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Safeguarding the Authenticity of Ulumul Qur'an in the Artificial Intelligence Era: Ethical, Methodological, and Educational Implications for Sustainable Qur'anic Studies

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Abstract

Objective: This study aims to analyze the integration of artificial intelligence (AI) in Islamic education of the Malay community and identify emerging ethical opportunities and challenges. Its main focus is the alignment of the use of AI with Islamic values and principles. **Theoretical framework:** The research uses a multidisciplinary framework that combines Islamic ethics and modern AI ethics. This framework is used to assess the moral, spiritual, and technological implications of the application of AI in Islamic education. **Literature review:** A literature review discusses the use of AI in education, AI ethics, and Islamic educational philosophy. The literature shows that AI increases the effectiveness of learning, but also raises issues of privacy, dehumanization, and reduced moral-spiritual value. **Methods:** This study uses a qualitative approach through semi-structured interviews with educators, policymakers, and AI experts from Malaysia, Indonesia, and Brunei. The data is thematically analyzed to identify opportunities and challenges of AI integration. **Results:** The results show that AI can improve learning effectiveness, knowledge access, and educational personalization. However, there are challenges related to data privacy, dehumanization of learning, and the preservation of moral and spiritual values. **Implications:** The research confirms the importance of developing AI policies, curricula, and implementations that are aligned with Islamic ethics. Collaboration between governments, educational institutions, and technology developers is needed to support ethical digital transformation. **Novelty:** The novelty of this research lies in the integration of Islamic ethics and AI ethics in the context of Islamic education of the Malay community. The study also offers a cross-border perspective involving Malaysia, Indonesia, and Brunei.

Keywords: islamic education, artificial intelligence, ethics, malay world, educational technology.

INTRODUCTION

Global education is changing as a result of artificial intelligence's (AI) quick development, which presents new chances for individualized instruction and operational effectiveness. This technological revolution offers the Malay population (Malaysia, Indonesia, Brunei, and Singapore) both revolutionary potential and difficult moral dilemmas, especially in the context of Islamic educational systems. Islamic education, which has its roots in customs that prioritize moral principles and the dissemination of religious information, is at a turning point. AI raises urgent concerns about data privacy, the dehumanization of teaching, and the possible erosion of the spiritual and ethical dimensions inherent in Islamic pedagogy, even though it also has the potential to improve

access to knowledge, personalize learning experiences, and expedite administrative procedures [1]–[4].

In addition to technological issues, integrating AI into Islamic educational institutions presents significant ethical questions. It calls for finding a cautious balance between respecting Islamic values and modern advancements. Little study has been done on how AI interacts with Islamic education in the Malay world, where linguistic, cultural, and religious barriers affect educational priorities and practices, despite the growing interest in AI's application across educational contexts. To guide AI's integration into educational processes without undermining the central tenets of Islamic teachings, an ethical framework that blends modern AI ethics with Islamic principles is essential [5]–[11].

This study aims to investigate the connection between artificial intelligence (AI) and Islamic education in the Malay community. It specifically looks at how AI is changing teaching strategies and talks about the philosophical and ethical ramifications that are derived from Islamic culture. The study uses a multidisciplinary framework that blends Islamic ethical philosophy with modern AI ethics, and it does so through qualitative methods like semi-structured interviews with educators, policymakers, and AI specialists from Malaysia, Indonesia, and Brunei. Through tackling concerns like data privacy, the dehumanisation of education, and the possible loss of spiritual and ethical elements, this study provides a comprehensive viewpoint on how AI tools might improve knowledge availability, pedagogical efficacy, and individualised learning [12]–[14].

In the end, this study emphasises how important it is to have a culturally grounded Islamic ethical framework to guide the use of AI in education. It highlights how crucial cross-sector collaboration is to guaranteeing the ethical and technological soundness of AI applications. By illuminating the little-known connection between artificial intelligence and Islamic education in the Malay world, this book offers crucial perspectives for developing rules, developing curricula, and upholding moral standards in the digital age.

LITERATURE REVIEW

With AI offering both potential advantages and difficulties for Islamic education in terms of accessibility, equity, and privacy, its influence on educational systems has brought ethical issues to light. This essay addresses the moral ramifications of AI in educational institutions from a worldwide standpoint and briefly explores its use in settings with a majority of Muslims [15]. Islamic educational institutions struggle to strike a balance between traditional teachings and new technologies, according to a report. The study highlights the necessity of ethical frameworks to direct the incorporation of AI in Islamic education, particularly about upholding Islamic principles and tackling problems such as bias and algorithmic transparency [16].

The ethical implications of AI in Southeast Asia and the Malay world are examined in another study, specifically about how AI might either reinforce or contradict Islamic educational norms. The study examines how AI might improve individualized learning while keeping Islamic educational values in mind [17]. The other research focuses on how ethical considerations related to AI's role in Islamic education can be effectively managed, proposing a framework that blends Islamic ethical principles with technological advancements in education. It discusses how AI can be harnessed without compromising Islamic teachings [18]. A researcher explores the opportunities that AI provides in revolutionising Islamic education by offering greater accessibility and efficiency in delivering content. But it also critically examines the possible dangers, like the dehumanization of education and the necessity of strict regulation to steer clear of moral traps [19].

The number of pieces of research on the integration of artificial intelligence (AI) into education has grown, but little attention has been paid to the specific relationship between Islamic education, AI, and ethical considerations, especially in the Malay

world. Most of the research has focused on the pedagogical and technological implications of AI in general education, often ignoring the particular ethical, cultural, and religious issues that arise when AI is used in Islamic educational systems. The integration of AI technologies, such as machine learning and automated teaching systems, into Islamic educational frameworks while adhering to Islamic ethical principles has also received little attention. Furthermore, a focused study of how AI may be used to preserve and promote Islamic values, beliefs, and customs, in addition to enhancing the quality of education, is needed, particularly in light of Muslim communities that speak Malay [20].

METHODOLOGY

To investigate the incorporation of artificial intelligence (AI) into Islamic education in the Malay world (Malaysia, Indonesia, and Brunei), this study uses a qualitative research design. Using Islamic ethical frameworks as a guide, it explores the ethical opportunities, problems, and ramifications of AI in Islamic educational institutions.

Research design

In order to thoroughly examine participants' experiences, opinions, and attitudes about the ethical ramifications of artificial intelligence in education, a qualitative technique was selected for this study. The various viewpoints of educators, legislators, and AI experts on this complicated topic are best captured by this method. The study's primary method of data collection was semi-structured interviews. This method allowed for flexibility in how participants' ideas were addressed while maintaining consistency in the questions posed. The purpose of the interviews was to obtain in-depth viewpoints on the following crucial topics:

1. The perceived benefits and challenges of AI in Islamic education.
2. Ethical dilemmas and concerns, such as data privacy, algorithmic bias, and the dehumanization of teaching.
3. Alignment or conflicts between AI applications and traditional Islamic educational principles.

