered applications provide students with interactive learning experiences that combine technical proficiency with spiritual understanding. For hard skills, the AI tools offer real-time feedback on pronunciation and tajwid rules, while fostering soft skills through reflective discussions on Quranic meanings and their application in daily life.

> Teacher 1 highlighted how AI helps develop both technical and interpretative abilities:
> *"The AI not only corrects pronunciation instantly but also prompts students to reflect on verses' meanings through guided questions, helping them connect Quranic teachings to real-world situations."*

> Student 2 noted the balanced development of skills:
> *"While the AI helps me perfect my recitation technique, our teacher uses the AI-generated discussion points to help us understand how to embody these teachings in our character."*

The research found that schools using AI effectively maintained this dual focus. For example, School A's AI-based Quranic learning program includes several key components. The program incorporates technical modules focused on tajwid and makhraj practice to develop hard skills in proper Quranic recitation. It also features interactive moral reasoning scenarios based on Quranic verses to cultivate soft skills in ethical understanding and application. Additionally, the program implements collaborative projects where students utilize AI tools to explore and present Quranic themes, integrating both technical and interpretative skills in meaningful ways.

3.1.2 AI in Teaching Islamic Ethics and Character Development

The study revealed innovative approaches to using AI for developing both analytical and ethical reasoning capabilities. AI-powered platforms simulate complex moral scenarios that require students to apply both logical analysis and Islamic ethical principles.

Administrator 1 described their comprehensive approach:
"Our AI system presents ethical dilemmas that require students to use both analytical problem-solving and Islamic moral reasoning. For example, students might analyze environmental data while considering their role as khalifah (stewards) of Earth."

The research identified several key examples of integrated skill development. Students engaged with AI-driven case studies that effectively combined business analytics with Islamic finance principles, allowing them to develop both technical and ethical understanding. The schools also implemented virtual simulations that required students to exercise both technical competencies and ethical decision-making skills in realistic scenarios. Additionally, students participated in collaborative projects where they utilized AI tools to address real community challenges through an Islamic lens, integrating both practical and moral considerations in their problem-solving approaches.

4.2 AI's Contribution to Hard Skills and Soft Skills Development in Islamic Schools

4.2.1 AI and the Enhancement of Hard Skills (STEM and Digital Literacy)

The research found that effective AI integration enhanced technical competencies while maintaining connections to Islamic values. For example:

Student 3 described this integrated learning:
"In our coding class, we use AI to develop apps that serve our community. I learned programming skills while creating an app that helps people track their prayer times and find nearby mosques."

Teacher 5 elaborated on their approach:
"We use AI tools to teach data analysis through projects examining zakat distribution efficiency. Students learn technical skills while understanding their practical application in Islamic contexts."

The research identified several concrete examples of integrated hard skills development. Students engaged in programming projects focused on creating Islamic educational games that combined technical coding skills with religious knowledge. They also conducted data analysis of community service initiatives, applying analytical methods to evaluate and improve charitable works. Additionally, students utilized AI-assisted tools to research historical Islamic scientific contributions, developing both research capabilities and deeper appreciation of Islamic intellectual heritage.

4.2.2 AI and the Development of Soft Skills (Communication, Ethics, and Collaboration)

The study found innovative ways AI supports soft skills development while reinforcing Islamic values:

Teacher 6 shared successful strategies:
"Our AI-powered discussion platforms help students practice both communication skills and Islamic ethics. Students engage in structured debates about contemporary issues, applying Islamic principles to modern challenges."

The research identified several effective approaches to soft skills development. Students participated in AI-facilitated group projects that addressed real community needs, allowing them to develop collaboration and social responsibility skills. The schools also implemented virtual simulations focused on ethical business scenarios, helping students build decision-making and moral reasoning capabilities. Additionally, leadership skills were cultivated through AI-supported community service initiatives that combined technological tools with hands-on service learning experiences.

4.3 Challenges and Potential Solutions for AI Integration in Islamic Education

4.3.1 Ethical Concerns and AI Alignment with Islamic Values

The research identified specific strategies for ensuring AI tools support both technical and moral development:

> Administrator 3 described their approach:
> *"We've developed guidelines requiring AI tools to integrate Islamic perspectives across subjects. For example, our science curriculum uses AI to explore both scientific concepts and their relationship to Islamic teachings about nature."*

Successful integration strategies include collaboration with Islamic scholars in AI content development to ensure alignment with religious principles and values. Regular ethical audits of AI systems are conducted to maintain compliance with Islamic guidelines and identify potential issues. Additionally, comprehensive teacher training programs focus on achieving a balance between technical competency and moral instruction to effectively integrate AI while preserving Islamic educational objectives.

