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## **Integration of Ecotheological Values in Adaptive Islamic Religious Education Curriculum in the Era of Artificial Intelligence**

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### **ABSTRACT :**

Environmental degradation has become one of the most pressing global issues, including in Indonesia, where technological advances often widen the gap between digital development and ecological responsibility. This study aims to analyze the integration of ecotheological values in the Islamic Religious Education curriculum that is adaptive to the Artificial Intelligence era. This research uses an integrative literature review approach by examining various relevant sources regarding ecotheology, PAI curriculum, and the use of Artificial Intelligence in learning. The research findings indicate that the integration of AI into Islamic Religious Education presents both challenges and opportunities. These challenges include technological dependency, limited infrastructure, and ethical and cultural issues. On the other hand, AI also opens up opportunities to enhance ecological awareness and spiritual values through interactive and adaptive learning experiences. This research emphasizes the importance of digital literacy and teacher pedagogical competence in balancing the use of technology with Islamic principles and environmental ethics. This integration is expected to shape students who are technologically literate, spiritually grounded, and environmentally responsible in accordance with Islamic teachings.

**Keywords:** *Ecotheological Values, Adaptive Islamic Education Curriculum, Artificial Intelligence*

## **INTRODUCTION**

Environmental damage is a major problem worldwide, including in Indonesia, which continues to be a focus of international attention. Over time, this environmental damage problem has worsened and become increasingly complex. This is driven by the rapid growth of factories and the public's habit of purchasing goods made from plastic and other non-biodegradable materials. Excessive plastic consumption can increase the volume of waste and greenhouse gases in the air. Piles of waste, water and air pollution, and extreme climate change are creating a worrying environmental situation. This situation impacts human health, but also threatens the survival of various creatures and the balance of the Earth's ecosystem.<sup>1</sup>

This issue forms an ecological issue rooted in religious and moral aspects. The Islamic perspective positions humans as caliphs on earth, responsible for protecting, preserving, and preventing environmental damage. As explained in Surah Ar-Rum, verse 41 of the Quran, environmental damage is caused by human actions, thus requiring behavioral changes and increased ethical awareness. This ecotheological concept depicts the relationship between humans

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<sup>1</sup> Rendi Susiswo Ismail and Aziz Thaba, *Hukum Dan Etika Lingkungan* (Sumatera Barat: PT Mafy Media Literasi Indonesia, 2024), 1–2.

and the environment, which is tied to their relationship with God. Education plays a crucial role in instilling religious values and environmental awareness that align with Islamic teachings regarding responsibility for nature.<sup>2</sup>

The increasingly rapid development of technology also influences the way humans obtain information, understand events, and make decisions, especially on environmental issues.<sup>3</sup> The use of technology without spiritual awareness has the potential to widen the gap between digital progress and ecological responsibility. Islamic religious education faces the challenge of instilling environmental awareness based on faith, morals, and the values of monotheism, enabling students to use technology wisely. Integration of ecotheological values supports the development of a way of thinking that views nature as a trust, not merely an object of exploitation. Islamic Religious Education curriculum plays a crucial role in shaping ecological character by integrating knowledge, attitudes, and religious values into the learning process.<sup>4</sup>

The learning process requires technological support that can facilitate it. One example is the emergence of artificial intelligence, which can be utilized in various fields, including Islamic Religious Education. AI can create more engaging learning experiences by tailoring them to individual backgrounds and involving active interaction.<sup>5</sup> AI in the context of Islamic Religious Education can be used as a tool to present content and materials related to environmental issues in a visual and lively manner, making it easier for students to understand and deepen the connection between religious teachings and efforts to preserve the environment. The use of AI also supports teachers in leading in-depth conversations about the importance of caring for the environment as a religious obligation. Through AI, teaching materials can be presented in a more interactive and personalized format, which can increase students' active participation in the learning process.<sup>6</sup> This AI must still be developed and used by paying attention to ethical principles and Islamic values so that its use does not deviate from the essence of Islamic religious education.<sup>7</sup>

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<sup>2</sup> Alfadhli et al., "Ekoteologi Islam: Menjelajahi Hubungan Spiritual Antara Manusia, Alam, Dan Tuhan Dalam Tradisi Islam," *Ta'wiluna: Jurnal Ilmu Al-Qur'an, Tafsir Dan Pemikiran Islam* 6, no. 1 (2025): 300–310, <https://doi.org/10.58401/takwiluna.v6i1.2024>.