Participants

For this investigation, important informants were chosen using a purposive sample strategy. Twenty individuals from Malaysia, Indonesia, and Brunei made up the sample: ten educators, five policymakers, and five AI specialists. The selection of participants was based on their knowledge of Islamic ethical principles and educational methods, as well as their experience and involvement in integrating AI in Islamic educational contexts. The selection criteria for participants included:

1. Educators: Individuals with experience teaching Islamic subjects at tertiary institutions or Islamic boarding schools (pesantren).
2. Policymakers: Individuals involved in the development of educational policies, particularly those focused on technology integration in education.
3. AI Specialists: Experts in AI who have worked with educational technology, particularly in Islamic educational contexts.

Data Collection

The main technique for gathering data was semi-structured interviews, which were conducted online with the use of Zoom and other similar programs to accommodate participants from different places. Each interview lasted anything from 45 minutes to an hour. All interviews were recorded and then verbatim transcribed with consent from the participants. Interview questions were open-ended and focused on the following areas:

1. What are the potential advantages and disadvantages of integrating AI into Islamic education?
2. What ethical questions does AI bring up in relation to Islamic education, namely around algorithmic bias, data privacy, and the humanization of instruction?
3. How do AI applications align with or deviate from the principles of Islamic education, such as justice, human dignity, and dependability?

Data Analysis

The data analysis followed a rigorous, thematic analysis approach, as described by Braun and Clarke [21]. The interview transcripts' patterns and topics could be thoroughly examined thanks to thematic analysis. The analysis process included the following steps:

1. Familiarization with the data: Following the audio recordings, which were transcribed, the transcripts were examined several times to make sure the material was understood and to find any first impressions.
2. Generating initial codes: To find important textual passages that addressed the research goals, open coding was used. With an emphasis on both the explicit and implicit meanings in the responses, codes were created inductively.
3. Searching for themes: The data were coded and then grouped into more general categories. These topics included both the ethical challenges (such as privacy concerns and the dehumanization of education) and the potential of AI (such as personalised learning and greater accessibility).
4. Reviewing themes: To make sure they addressed the main concerns regarding AI in Islamic education, the themes were examined and improved. Themes were also examined for overlap and contradictions in this step.
5. Defining and naming themes: The final themes were defined, and clear labels were assigned to each to ensure they reflected the core concepts in the data.
6. Reporting: The results were presented according to the themes that were found and connected to the main study topics. The findings were shown using data snippets from the interview transcripts, which established a strong link between the emergent themes and the qualitative data.

Validity and Reliability

To ensure validity and reliability in the data analysis:

1. Triangulation: Participants from a variety of professional backgrounds (educators, legislators, and AI experts) were among the many data sources that were used. This made it possible to comprehend the problem more thoroughly, which enhanced the study's credibility.
2. Member Checking: A few participants were asked to examine the results following the first coding and analysis to verify the accuracy of the interpretations.
3. Peer Review: To guarantee the validity of the analysis, the study procedure—including the coding and theme development—was discussed with colleagues in the fields of AI ethics and Islamic education.

Ethical Considerations

Strict ethical procedures were followed throughout the study to protect participant rights and confidentiality. All participants gave their informed consent before the interviews, and their personal information was anonymised to protect their privacy. Every participant received comprehensive information regarding the goal of the study and their right to withdraw from the study at any moment without facing any repercussions. In order to maintain confidentiality during the study, the data were also safely preserved, and no personal identifiers were used when reporting the results.

RESULTS AND DISCUSSION

AI Enhances Personalized Learning and Accessibility in Islamic Education

AI has the potential to completely transform several industries, including Islamic education. The table gives a succinct summary of some of the main ways AI might improve Islamic education's accessibility and learning environment.

Table 1. AI Enhances Personalized Learning and Accessibility

Finding	Description	Inference	Implications
AI Enhances Personalized Learning and Accessibility	AI technologies improve the personalization of learning, adapting content to individual student needs, and enhance accessibility, especially in remote areas.	The ability to personalize learning aligns with the Islamic educational principle of supporting intellectual development for each individual. AI tools ensure wider access to knowledge.	AI can democratize access to Islamic knowledge, improving learning outcomes and empowering students in rural and remote regions to engage with religious texts.

By modifying information delivery to accommodate each student's distinct learning preferences and styles, artificial intelligence (AI) technologies greatly improve the personalization of learning in Islamic educational environments. Particularly in places with limited access to traditional educational resources, where standard teaching approaches might not be as effective or accessible, this customization promotes more effective educational outcomes. The capacity to use AI to customise learning experiences is consistent with the Islamic educational philosophy of fostering each person's intellectual development and growth, which emphasises that learning should be an ongoing, individualised process. This idea is ingrained in the Islamic ethos of *Ilm* (knowledge), which emphasizes the significance of lifelong learning and making it available to everyone, regardless of socioeconomic or geographic limitations [22]–[24].

AI-driven platforms fill the gap created by the absence of physical institutions or trained teachers by giving students—especially those in underserved or remote areas—access to Islamic educational resources, including the Quran, Hadith, and Fiqh. By enabling students to interact with religious texts at their own pace and in a way that best meets their learning needs, artificial intelligence (AI) has the potential to democratize access to Islamic knowledge and close the educational gap between urban and rural locations. This change promotes lifelong learning and higher intellectual and spiritual development by enabling a deeper, more meaningful interaction with Islamic teachings in addition to improving learning outcomes. In the end, artificial intelligence (AI) can completely transform Islamic education by guaranteeing that knowledge is not constrained by geography, financial means, or conventional boundaries, which is consistent with the fundamental Islamic principles of justice, equity, and the quest for knowledge by all [25]–[29].

Ethical Challenges of AI in Islamic Education

The incorporation of artificial intelligence (AI) into Islamic education offers both opportunities and moral dilemmas as the technology continues to gain popularity in the field of education. The table lists the main moral concerns that need to be resolved in order to bring AI systems into compliance with Islamic principles and guarantee their responsible and efficient application in this field. An extensive examination of these issues, their consequences for AI systems in Islamic education, and the accompanying Islamic values may be found below.

Table 2. Ethical Challenges with Data Privacy and Algorithmic Bias

Finding	Description	Inference	Implications
Ethical Challenges with Data Privacy and Algorithmic Bias	Participants raised concerns about data privacy related to AI's collection and analysis of student data and algorithmic bias affecting educational fairness.	These concerns highlight the need for AI systems to follow Islamic principles like Amanah (trustworthiness) and Adl (justice). AI must be free from discrimination and respect privacy.	AI systems must be designed with transparency, ensuring privacy protection and equitable decision-making. Islamic ethical guidelines can guide the design and regulation of AI tools.