4.3.2 Technical and Infrastructure Challenges

Schools demonstrated creative solutions to resource limitations:

> Administrator 4 shared effective approaches:
> *"We've implemented a phased AI adoption strategy, starting with cost-effective solutions that serve multiple educational goals. For example, our AI language learning tools help students develop both technical and communication skills while studying Islamic texts."*

Innovative solutions include shared AI resources between schools to maximize limited technology budgets, mobile-based AI applications that increase accessibility for students without computers, and strategic community partnerships that provide additional funding streams for technology infrastructure. These collaborative approaches help schools overcome resource constraints while ensuring equitable access to AI-enhanced learning opportunities.

Discussion

The findings of this study align with previous research on the integration of AI in Islamic education, particularly in its potential to modernize learning experiences while maintaining traditional Islamic values. AI has demonstrated its ability to enhance distance learning and digitize Qur'anic teaching, as previously noted in Indonesian Islamic universities (Syukur et al., 2024). However, concerns remain about AI's impact on traditional teaching roles and cultural values, particularly in settings where human mentorship is central to religious education. Research in Thailand has similarly found that while AI offers educational benefits, it risks undermining the role of educators in spiritual guidance (Syukur et al., 2024). The present study supports these findings, as teachers in Islamic schools

expressed concerns that AI alone cannot replace the moral and ethical guidance provided by religious educators.

A key issue raised by both this study and previous research is the ethical dimension of AI adoption in Islamic education. Concerns related to data privacy, algorithmic bias, and the alignment of AI with Islamic ethical principles remain a challenge (Abubakari et al., 2024; Achruh et al., 2024). As AI algorithms are often developed in Western educational and cultural contexts, ensuring that they align with Islamic pedagogical goals requires content adaptation and customization. Studies emphasize the importance of developing AI systems that uphold Wasathiyyah (moderation) in Islam, ensuring that technology complements rather than replaces traditional knowledge transmission methods (Kosasih et al., 2024).

Similarly, this study confirms previous findings regarding the balance between hard skills and soft skills in AI-driven education. Research has consistently shown that soft skills, such as leadership, communication, and ethical reasoning, are crucial for student success, often playing a more significant role than hard skills (Kumar et al., 2022; Wats & Wats, 2009). The study's findings align with these results, demonstrating that while AI successfully enhances STEM education and computational thinking, it requires additional pedagogical strategies to cultivate character development, ethical reasoning, and interpersonal skills in Islamic education.

The challenges of AI implementation in Islamic schools identified in this study—such as technological infrastructure limitations, teacher preparedness, and ethical considerations—are also well-documented in prior research. Ethical concerns surrounding data privacy, bias in AI-driven assessments, and the potential for AI to diminish teacher authority have been highlighted as key obstacles (Rizvi, 2023). Additionally, studies emphasize that AI's cultural and social impact in religious education settings must be carefully managed to prevent disruptions to long-standing educational traditions (Abubakari et al., 2024).

Implications of AI in Islamic Education

The integration of AI in Islamic-based schools presents significant implications that warrant careful consideration for the future development of Islamic education. One of the most profound implications lies in how AI transforms practical educational delivery while maintaining Islamic values. AI-powered platforms have demonstrated remarkable capability in personalizing learning experiences, particularly in Qur'anic studies and Islamic ethics education. These systems provide adaptive learning paths tailored to individual student needs, offering real-time feedback and assessment that enhance both academic and religious knowledge acquisition. These findings align with previous research highlighting AI's role in personalizing education in faith-based schools, ensuring that students receive contextually relevant religious teachings (Shahrouri, 2023).

The research findings emphasize that AI's role in teacher-student relationships must be carefully balanced. While AI tools have shown effectiveness in supporting educational delivery, they should enhance rather than replace the fundamental role of teachers in providing moral and spiritual guidance. Research supports this perspective, noting that AI-powered religious teaching tools should be designed to reinforce, rather than substitute, the role of Islamic educators (Malik, 2023). The technology serves best as a complement to traditional teaching methods, helping educators identify students who need additional support while providing data-driven insights for tracking both academic progress and character development.

From an institutional perspective, AI integration offers substantial administrative benefits that can strengthen overall educational quality. Schools implementing AI systems report more streamlined administrative processes, allowing greater focus on religious instruction and character development. However, these benefits must be weighed against potential risks of surveillance, data privacy breaches,

and algorithmic biases that may unintentionally marginalize certain student groups (Gaur et al., 2024). Institutions must ensure transparent policies regarding AI usage and maintain strict ethical oversight to protect student welfare.

Challenges and Solutions in AI Implementation in Islamic Schools

The implementation of AI in Islamic schools faces several significant challenges that require strategic solutions. One primary concern involves ensuring AI alignment with Islamic values, particularly in assessment and content delivery. AI-driven educational platforms must accurately reflect Islamic ethical standards while preventing misinformation. This challenge aligns with previous research showing that careful oversight from Islamic scholars is essential for maintaining religious authenticity in AI-powered learning (Achruh et al., 2024).

Technical infrastructure limitations present another significant hurdle, especially in rural Islamic schools lacking adequate access to AI-compatible devices and stable internet connections. This digital divide remains a key obstacle to equitable AI adoption in religious schools (Achruh et al., 2024). To address this, governments and private stakeholders must prioritize expanding AI infrastructure through targeted funding initiatives and public-private partnerships.