<sup>3</sup> Riska Aini Putri, "Pengaruh Teknologi Dalam Perubahan Pembelajaran Di Era Digital," *Journal of Computers and Digital Business*, 2, no. 3 (2023): 105–111, <https://doi.org/10.56427/jcbd.v2i3.233>.

<sup>4</sup> Meilisa Ani Nurhayati et al., "Islam Dan Tantangan Dalam Era Digital: Mengembangkan Koneksi Spiritual Dalam Dunia Maya," *Al Aufo: Jurnal Pendidikan Dan Kajian Keislaman* 5, no. 1 (2023): 1–27, <https://doi.org/10.32665/alaufa.v5i1.1618>.

<sup>5</sup> Sehan Rifky, "Dampak Penggunaan Artificial Intelligence Bagi Pendidikan Tinggi," *Indonesian Journal of Multidisciplinary on Social and Technology*, 2, no. 1 (2024): 37–42, <https://doi.org/10.31004/ijmst.v2i1.287>.

<sup>6</sup> Ahmad Sulaiman, "Peran AI Dalam Membangun Kesadaran Ekologis Pada Peserta Didik Melalui Pendidikan Agama Islam," *Pelita: Jurnal Studi Islam Mahasiswa UII Dalwa* 1, no. 2 (2024): 199–207, <https://doi.org/10.38073/pelita.v1i2.1839>.

<sup>7</sup> Andi Eki Dwi Wahyuni et al., "Integrasi Artificial Intelligence Dalam Pembelajaran Pendidikan Agama Islam," *Indo-MathEdu Intellectuals Journal* 6, no. 1 (2025): 1271–1280, <https://doi.org/10.54373/imeij.v6i1.2625>.

Several previous studies have shown that the integration of Islamic values is linked to a variety of methods utilizing digital technology. The use of this technology requires digital literacy to ensure that the values remain in line with Islamic teachings.<sup>8</sup> Other studies also discuss the transmission of teacher methods by implementing AI-based media such as Canva, Gamma and Quiziz, but there are still some that still apply conventional methods such as one-way lectures and books.<sup>9</sup> The focus of research that has not yet connected ecotheological values, PAI curriculum and artificial intelligence adaptation in an integrated manner is a difference that needs to be studied further.

The current Islamic Religious Education learning process predominantly emphasizes aspects of worship, morality, and the normative dimension of religion. Consequently, environmental issues, which encompass various ecological, ethical, and spiritual perspectives, are rarely comprehensively integrated into the curriculum. In reality, challenges such as natural disasters, climate change, water and air pollution, and illegal logging require in-depth attention, especially from the younger generation, to understand the meaning of their responsibilities. This gap is further highlighted by the lack of utilization of Artificial Intelligence technology as a means of adaptive ecological literacy. AI could actually support teachers in illustrating verses of the Quran, enabling students to better understand the connection between religion and current environmental issues. These findings indicate that Islamic Religious Education has not optimally addressed the ecological and social challenges posed by students, necessitating additional learning programs to address this gap.<sup>10</sup>

This situation worsens when teachers link religious teachings to environmental problems and technological developments. The Islamic Religious Education curriculum also prioritizes cognitive and normative domains, resulting in inadequate active attention to socio-ecological aspects. This impacts the learning process, requiring teachers to innovate in developing materials and employing teaching methods that enhance ecological literacy in accordance with Islamic teachings. For example, Quranic verses are linked to human responsibility as caliphs on earth by utilizing environmentally friendly technology. The limited number of reference sources and training programs also poses a challenge.<sup>11</sup>

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<sup>8</sup> Muhammad Hafizd Fauzi et al., "Integrasi Nilai Islam Dan Inovasi Pembelajaran Dalam Pendidikan Agama Islam Di Perguruan Tinggi Dalam Perspektif Akademik Dan Keagamaan," *Reflection : Islamic Education Journal* 2, no. 2 (2025): 186–196, <https://doi.org/10.61132/reflection.v2i2.771>.