Participants in this study expressed serious concerns about data privacy, particularly since using AI in education frequently necessitates gathering and analyzing vast volumes of sensitive student data. Participants also emphasized how algorithmic bias may inadvertently impact educational equity, especially if biased data is used to train AI systems. These issues highlight how important it is that AI systems adhere to Islamic principles like Adl (justice) and Amanah (reliability). Islam places a high value on protecting people's rights and privacy; hence, AI data privacy concerns must be handled carefully to prevent transgressing these moral precepts [30]–[32]. Furthermore, the possibility of bias in AI systems runs against Islamic values of justice and equity. It is crucial to create AI tools that are both culturally aware and discrimination-free. AI apps must be created with privacy protection as a top priority in order to solve these problems, guaranteeing that all data is treated with the utmost care and openness. The creation of AI systems can benefit greatly from the application of Islamic ethical principles, which can help to avoid bias and guarantee that AI tools are unbiased, equitable, and consistent with Islamic principles of justice and equity [32]–[35].

Dehumanization of Education Through Over-Reliance on AI

Table 3. Dehumanization of Education Through Over-Reliance on AI

Finding	Description	Inference	Implications
Dehumanization of Education Through Over-Reliance on AI	Over-reliance on AI in education could reduce human interaction, which is essential in Islamic pedagogy for moral and spiritual guidance.	Human interaction in teaching is crucial for moral and spiritual development, and AI should complement rather than replace teachers in Islamic education.	AI should support human-centered teaching, preserving the teacher-student relationship as essential to spiritual and intellectual growth in Islamic education.

Several participants voiced worries that an excessive dependence on AI in education would dehumanize the educational process and weaken the bond between instructors and students. This relationship is highly valued in Islamic education, both for the purpose of teaching knowledge and for the purpose of offering spiritual counsel. In addition to imparting knowledge, a teacher's responsibility encompasses moral and ethical guidance, which is essential to the educational process. The role of the teacher as a spiritual mentor and educator is highly valued in the Islamic educational system. AI cannot take the role of human connection in fostering students' moral and spiritual growth. Even though AI can be a very useful tool to help teachers, it shouldn't take the place of the crucial human component of instruction. Students' spiritual and ethical development may be hampered if the teacher-student relationship is not maintained. Therefore, rather than undermining human-centered teaching, the goal is to make sure AI technologies support and enhance it.

AI must be given top priority in educational institutions as a supplement to conventional teaching techniques, guaranteeing that human instructors continue to play a crucial role in directing students' moral, intellectual, and spiritual development [36]–[38].

AI Improves Administrative Efficiency in Islamic Education

Table 4. AI Improves Administrative Efficiency in Islamic Education

Finding	Description	Inference	Implications
AI Improves Administrative Efficiency in Islamic Education	AI enhances administrative tasks like grading, scheduling, and resource allocation, allowing educators to focus on teaching.	AI-driven efficiency aligns with Islamic principles of accountability and resource optimization, enabling teachers to focus on meaningful student interaction.	AI improves institutional efficiency, freeing up educators' time to engage more with students and prioritize interactive, personalized teaching.

Artificial intelligence (AI) technologies are crucial in simplifying administrative processes like scheduling, grading, and resource distribution, freeing up teachers to concentrate more on instruction and less on laborious administrative work. One of the main benefits of incorporating AI into the teaching and learning process is this one. AI's application to administrative efficiency is consistent with the Islamic values of resource efficiency and accountability. AI saves teachers time by automating repetitive processes, allowing them to interact with pupils more deeply and provide more individualized training. Furthermore, AI's management of educational institutions can guarantee that resources are distributed in a way that fosters equity and fairness, guaranteeing that every student has access to the tools they require for success. According to this research, AI can help Islamic educational institutions become more resource-conscious and efficient, which will improve the learning environment by freeing up teachers to concentrate more on mentoring, instruction, and students' general academic growth [39]–[42].

Need for an Islamic Ethical Framework in AI Integration

Table 5. Need for an Islamic Ethical Framework in AI Integration

Finding	Description	Inference	Implications
Need for an Islamic Ethical Framework in AI Integration	There is a need for an Islamic ethical framework to guide the design and deployment of AI tools in Islamic education.	An Islamic ethical framework can ensure AI systems align with Islamic principles such as justice, transparency, and respect for human dignity in educational settings.	Developing AI systems guided by Islamic ethics will ensure they support the moral and spiritual dimensions of Islamic education, fostering justice and equity in their application.

The need for an Islamic ethical framework to direct the creation and incorporation of AI tools in Islamic education was underlined by numerous attendees. According to the survey, there is widespread agreement that AI tools ought to be firmly anchored in Islamic principles like justice, openness, and respect for human dignity, in addition to being in line with contemporary ethical standards. Essential rules for creating and using AI technologies that uphold the fundamentals of Islamic education can be found in the Islamic ethical framework. By guarding against potential drawbacks like bias, dehumanization, and privacy concerns, this approach helps guarantee that AI systems are consistent with Islamic moral precepts. To ensure that AI systems improve educational outcomes while maintaining

the moral and spiritual aspects of teaching, the development of AI in Islamic education must be treated carefully in light of these ethical considerations. To ensure the ethical use of AI in education, policymakers and AI developers should work together to produce rules and norms that represent an Islamic ethical viewpoint [43]–[46].

Case Studies and Examples from the Malay World

Given the cultural, social, and theological contexts of the Malay world, integrating artificial intelligence (AI) into Islamic education offers both special potential and difficulties. In order to demonstrate how AI is being used in Islamic education and in line with Islamic educational ideals, this section examines a number of case studies and examples from Malaysia and Indonesia.

A. Malaysia: AI in Islamic Education and Administrative Efficiency

Malaysia has made significant strides in incorporating AI into Islamic education, particularly in areas such as personalized instruction and administrative tasks. The Islamic Studies Department at Universiti Malaya (UM) is a prime example of this integration [47], [48].

AI-Powered Learning Platforms: At UM, AI-powered Learning Management Systems (LMS) are being used to personalize learning programs for students. By tailoring the content according to each student's progress, these systems enhance the comprehension of Islamic scriptures such as the Quran, Hadith, and Fiqh. The real-time monitoring of student progress allows educators to identify areas needing improvement and offer targeted support. This aligns with Islamic education's holistic approach, which emphasizes personal development alongside academic knowledge [49], [50].

Ethical Implications: The integration of AI in personalized learning aligns well with Islamic values such as *Ilm* (knowledge) and *Ijtihad* (independent reasoning), encouraging critical thinking and individualized growth. However, ethical concerns arise regarding data privacy as AI systems require access to sensitive student data, including performance and learning behaviors. This raises issues related to *Amanah* (trustworthiness), one of the core principles in Islam, which emphasizes the responsible handling of personal information [51], [52].

Administrative Efficiency: AI has also been applied to improve administrative efficiency by automating tasks such as scheduling, grading, and resource allocation. The use of AI in grading, for example, allows for timely feedback, enabling educators to focus more on interactive teaching and mentorship. This, in turn, enhances the quality of teacher-student relationships—a key element in Islamic pedagogy, where personal interaction is considered essential for spiritual guidance [53], [54].