Teacher readiness and professional development emerge as critical factors in successful AI implementation. Research has shown that well-trained educators can effectively leverage AI to improve student engagement while maintaining Islamic educational traditions (Cheng & Wang, 2023). Institutions must invest in continuous AI training programs that equip teachers with both technical skills and pedagogical strategies for meaningful technology integration.

Recommendations for Future AI Integration in Islamic Education

To maximize AI's benefits while mitigating risks, Islamic educational institutions should pursue collaborative development of contextually relevant AI learning tools. This collaboration between AI developers and religious scholars ensures that applications align with Islamic values and provide culturally appropriate learning experiences. Teacher training programs must expand to help educators integrate AI effectively, covering technical skills, ethical considerations, and AI's role in character education. Research suggests that teachers who receive comprehensive AI training are more likely to use technology effectively and ethically in their classrooms (Mozelius et al., 2024).

Clear policies and ethical frameworks must guide AI adoption in Islamic education. Policymakers should develop comprehensive guidelines ensuring that AI-driven learning adheres to Islamic ethical standards without compromising fundamental religious principles. Additionally, efforts to increase AI accessibility in underprivileged Islamic schools are crucial for ensuring equitable benefits across all institutions. Governments and private stakeholders should work together to provide necessary infrastructure, internet access, and technical support to Islamic schools (Abubakari et al., 2024).

These implications and recommendations provide a structured framework for thoughtful AI integration that enhances Islamic education while preserving its core values and traditions. Success requires sustained collaboration between educators, technologists, religious scholars, and community stakeholders to ensure AI serves as a tool for strengthening, not diminishing, Islamic educational excellence. Through careful planning and implementation, AI can help create more effective, accessible, and engaging Islamic educational experiences while maintaining the essential human elements of religious instruction.

Limitations of the Study and Directions for Future Research

While this study provides valuable insights into AI's role in Islamic education, it is not without limitations. First, the study focuses on two Islamic elementary schools in Gresik, which may limit the

generalizability of findings to Islamic schools in different regions or countries. Future research should explore AI adoption across a broader range of Islamic educational institutions, including higher education settings and rural Islamic schools.

Second, longitudinal studies are needed to assess the long-term impact of AI on students' character development and religious education. The current study provides a snapshot of AI integration, but future research should track how AI influences student learning outcomes and spiritual growth over time.

Another area for future exploration is the role of AI in teacher-student interactions in religious schools. Research should investigate how AI alters pedagogical relationships and whether it enhances or diminishes student engagement with religious educators.

4. CONCLUSION

This study has examined the integration of AI in Islamic-based elementary schools and its role in balancing hard skills and soft skills while preserving Islamic educational values. The findings highlight that AI offers significant benefits in enhancing Quranic learning, ethical discussions, and STEM education, yet also raises ethical, technological, and pedagogical concerns. AI-powered tools have personalized learning experiences, provided real-time feedback, and enhanced student engagement, contributing to academic and cognitive skill development. However, the findings emphasize that AI should complement, rather than replace, traditional teacher-led moral and spiritual instruction to maintain the holistic character-building aspects of Islamic education.

Despite AI's potential, its implementation in Islamic schools faces several challenges, including technological infrastructure limitations, teacher readiness, and ethical concerns regarding AI alignment with Islamic values. These challenges align with previous research indicating the need for ethical AI governance, customized AI-based learning content, and comprehensive teacher training programs. While AI effectively supports hard skills development, its role in fostering interpersonal and ethical reasoning skills requires additional pedagogical strategies. The findings underscore the importance of human-AI collaboration, where AI serves as an assistive tool rather than a replacement for educators in religious instruction.

Based on these findings, several key recommendations are proposed. First, Islamic educational institutions should collaborate with AI developers and religious scholars to design contextually relevant AI learning tools that align with Islamic ethical principles. Second, teacher training programs must be expanded to ensure educators are equipped with technical and pedagogical skills to integrate AI effectively. Third, policymakers should establish clear AI governance frameworks that regulate ethical AI use in Islamic education. Lastly, efforts must be made to increase AI accessibility in underprivileged Islamic schools, ensuring equitable AI adoption across diverse educational settings.

This study provides insights into the evolving relationship between AI and Islamic education, yet future research should explore the long-term impact of AI on character development, spiritual learning, and moral reasoning in students. Additionally, further studies should investigate cross-cultural AI adoption in different Islamic education systems to develop globally relevant AI-based Islamic learning models. By ensuring ethical and pedagogically sound AI integration, educators and policymakers can harness AI's potential while preserving the values and traditions that define Islamic education.

Acknowledgments: The authors would like to express sincere gratitude to Universitas Nahdlatul Ulama Surabaya for its support and resources throughout this research. Special thanks to the university leadership, academic staff, and fellow students for their guidance and encouragement. This research would not have been possible without their valuable contributions.

Conflicts of Interest: The authors declare no conflict of interest.

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