<sup>9</sup> Lasri Lumbantoruan et al., "Strategi Guru Dalam Memamfaatkan Media Pembelajaran Berbasis AI," *Jurnal Pendidikan Dan Sastra Inggris*, 5, no. 2 (2025): 181–188., <https://doi.org/10.55606/jupensi.v5i2.5190>.

<sup>10</sup> Aqila Fitriani Ulayya, Wahab Wahab, and Syamsul Kurniawan, "Model Pembelajaran Pendidikan Agama Islam Berbasis Proyek Kesadaran Lingkungan Di Sekolah," *Paedagogie: Jurnal Pendidikan Dan Studi Islam* 6, no. 2 (2025): 17–42, <https://doi.org/10.52593/pdg.06.2.02>.

<sup>11</sup> Ahmad Manshur and Farida Isroani, "Tantangan Kurikulum Pendidikan Agama Islam Di Era Digital," *Edukasi Islami: Jurnal Pendidikan Islam* 12, no. 4 (2023): 351–368, <https://doi.org/10.30868/ei.v12i04.8114>.

Integrating ecotheological values into Islamic Religious Education learning can be an alternative to bridge the apparent gap between Islamic teachings and real-life educational practices. One way to do this is through a holistic approach that connects the cognitive, affective, and psychomotor domains, along with concrete actions such as planting trees or recycling organic waste. This will shape students' behavior toward ritual obedience and environmental responsibility. This integration also reinforces the concepts of faith, belief, caliphate, and rahmatan lil'alamin (mercy for all the worlds) as applicable environmental ethics. Furthermore, this integration is anticipated to produce a learning process that is contextually relevant, engaging, interactive, and adaptable, so that students not only master formal Islamic teachings but also are prepared to act as representatives of God who care for the environment with the help of developing technology.<sup>12</sup> The integration of ecotheological values by utilizing Artificial Intelligence in the Islamic Education curriculum is a combination that has not been widely studied in previous research.

## Methods

This study uses a qualitative approach with an integrative literature review. This method was chosen because it is able to collect, examine, compare, and synthesize various previous studies obtained from various journals, books, and other references related to the research topic to produce a new understanding of the integration of ecotheological values in the adaptive Islamic Religious Education curriculum in the era of Artificial Intelligence. This approach not only summarizes the findings of previous studies but also evaluates the relationships between studies to gain a deeper conceptual perspective.<sup>13</sup>

Research data was obtained from various scientific publications, including reputable journal articles, conference proceedings, and credible academic books. These sources were selected because of their strong relevance to the themes of Islamic ecotheology, the Islamic Religious Education curriculum, and the use, challenges, and impacts of Artificial Intelligence in learning. The selection of these sources was based on specific criteria: journal articles published within the last five years, with DOI (Domain Information Identification Number), and discussions related to the research focus. Book sources were selected based on the stipulation that they were published within the last 10 years and relevant to the research topic. This approach allows for a comprehensive, evidence-based synthesis of information, supporting the development of logical arguments in an interdisciplinary context.

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<sup>12</sup> Mubiar Agustin et al., "Pendidikan Islam Berbasis Lingkungan: Membangun Kesadaran Ekologis Melalui Nilai-Nilai Keislaman," *Jurnal Penelitian Pendidikan Sosial Humaniora* 8, no. 2 (2023): 214–223, <https://doi.org/10.32696/jp2sh.v8i2.3442>.

<sup>13</sup> Chigbu et al., "The Science of Literature Reviews: Searching, Identifying, Selecting, and Synthesising," *Publications* 11, no. 1 (2023): 2, <https://doi.org/10.3390/publications11010002>.

Data collection was conducted through direct searches of various national and international journal databases, such as Google Scholar, DOAJ, SINTA, Garuda, ScienceDirect, and ResearchGate. The keywords used varied, including Islamic ecotheology, ecological values, Islamic Religious Education Curriculum, Artificial Intelligence in Learning, the impact of Artificial Intelligence, and the challenges of Artificial Intelligence. This keyword variation aimed to broaden the search scope and facilitate the discovery of literature relevant to the research topic being studied.