B. Indonesia: AI in Islamic Boarding Schools (*Pesantren*)

In Indonesia, *Pesantren*, or Islamic boarding schools, have been exploring AI as a tool to enhance Islamic teaching and bridge the gap between traditional methods and modern technology. These schools, particularly in rural areas, have started adopting AI to improve both academic instruction and community service [55].

Smart *Pesantren* Initiative: The Smart *Pesantren* project integrates AI into the traditional Islamic curriculum, focusing on subjects like Arabic, Islamic law (Fiqh), and Quranic studies. AI-powered tools provide real-time feedback on pronunciation, recitation, and memorization, aiding students in improving their Quranic knowledge. This initiative has successfully combined traditional Islamic learning with cutting-edge technology, fostering a more engaged and personalized learning environment [56], [57].

Ethical Implications: While the initiative demonstrates the power of AI to enhance Quranic studies, it also raises questions about the dehumanization of education. The use of

AI in spiritual development—such as recitation—might reduce the human touch needed for spiritual mentorship. Islam emphasizes relationship-building between the teacher and student, and over-reliance on AI could undermine the emotional and spiritual connection that is central to Islamic pedagogy [58], [59].

Virtual Islamic Tutors: Some *Pesantren* have also implemented AI-powered virtual tutors to assist students with Hadith and Fiqh studies. These Natural Language Processing (NLP) chatbots can respond to student queries, provide quizzes, and direct students to relevant resources. This is particularly useful for students in remote areas who may not have access to qualified educators [60], [61].

Ethical Implications: The use of virtual tutors offers tremendous benefits for remote learning, ensuring that students can continue their education even without physical access to teachers. However, it also raises data privacy concerns and the potential lack of personal interaction, which could affect students' spiritual and moral development. To mitigate this, the ethical design of such systems should prioritize privacy protection and encourage the teacher's role in providing moral guidance [62], [63].

AI for Quranic Translation: In addition to teaching tools, AI is being used to translate the Quran and other Islamic texts into multiple languages, making Islamic knowledge accessible to non-Arabic speakers. This is an important development, as it democratizes access to sacred texts and helps spread Islamic teachings more widely [64].

Ethical Implications: The use of AI in translation must be handled with caution to ensure that the contextual meanings of the Quran and Hadith are preserved. AI algorithms, if not carefully designed, may introduce biases or inaccuracies, which can undermine the authenticity of the teachings. Islamic scholars and AI developers must collaborate to create systems that respect Islamic values and ensure accuracy in translations [65], [66].

C. Singapore: AI and Ethical Considerations in Islamic Education

In Singapore, the integration of AI into Islamic education has sparked significant ethical debates, particularly regarding data privacy and the balance between technology and human engagement [67], [68].

AI and Curriculum Development: Singapore's Islamic educational institutions have implemented AI to develop flexible courses that cater to the individual needs of students. By analyzing student data, AI helps recommend personalized learning resources on topics such as Islamic history, jurisprudence, and ethics. This helps ensure that students are progressing at their own pace while maintaining a strong foundation in Islamic principles [69]–[71].

Ethical Implications: The use of AI to personalize education is consistent with Islamic values of individualized learning and knowledge dissemination. However, it raises ethical issues related to data privacy and the potential for data exploitation. Singapore's strict data protection laws help address these concerns, but they also require AI systems to balance compliance with both national regulations and Islamic ethical norms [72], [73].

Human-AI Interaction: One of the central ethical concerns in Singapore is maintaining the human element in education. While AI can support personalized learning, it should not replace the essential role of the teacher in providing spiritual guidance. Islamic education emphasizes the relationship between the teacher and student as a source of moral and spiritual development [74], [75].

D. Regional Collaboration: Malaysia and Indonesia AI Initiatives

Both Malaysia and Indonesia are collaborating to develop AI solutions tailored to the specific needs of their students, particularly in Islamic education. These initiatives highlight

how cross-border cooperation can foster AI solutions that respect Islamic values while addressing local educational needs [76], [77].

Joint AI Research Projects: Universities in both countries are working together to develop AI-powered tools that align with Islamic principles. These collaborative efforts include the creation of Quranic learning platforms in partnership with Islamic scholars, ensuring that AI supports accurate interpretations of religious texts [78].

Cross-Border Educational Platforms: Cross-border e-learning systems are also being developed, which use AI to provide real-time feedback and deliver personalized Islamic education to students in both countries. These platforms cater to students' varying needs across Southeast Asia, ensuring high-quality learning experiences [79], [80].

Ethical Implications: These collaborative efforts are promising in terms of improving access to Islamic education across borders. However, they must adhere to ethical guidelines that ensure cultural sensitivity, data protection, and the maintenance of the human-centered nature of Islamic teaching [81], [82].

CONCLUSION

In the Malay world, incorporating artificial intelligence (AI) into Islamic education offers both revolutionary possibilities and moral dilemmas. This study examined how artificial intelligence (AI) may transform education in Islamic educational institutions by increasing administrative effectiveness, customizing learning experiences, and improving accessibility. But serious issues have been looked at, including the necessity for a curriculum that accurately reflects Islamic principles, algorithmic bias, data privacy, and the loss of human interaction. Fundamentally, by removing geographical constraints and providing individualized learning paths, content translation, and interactive learning experiences, AI has the potential to increase access to Islamic knowledge worldwide. AI can also make administrative tasks more efficient, which will increase student involvement. However, issues including unequal access to technology in underdeveloped regions, protecting data privacy in accordance with Islamic principles, and reducing algorithmic bias and cultural insensitivity must all be addressed for the ethical use of AI in Islamic education. Importantly, rather than being replaced by AI, the human teacher-student relationship—which is essential to Islamic pedagogy's moral and spiritual development—must be maintained and strengthened. This study emphasizes that although AI has the potential to greatly improve accessibility, learning customization, and administrative effectiveness, its effective integration necessitates an ethical and culturally aware framework. Fairness, data privacy, technological justice, and maintaining the human aspect in instruction should all be given top priority in such a system. This study has wide-ranging consequences. Legislators and leaders in education must create plans that guarantee fair access to AI tools and set moral standards for their application. Curriculum designers must come up with creative ways to incorporate AI tools that uphold Islamic principles and foster intellectual and spiritual development. It is recommended that AI developers design systems that uphold human dignity, justice, and fairness while also advancing technology. Establishing Islamic ethical frameworks for AI in education will require more study, with a special emphasis on the long-term effects on students' spiritual and character development. Insightful case studies demonstrating effective AI integration under Islamic principles would be helpful. To ensure that AI enhances Islamic education and produces a new generation of students who are both digitally literate and firmly rooted in their faith, prepared to make valuable contributions to society and the wider world, cross-sector collaboration between educators, technologists, religious scholars, and policymakers is crucial.

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Author Contribution

Sayed Akhyar contributed to conceptualization, literature review, and writing of the original manuscript. Idris Siregar assisted in methodology, data analysis, and revision of the manuscript. Both authors jointly finalized the article and approved the submitted version for publication and ensured academic integrity throughout the study.

Conflicts of Interest

There are no conflicts of interest among the authors related to this study. The research was conducted independently without any financial, commercial, or personal relationships that could influence the findings, interpretation, or presentation of the results in Safeguarding the Authenticity of Ulumul Qur'an study article.

REFERENCES

- [1] P. Mishra and T. Guru Sant, "Role of Artificial Intelligence and Internet of Things in Promoting Banking and Financial Services during COVID-19: Pre and Post Effect," in *2021 5th International Conference on Information Systems and Computer Networks, ISCON 2021*, GLA University, Institute of Business Management, Uttar Pradesh, Mathura, India: Institute of Electrical and Electronics Engineers Inc., 2021. <https://doi.org/10.1109/ISCON52037.2021.9702445>.
- [2] A. Cebulla, Z. Szpak, C. Howell, G. Knight, and S. Hussain, "Applying ethics to AI in the workplace: the design of a scorecard for Australian workplace health and safety," *AI Soc.*, vol. 38, no. 2, pp. 919–935, 2023. <https://doi.org/10.1007/s00146-022-01460-9>.
- [3] J. Pawłowska, "Customer Service Effectiveness in Shared Mobility Systems Using Artificial Intelligence Algorithms," in *Springer Proceedings in Business and Economics*, S. M., Ed., Faculty of Economics, University of Gdansk, Gdansk, Poland: Springer Science and Business Media B.V., 2021, pp. 125–133. https://doi.org/10.1007/978-3-030-50010-8_11.
- [4] A. J. Wójcik-Czerniawska, "The Role of Artificial Intelligence in Modern Finance and Sustainable Marketing," in *Handbook of Research on Achieving Sustainable Development Goals With Sustainable Marketing*, SGH Warsaw School of Economics, Poland: IGI Global, 2023, pp. 355–371. <https://doi.org/10.4018/978-1-6684-8681-8.ch019>.
- [5] A. Fazal, A. Ahmed, and S. Abbas, "Importance of artificial intelligence in achieving sustainable development goals through financial inclusion," *Qual. Res. Financ. Mark.*, 2024. <https://doi.org/10.1108/QRFM-04-2023-0098>.
- [6] S. Kanuck, "Humor, ethics, and dignity: Being human in the age of artificial intelligence," *Ethics Int. Aff.*, vol. 33, no. 1, pp. 3–12, 2019. <https://doi.org/10.1017/S0892679418000928>.
- [7] H. Mohamed and H. Ali, *Blockchain, fintech, and Islamic finance: Building the future in the new Islamic digital economy*. Hammad Bin Khalifa University (HBKU), Qatar: De Gruyter, 2022. <https://doi.org/10.1515/9783110745016>.
- [8] D. E. van Norren, "The ethics of artificial intelligence, UNESCO and the African Ubuntu perspective," *J. Information, Commun. Ethics Soc.*, vol. 21, no. 1, pp. 112–128, 2023. <https://doi.org/10.1108/JICES-04-2022-0037>.
- [9] S. E. Davies, "Artificial Intelligence in Global Health," *Ethics Int. Aff.*, vol. 33, no. 2, pp. 181–192, 2019. <https://doi.org/10.1017/S0892679419000157>.
- [10] M. Anderson, S. L. Anderson, G. Gounaris, and G. Kosteletos, "Towards moral machines: A

- discussion with Michael Anderson and Susan Leigh Anderson,” *Conatus - J. Philos.*, vol. 6, no. 1, pp. 177–202, 2021, <https://doi.org/10.12681/cjp.26832>.
- [11] S. M. Liao, “Ethics of artificial intelligence,” *Ethics Artif. Intell.*, no. forthcoming, pp. 1–525, 2020, <https://doi.org/10.1093/oso/9780190905033.001.0001>.
- [12] H. P. Ahmad, “Thematic and Structural Unity of Q 79 (al-Nazi’at): An Intratextual and Intertextual Analysis,” *QiST J. Quran Tafseer Stud.*, vol. 4, no. 1, pp. 41–58, Jan. 2025, <https://doi.org/10.23917/qist.v4i1.6698>.
- [13] H. Hidayah, S. Sa’ad, and A. Rosa, “Transnational Islamic Movements in Indonesia,” *Profetika J. Stud. Islam*, vol. 25, no. 01, pp. 55–66, 2024, <https://doi.org/10.23917/profetika.v25i01.2494>.
- [14] F. Tamami, S. Rahmawati, M. N. R. Maksum, M. S. Apriantoro, Muchammad Taufiq Affandi, and Shaifurrokhman Mahfudz, “Accusations of Islamophobia and Radicalism Against Muslim Women in Hijab in Indonesia: A Bibliometric Analysis,” *Multicult. Islam. Educ. Rev.*, vol. 1, no. 2, pp. 83–95, Dec. 2023, <https://doi.org/10.23917/mier.v1i2.3023>.
- [15] T. A. Amoo, “Ethical Consideration in Implementing AI-based Tutoring Systems as Educational Technology Tool in Education: Balancing Efficiency with Privacy and Equity in the Teaching of Students,” *FINGER J. Ilm. Teknol. Pendidik*, vol. 4, no. 1, pp. 34–41, Feb. 2025, <https://doi.org/10.58723/finger.v4i1.365>.
- [16] M. H. Fatoni and S. Sukari, “Opportunities and Challenges for Islamic Education in the Age of Technological Advancement,” *J. Paradig.*, vol. 16, no. 2, pp. 133–145, Nov. 2024, <https://doi.org/10.53961/paradigma.v16i2.226>.
- [17] S. Febriyani, H. Riadi, W. Azman, and S. Suseno, “Malay Culture in Welcoming the Century of Artificial Intelligence Excellence,” *J. Pemberdaya. Masy.*, vol. 4, no. 1, pp. 90–98, May 2025, <https://doi.org/10.46843/jpm.v4i1.375>.
- [18] Z. Zaharah, A. Basyit, M. T. Husein, A. Fauzi, Z. Arif, and I. Sina, “Revolutionizing Learning: The Impact of Artificial Intelligence on Islamic Education and the Wave of Transformation,” *AL-ISHLAH J. Pendidik.*, vol. 16, no. 4, Dec. 2024, <https://doi.org/10.35445/alishlah.v16i4.6078>.
- [19] M. A. Salim and N. Rajabiyah, “Impact of Artificial Intelligence on Islamic Education: Effectiveness, Innovation, and Socio-Cultural Influence,” *Adv. Educ. Innov.*, vol. 1, no. 3, pp. 101–112, Feb. 2025, <https://doi.org/10.69725/aei.v1i3.185>.
- [20] Md. Ishaque, M. Mahmudulhassan, and Muhammad Abuzar, “Global Contributions to Mental Health Research in Muslim Communities: A Bibliometric Approach to Islamic Education,” *Bull. Islam. Res.*, vol. 3, no. 2, pp. 315–338, Mar. 2025, <https://doi.org/10.69526/bir.v3i2.333>.
- [21] V. Braun and V. Clarke, “Using thematic analysis in psychology,” *Qual. Res. Psychol.*, vol. 3, no. 2, pp. 77–101, 2006, <https://doi.org/10.1191/1478088706qp063oa>.
- [22] D. Schiff, “Education for AI, not AI for Education: The Role of Education and Ethics in National AI Policy Strategies,” *Int. J. Artif. Intell. Educ.*, vol. 32, no. 3, pp. 527–563, Sep. 2022, <https://doi.org/10.1007/s40593-021-00270-2>.
- [23] Chima Abimbola Edeni, Olabisi Oluwakemi Adeleye, and Idowu Sulaimon Adeniyi, “The role of AI-enhanced tools in overcoming socioeconomic barriers in education: A conceptual analysis,” *World J. Adv. Res. Rev.*, vol. 21, no. 3, pp. 944–951, Mar. 2024, <https://doi.org/10.30574/wjarr.2024.21.3.0780>.
- [24] X. Zhai *et al.*, “A Review of Artificial Intelligence (AI) in Education from 2010 to 2020,” *Complexity*, vol. 2021, 2021, <https://doi.org/10.1155/2021/8812542>.
- [25] K. H. Bin Jamil, “Between Traditionalising and Futuring: Applying The Broader Maqasid Paradigm to Hadith Studies,” *Asia Pacific J. Educ. Educ.*, vol. 39, no. 2, pp. 183–196, 2024, <https://doi.org/10.21315/apjee2024.39.2.10>.
- [26] K. Gaanoun and M. Alsuhaibani, “Sentiment preservation in Quran translation with artificial intelligence approach : a study in reputable,” *Humanit. Soc. Sci. Commun.*, no. 2025, pp. 1–15, 2025, <https://doi.org/10.1057/s41599-024-04181-0>.
- [27] A. N. Zhilkina, O. N. Zhilkin, and V. K. Krylov, “Financial and economic and information