Data analysis in this study was conducted using a systematic integrative literature review. The process began with the identification of the problem and research focus to establish a clear framework. Afterward, literature was selected based on inclusion criteria, including relevance to Islamic ecotheology, Islamic Religious Education curriculum, and Artificial Intelligence. Next stage was a literature quality evaluation to ensure data credibility and the relevance of sources to the research objectives. Selected data were then grouped into several main themes to ensure a coherent analysis. The final stage involved synthesis and interpretation, yielding new insights into the integration of ecotheological values and the adaptation of Artificial Intelligence in the Islamic Religious Education curriculum. This approach enabled a comprehensive, evidence-based, and interdisciplinary analysis, resulting in strong argumentative value for the findings.<sup>14</sup>

## **Result**

Artificial Intelligence has brought significant changes to the field of education, particularly in Islamic Religious Education. Educational institutions and educators strive to incorporate technological innovation into learning programs, making it crucial to examine the opportunities and challenges posed by Artificial Intelligence. This study employed an integrative literature review method by selecting twelve reputable and indexed journal articles published in the past five years. These articles outline the role of Artificial Intelligence in strengthening the learning process in Islamic Religious Education by incorporating ecotheological principles, enhancing students' ecological and spiritual understanding, and enabling curriculum adjustments to be more responsive to technological developments. The articles also highlight the impact of Artificial Intelligence on teaching methods, such as increased interactivity, tailoring learning to individual needs, and developing ecological and spiritual awareness in students. A summary of these twelve literature reviews is presented briefly in the table below :

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<sup>14</sup> Sudirman et al., *Metodologi Penelitian 1* (Bandung: CV.Media Sains Indonesia, 2023), 58–65.

**Table 1.** Key Research Overview

Author	Title	Method	Key Findings
Ahmad Sulaiman (2024)	<i>The Role of AI in Building Ecological Awareness in Students Through Islamic Religious Education</i>	Case study	Artificial intelligence enhances students' ecological awareness through interactive, adaptive, and personalized learning experiences. This technology helps students understand Islamic ecological concepts, such as human responsibility as caliphs on earth, and strengthens their engagement in environmental conservation discussions. Furthermore, artificial intelligence enables the delivery of contextual and relevant materials related to environmental issues, supports the development of learning models that combine spirituality and ecological awareness, and provides recommendations for teachers and curriculum developers to develop more effective learning strategies.
Annisa Nur Asyiah & M. Husnaini (2025)	<i>Repositioning Artificial Intelligence (AI) in Islamic Religious Education Learning Based on Nurcholish Madjid's Thoughts</i>	Literature review	Artificial intelligence makes Islamic Religious Education (PAI) learning more adaptive, interactive, and effective. The application of artificial intelligence aligns with Nurcholish Madjid's thinking on the modernization of Islamic education, helping teachers design innovative learning strategies without compromising Islamic values. Artificial intelligence also supports personalized learning and enriches students' learning experiences, while also serving as a means to integrate religious values with modern learning practices.
Husni Zulkarnain et al. (2021)	<i>Integration of Islamic Religious Education Learning with Environmental Education in the Adiwiyata Program at SD Plus Al-Kautsar Malang</i>	Literature review	The integration of Islamic Religious Education (PAI) with Environmental Education can increase students' environmental awareness through various learning methods, such as habituation, discussions, lectures, and demonstrations, making learning more interactive and effective. Teachers' role models have been shown to significantly influence the development of students' environmentally conscious character. Furthermore, the integration of ecotheological values encourages students to internalize the relationship between religious teachings and the environment in practical ways, in line with the objectives of the Adiwiyata program.
Rizal Arjunnajata et al. (2024)	<i>The Impact of Environmentally Based Islamic Religious Education Learning with Technology and Social Media Integration on the Religious Character of Students at SDN 1 Mlaran Purworejo</i>	Literature review	The integration of Islamic Religious Education (PAI), environmental education, and technology or social media enhances students' religious character and environmental awareness. Project methods, group work, and hands-on practice also increase student active participation, while teachers create a safe, comfortable, and conducive classroom environment. The use of technology can increase student motivation and interaction, strengthen ecological literacy, and help students understand ecotheological values, thus fostering social responsibility from an early age.