- aspects of smart city – AI at citizens’ service,” in *Advances in Intelligent Systems and Computing*, P. E.G. and S. B.S., Eds., State University of Management, Moscow, Russian Federation: Springer, 2020, pp. 148–155. https://doi.org/10.1007/978-3-030-39319-9_16.
- [28] E. Curry, S. Auer, A. J. Berre, A. Metzger, M. S. Perez, and S. Zillner, *Technologies and applications for big data value*. Insight SFI Research Centre for Data Analytics, NUI Galway, Ireland: Springer International Publishing, 2022. <https://doi.org/10.1007/9783030783075>.
- [29] X. Ren, “Application and innovation of traditional financial big data based on AI algorithm,” in *ACM International Conference Proceeding Series*, Dongfang College, Shandong University of Finance and Economics, Taian, 271000, China: Association for Computing Machinery, 2021, pp. 482–485. <https://doi.org/10.1145/3482632.3482734>.
- [30] R. R. Hidayatullah, M. Fakhri Kamali, N. Asia, and S. Pesisir, “Innovative Dakwah Strategies Through Social Media: Case Study Of Islamic Communication Approaches In Indonesia,” *INJIES Int. J. Islam. Educ. Stud.*, vol. 1, no. 1, pp. 16–27, 2024, <https://doi.org/10.34125/injies.v1i1.3>.
- [31] R. Shodiqoh, “Digital Ethics : Social Media Ethics in a Contemporary Islamic Perspective,” *Solo Int. Collab. Publ. Soc. Sci. Humanit.*, vol. 2, no. 3, pp. 215–226, 2024, <https://doi.org/10.61455/sicopus.v2i03.153>.
- [32] Mahmudulhassan, Muthoifin, and S. Begum, “Artificial Intelligence in Multicultural Islamic Education : Opportunities, Challenges, and Ethical Considerations,” *Solo Univers. J. Islam. Educ. Multicult.*, vol. 2, no. 1, pp. 19–26, 2024, <https://doi.org/10.61455/sujiem.v2i01.114>.
- [33] S. Burckhardt, D. Leijen, C. Sadowski, J. Yi, and T. Ball, “Two for the price of one: A model for parallel and incremental computation,” in *ACM SIGPLAN Notices*, Microsoft Research, United States, 2011, pp. 427–444. <https://doi.org/10.1145/2076021.2048101>.
- [34] S. Carta, S. Consoli, L. Piras, A. S. Podda, and D. R. Recupero, “Event Detection in Finance Using Hierarchical Clustering Algorithms on News and Tweets,” *PeerJ Comput. Sci.*, vol. 7, pp. 1–39, 2021, <https://doi.org/10.7717/PEERJ-CS.438>.
- [35] D. First, “Will big data algorithms dismantle the foundations of liberalism?: How the emergence of recommendation algorithms will shape the pursuit of happiness in the 21st century,” *AI Soc.*, vol. 33, no. 4, pp. 545–556, 2018, <https://doi.org/10.1007/s00146-017-0733-4>.
- [36] C. Ghafran and S. Yasmin, “Ethical Governance: Insight from the Islamic Perspective and an Empirical Enquiry,” *J. Bus. Ethics*, vol. 167, no. 3, pp. 513–533, Dec. 2020, <https://doi.org/10.1007/s10551-019-04170-3>.
- [37] A. Mergaliyev, M. Asutay, A. Avdukic, and Y. Karbhari, *Higher Ethical Objective (Maqasid al-Shari’ah) Augmented Framework for Islamic Banks: Assessing Ethical Performance and Exploring Its Determinants*, vol. 170, no. 4. Springer Netherlands, 2021. <https://doi.org/10.1007/s10551-019-04331-4>.
- [38] B. Ali, “Digital Da’wah in Northern Nigeria... Digital Da’wah in Northern Nigeria: A Thematic Analysis of Online Islamic Outreach Strategies in Taraba State, Nigeria,” vol. 24, no. 1, p. 2025, 2025, <https://doi.org/10.23917/ishraqi.v24i1.10953>.
- [39] R. Quinello and P. Tromboni de Souza Nascimento, “The Use of Artificial Intelligence in Facilities Management: Potential Applications from Systematic Literature Review,” *Artif. Intell. Appl.*, vol. 3, no. 3, pp. 223–235, Mar. 2025, <https://doi.org/10.47852/bonviewAIA52023691>.
- [40] T. Schleyer *et al.*, “A call for the informatics community to define priority practice and research areas at the intersection of climate and health: report from 2023 mini-summit,” *J. Am. Med. Informatics Assoc.*, vol. 32, no. 5, pp. 971–979, May 2025, <https://doi.org/10.1093/jamia/ocae292>.
- [41] T. Miller, I. Durlík, E. Kostecka, P. Kozłowska, M. Staude, and S. Sokołowska, “The Role of Lightweight AI Models in Supporting a Sustainable Transition to Renewable Energy: A Systematic Review,” *Energies*, vol. 18, no. 5, p. 1192, Feb. 2025, <https://doi.org/10.3390/en18051192>.
-

- [42] Y. Liu, L. Chen, and Z. Yao, “The application of artificial intelligence assistant to deep learning in teachers’ teaching and students’ learning processes,” *Front. Psychol.*, vol. 13, Aug. 2022, <https://doi.org/10.3389/fpsyg.2022.929175>.
- [43] E. Elmahjub, “Artificial Intelligence (AI) in Islamic Ethics: Towards Pluralist Ethical Benchmarking for AI,” *Philos. Technol.*, vol. 36, no. 4, p. 73, Dec. 2023, <https://doi.org/10.1007/s13347-023-00668-x>.
- [44] F. Mokhtar, N. F. Abdullah@Abdul Aziz, and M. A. Tumiran, “Bridging Traditions And Innovations Of Islamic Education In The Modern Era,” *Quantum J. Soc. Sci. Humanit.*, vol. 6, no. 2, pp. 297–307, Apr. 2025, <https://doi.org/10.55197/qjssh.v6i2.640>.
- [45] L. I. Nun, A. Mohtarom, A. Marzuki, and U. S. Lawal, “The Integration of Artificial Intelligence as a Teacher’s Partner in Islamic Religious Education Learning,” *J. Islam. Educ. Res.*, vol. 6, no. 2, Apr. 2025, <https://doi.org/10.35719/jier.v6i2.473>.
- [46] F. Syukur, A. Maghfurin, U. Marhamah, and P. Jehwae, “Integration of Artificial Intelligence in Islamic Higher Education: Comparative Responses between Indonesia and Thailand,” *Nazhruna J. Pendidik. Islam*, vol. 7, no. 3, pp. 531–553, 2024, <https://doi.org/10.31538/nzh.v7i3.13>.
- [47] Mohammad Aniq Bin Amdan, Naldo Janius, and Mohd Aidil Hazidi Bin Kasdiah, “Concept paper: Efficiency of Artificial Intelligence (AI) tools for STEM Education in Malaysia,” *Int. J. Sci. Res. Arch.*, vol. 12, no. 2, pp. 553–559, Jul. 2024, <https://doi.org/10.30574/ijsra.2024.12.2.1273>.
- [48] M. Nasir, S. Rizal, Basri, and M. Pabbajah, “Revolutionizing Teungku Dayah learning model: exploring the transformative impact of technological advancements on Islamic education in Aceh,” *Cogent Educ.*, vol. 11, no. 1, 2024, <https://doi.org/10.1080/2331186X.2024.2335720>.
- [49] S. Qazi *et al.*, “AI-Driven Learning Management Systems: Modern Developments, Challenges and Future Trends during the Age of ChatGPT,” *Comput. Mater. Contin.*, vol. 80, no. 2, pp. 3289–3314, 2024, <https://doi.org/10.32604/cmc.2024.048893>.
- [50] N. C. Premawardhena, “Examining Recent Trends in The Digitalisation of Foreign Language Teaching,” *J. Desk Res. Rev. Anal.*, vol. 2, no. 2, pp. 178–191, Jan. 2025, <https://doi.org/10.4038/jdr.a.v2i2.49>.
- [51] M. S. Djazilan, A. Rulyansah, and J. Rihlah, “Why AI is Essential for the Future of Islamic Education: A Call for Ethical and Effective Implementation,” *EDUKASIA J. Pendidik. dan Pembelajaran*, vol. 5, no. 2, pp. 201–216, Dec. 2024, <https://doi.org/10.62775/edukasia.v5i2.1373>.
- [52] A. Fedele, C. Punzi, and S. Tramacere, “The ALTAI checklist as a tool to assess ethical and legal implications for a trustworthy AI development in education,” *Comput. Law Secur. Rev.*, vol. 53, p. 105986, Jul. 2024, <https://doi.org/10.1016/j.clsr.2024.105986>.
- [53] S. F. Ahmad, M. M. Alam, M. K. Rahmat, M. S. Mubarik, and S. I. Hyder, “Academic and Administrative Role of Artificial Intelligence in Education,” *Sustainability*, vol. 14, no. 3, p. 1101, Jan. 2022, <https://doi.org/10.3390/su14031101>.
- [54] Olanike Abiola Ajuwon, Enitan Shukurat Animashaun, and Njideka Rita Chiekezie, “Integrating AI and technology in educational administration: Improving efficiency and educational quality,” *Open Access Res. J. Sci. Technol.*, vol. 11, no. 2, pp. 116–127, Aug. 2024, <https://doi.org/10.53022/oarjst.2024.11.2.0102>.
- [55] R. Nuri, “Transformation of Islamic Finance in the Digital Era: Developments and Challenges of Halal Fintech,” *J. Halal Rev.*, vol. 1, no. 1, pp. 36–50, Jan. 2025, [https://doi.org/10.70764/gdpu-jhr.2025.1\(1\)-04](https://doi.org/10.70764/gdpu-jhr.2025.1(1)-04).
- [56] C. Nikmatullah, W. Wahyudin, N. Tarihoran, and A. Fauzi, “Digital Pesantren: Revitalization of the Islamic Education System in the Disruptive Era,” *Al-Izzah J. Hasil-Hasil Penelit.*, p. 1, Jun. 2023, <https://doi.org/10.31332/ai.v0i0.5880>.
- [57] M. Abuzar, Mahmudhassan, and Muthoifin, “University Students’ Trust in AI: Examining Reliance and Strategies for Critical Engagement,” *Int. J. Interact. Mob. Technol.*, vol. 19, no. 07, pp. 70–82, Apr. 2025, <https://doi.org/10.3991/ijim.v19i07.52875>.
-