Ratna Dewi (2021)	<i>Integration of Islamic Education in the Implementation of Ecology</i>	Literature review	Integration of Islamic education unites disparate elements to form a unity of knowledge and character. Ecological education helps students understand the relationship between humans and nature, developing moral, spiritual, and social awareness, based on the Quran, Hadith, ijtihad, and policy. Problems in ecological education can be addressed through ontological, epistemological, and axiological solutions. This approach encourages the development of environmentally responsible characters and an understanding of the Islamic concept of trust.
Nazih Sadatul Kahfi et al. (2025)	<i>Artificial Intelligence in Islamic Religious Education: Balancing Learning Efficiency And Safeguarding Spiritual Integrity In Indonesian Higher Education</i>	Case study	AI has great potential to improve learning efficiency, accessibility of teaching materials, and student engagement in the context of Islamic higher education. However, the biggest challenge is maintaining spiritual integrity and religious ethics so that they are not eroded by technological tools. The proposed solution is to integrate AI systems with an Islamic framework and develop AI-based religious ethics to ensure a balance between technological advancement and the protection of spiritual values, which are the core objectives of Islamic Religious Education.
Taufik Mustofa et al. (2025)	<i>Integrating Ecotheological Values in the Islamic Religious Education Curriculum: The Green Islamic Education Perspective in Karawang Secondary Schools</i>	Literature review	The integration of ecotheological values into Islamic Religious Education is carried out through three channels: strengthening spiritual awareness (understanding nature as a kaunyah verse), implementing ecological ethics in the school environment, and concrete, environmentally-based actions. Implementation in the field has not been optimal due to limited resources, inadequate teacher training, and minimal policy support. Curriculum adjustments are needed to make it more responsive and the capacity of Islamic Religious Education teachers to maximize ecotheological impact is needed.
Abdul Rohman et al. (2024)	<i>Religious Education for The Environment: Integrating Eco-Theology in The Curriculum of Islamic Religious and Character Education to Enhance Environmental Education in Indonesia</i>	Literature review	The Islamic Religious Education curriculum in Indonesia tends to emphasize the affective domain (attitudes) over the cognitive domain (deep understanding) in environmental education. The integration of Islamic ecotheology is crucial for enhancing students' ecological and spiritual understanding by offering an ethical foundation. These findings recommend adapting the Islamic Religious Education curriculum by adding explicit ecotheological content, encompassing Islamic conservation principles and environmental ethics, as a solution to acute environmental degradation, as existing conservation efforts lack support from spiritual values.
Ahmad Barizi & SDA Defi Yufarika (2025)	<i>Ecology in the Quran and Hadith: Implications for the</i>	Literature review	This study confirms that the Qur'an and Hadith are primary sources of strong ecological guidance, teaching the obligation to maintain ecosystem balance and prevent environmental damage. Key

	<i>Islamic Education Curriculum</i>		Islamic concepts that must be integrated into Islamic Religious Education are the concepts of khalifah (guardian) and amanah (responsibility). This integration is crucial for developing students' character, who are environmentally responsible and possess a deep spiritual awareness of the relationship between humans and nature.
Robi'ah et al. (2025)	<i>Strengthening Islamic Values Through Religious Education in the Era of Artificial Intelligence</i>	Literature review	The use of AI, such as AI-based learning platforms and prayer reminder apps, is highly effective in strengthening the internalization of Islamic values and making the delivery of religious material more interactive, personalized, and adaptive to individual needs. These findings emphasize the urgency of ethical oversight of AI algorithms to mitigate the risk of information distortion and ensure the preservation of Islamic values (spiritual integrity).
Mahrus (2024)	<i>Integration of Islamic Values with Ecological Awareness: A Study of the Transformation of Islamic Education</i>	Literature review	The integration of Islamic Religious Education with ecological awareness can be transformed through five main innovative strategies: (1) Interdisciplinary Curriculum (combining religious teachings and environmental science), (2) Practical Experience (involving students in activities in nature), (3) Participatory Learning (involving students in decision-making on environmental issues), (4) Community Engagement (involving the community in protecting the environment), and (5) Project-Based Evaluation (students demonstrate ecological understanding through applied projects). This approach results in specific changes in students' attitudes, behaviors, and spiritual understanding of environmental sustainability.
Gangsar Edi Laksono (2022)	<i>Ecotheology-Based Islamic Religious Education to Achieve Environmental Awareness</i>	Literature review	The global environmental crisis is rooted in an anthropocentric paradigm and a spiritual crisis, making an ecotheology approach crucial for raising awareness. The learning objectives of ecotheology-based Islamic Religious Education extend beyond the cognitive realm, focusing on increasing spiritual awareness, attitudes, skills, and participation, leading to ecologically responsible morals and ethics. Implementation strategies must include a thematic learning model that integrates environmental issues.