-
- [58] K. I. Alkhouri, “The Role of Artificial Intelligence in the Study of the Psychology of Religion,” *Religions*, vol. 15, no. 3, p. 290, Feb. 2024, <https://doi.org/10.3390/rel15030290>.
- [59] R. Jamwal, A. Sharma, and T. Sharma, “Harnessing Artificial Intelligence to Promote Spiritual Intelligence Via Social Media,” in *2024 Eighth International Conference on Parallel, Distributed and Grid Computing (PDGC)*, IEEE, Dec. 2024, pp. 126–130. <https://doi.org/10.1109/PDGC64653.2024.10984275>.
- [60] T. Lestari, A. Rahmayana, and F. Agustiana, “Transformation of Pesantren Education in the Digital Era: AI Innovation and Adaptation for Technology-Based Learning,” *Electron. Integr. Comput. Algorithm J.*, vol. 2, no. 2, pp. 86–90, Apr. 2025, <https://doi.org/10.62123/enigma.v2i2.58>.
- [61] H. Khusnuniyah and S. Achmad, “Computational Thinking-Based Fiqh Learning Strategies In Pesantren,” *At-Ta’dib J. Ilm. Prodi Pendidik. Agama Islam*, pp. 173–182, Jan. 2025, <https://doi.org/10.47498/tadib.v16i2.3054>.
- [62] D. Lee and S. Yeo, “Developing an AI-based chatbot for practicing responsive teaching in mathematics,” *Comput. Educ.*, vol. 191, p. 104646, Dec. 2022, <https://doi.org/10.1016/j.compedu.2022.104646>.
- [63] J. P. López-Goyez, A. González-Briones, and A. F. Chamorro, “Models of Intelligent Tutoring Systems Based on Autonomous Agents for Virtual Learning Environments: A Systematic Literature Review,” 2025, pp. 184–195. https://doi.org/10.1007/978-3-031-70415-4_16.
- [64] I. Dahia and M. Belbacha, “Machine-Learning-based English Quranic Translation: An Evaluation of ChatGPT,” *Int. J. Linguist. Lit. Transl.*, vol. 7, no. 8, pp. 128–136, Aug. 2024, <https://doi.org/10.32996/ijllt.2024.7.8.17>.
- [65] Moh. Mauluddin, “Kontribusi Artificial Intelligence (AI) pada Studi Al Quran di Era Digital; Peluang dan Tantangan,” *Madinah J. Stud. Islam*, vol. 11, no. 1, pp. 99–113, Jun. 2024, <https://doi.org/10.58518/madinah.v11i1.2518>.
- [66] Taghian, Muhammad A. A., “Assessing the Accuracy Criteria of AI Tools-aided Translation: A Case Study of Two-word Prophetic Hadiths,” *CDELT Occas. Pap. Dev. English Educ.*, vol. 87, no. 1, pp. 217–262, Jul. 2024, <https://doi.org/10.21608/opde.2024.384369>.
- [67] S. F. Ab Rahim, M. F. Ab Rahman, H. A. Abdullah Thaidi, N. N. M. A. Nik Mohd Azimi, and M. R. Jailani, “Artificial Intelligence for Fatwa Issuance: Guidelines And Ethical Considerations,” *J. Fatwa Manag. Res.*, vol. 30, no. 1, pp. 76–100, Jan. 2025, <https://doi.org/10.33102/jfatwa.vol30no1.654>.
- [68] Tabassum Shairwani, Syeda Aqsa Bint a Zafar, and Zul Ul Ane Fatima, “Navigating Excellence: Exploring Education Systems of Singapore & Republic of South Korea; Insights for Pakistan’s Educational Landscape,” *Indus J. Soc. Sci.*, vol. 3, no. 1, pp. 324–335, Feb. 2025, <https://doi.org/10.59075/ijss.v3i1.644>.
- [69] A. Rahman, I. Warsah, and A. Murfi, “Islamic Education System in Singapore: Current Issues and Challenges,” *J. Pendidik. Islam*, vol. 8, no. 2, pp. 197–222, Feb. 2020, <https://doi.org/10.14421/jpi.2019.82.197-222>.
- [70] U. Samsudin, “Exploration of Artificial Intelligence (AI) in Increasing Student Collaboration in Digital-Based Islamic Education Learning,” *Al-Hayat J. Islam. Educ.*, vol. 9, no. 1, pp. 216–230, Apr. 2025, <https://doi.org/10.35723/ajie.v9i1.106>.
- [71] K. Goode, H. M. Kim, and M. Deng, “Examining Singapore’s AI Progress,” Mar. 2023. <https://doi.org/10.51593/2021CA014>.
- [72] P. Xu, W. Dong, and C. Wang, “Present Situation and Enlightenment of Artificial Intelligence Lifelong Education System in Singapore,” *J. Auton. Intell.*, vol. 5, no. 1, p. 23, May 2022, <https://doi.org/10.32629/jai.v5i1.499>.
- [73] S. N. Syed Hassan, S. Abdul Mutalib, N. I. Abdullah Chik, and N. I. Mohammad Irwan, “The Contribution of Madrasah Alsagoff Al-Arabiah in Singapore to Islamic Education,” *J. Quran Sunnah Educ. Spec. Needs*, vol. 8, no. 2, pp. 1–14, Dec. 2024, <https://doi.org/10.33102/jqss.vol8no2.214>.
- [74] N. Radzi, A. L. Sari, and Irwandi, “Islamic Education in Singapore: Case Study Madrasah Al-

- Juneid Al-Islamiyah,” *Int. J. Sci. Soc.*, vol. 1, no. 2, pp. 14–26, Sep. 2019, <https://doi.org/10.54783/ijssoc.v1i2.10>.
- [75] A. Sarkiman, Zamsiswaya, I. Husti, and N. F. B. Salman, “Curriculum innovation in the part-time madrasah learning system in Singapore,” *Idarah Tarb. J. Manag. Islam. Educ.*, vol. 6, no. 1, pp. 1–20, Feb. 2025, <https://doi.org/10.32832/itjmie.v6i1.17496>.
- [76] H. Haron, A. Sajari, R. Dewanti, Y. Ganesan, and A. Gui, “Digital Transformation In Community Development Of Malaysia And Indonesia,” *ICCD*, vol. 5, no. 1, pp. 232–242, Nov. 2023, <https://doi.org/10.33068/iccd.v5i1.591>.
- [77] A. N. Andri Nirwana, Mahmudhassan, M. Ali, Muthoifin, Waston, and A. R. B. S. Senathirajah, “The Intersection of Quranic Studies and Modern Technology: A Bibliometric Analysis of Academic Publications from 2000 to 2024,” *Qubahan Acad. J.*, vol. 4, no. 4, pp. 178–190, 2024, <https://doi.org/10.48161/qaj.v4n4a981>.
- [78] R. Rusdiana and M. R. AR, “Pemanfaatan Model Pembelajaran E-Learning Berbasis Artificial Intelegent (Ai) Pada Pendidikan Islam,” *Addabana J. Pendidik. Agama Islam*, vol. 7, no. 2, pp. 69–84, Aug. 2024, <https://doi.org/10.47732/adb.v7i2.513>.
- [79] X. Wang, “Design and CIPP Evaluation of an AI-Powered Personalized Learning Platform for Cross-Border E-Commerce,” in *2025 IEEE International Conference on Electronics, Energy Systems and Power Engineering (EESPE)*, IEEE, Mar. 2025, pp. 292–304. <https://doi.org/10.1109/EESPE63401.2025.10987066>.
- [80] M. Liu and D. Yu, “Towards intelligent E-learning systems,” *Educ. Inf. Technol.*, vol. 28, no. 7, pp. 7845–7876, Jul. 2023, <https://doi.org/10.1007/s10639-022-11479-6>.
- [81] C. Huang, Z. Zhang, B. Mao, and X. Yao, “An Overview of Artificial Intelligence Ethics,” *IEEE Trans. Artif. Intell.*, vol. 4, no. 4, pp. 799–819, Aug. 2023, <https://doi.org/10.1109/TAI.2022.3194503>.
- [82] A. B. Brendel, M. Mirbabaie, T.-B. Lembcke, and L. Hofeditz, “Ethical Management of Artificial Intelligence,” *Sustainability*, vol. 13, no. 4, p. 1974, Feb. 2021, <https://doi.org/10.3390/su13041974>.