## Discussion

### ***Challenge of Integrating Ecotheological Values in Adaptive Islamic Religious Education Curriculum in the Era of Artificial Intelligence***

Integration of ecotheological values into the Islamic Religious Education curriculum in the era of Artificial Intelligence presents several challenges that require careful consideration. One major concern is the risk of students becoming overly dependent on technological devices. For example, AI, which provides instant answers, has the potential to reduce students' active participation in the learning process. Such dependence can lead to students becoming less active,

less critical thinkers, and less motivated to understand ecological concepts taught in alignment with Islamic teachings, such as maintaining the balance of nature as a mandate from Allah.<sup>15</sup>

This findings align with Kahfi et al. that students reliance on AI without adequate guidance from educators risks altering the foundations of learning. This shift is evident in the shift in focus from mastering deep and reflective thinking processes to seeking quick and instant results. This situation can undermine the instillation of important values and ethics. Students accustomed to using automated systems may experience a decline in their ability to think independently, reason morally, and develop holistic awareness. This condition gradually undermines the goals of character education, which emphasize deep understanding and ethical responsibility.<sup>16</sup>

Agreeing with these findings, Sulaiman et al. stated that excessive use of AI can reduce student activity and engagement if not integrated through teacher guidance. Wise use of AI, under direct teacher guidance and combined with interactive learning methods, can actually strengthen students' ecological awareness. In this regard, teachers need to keep abreast of technological developments and position AI as a supporting tool, not a replacement. This can be achieved through discussions or field practice activities to optimize student participation, both spiritually and ecologically.<sup>17</sup>

Robi'ah et al. also emphasized that the teacher's role is crucial as a value-oriented facilitator, ensuring that the use of artificial intelligence aligns with the essential objectives of Islamic Religious Education. Teacher's function goes beyond simply controlling technology; they serve as living role models (*uswah hasanah*), instilling ethical attitudes, ecological responsibility, and strengthening students spiritual awareness. Through personal guidance and role models, teachers bridge AI-based knowledge with religious wisdom. This approach affirms the fundamental principle that technological sophistication does not replace the role model, moral guidance, and human touch of Islamic education. Authentic interaction between teachers and students remains central to the formation of a holistic character.<sup>18</sup>

Another challenge relates to limited resources and supporting facilities. Unequal access to technology and limited capacity to manage these resources, particularly in remote areas, can hinder

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<sup>15</sup> Revalya Nadya, Ika Amalia, and Ichsan Fauzi Rachman, "Analisis Potensi Dan Tantangan Dalam Penggunaan AI Di Bidang Pendidikan," *Semantik: Jurnal Riset Ilmu Pendidikan, Bahasa Dan Budaya* 3, no. 2 (2025): 295–309, <https://doi.org/10.61132/semantik.v3i2.1705>.

<sup>16</sup> Nazih Sadatul Kahfi et al., "Artificial Intelligence in Islamic Religious Education: Balancing Learning Efficiency And Safeguarding Spiritual Integrity In Indonesian Higher Education," *INJECT (Interdisciplinary Journal of Communication)* 10, no. 1 (June 28, 2025): 643–660, <https://doi.org/10.18326/inject.v10i1.4325>.

<sup>17</sup> Sulaiman, "Peran AI Dalam Membangun Kesadaran Ekologis Pada Peserta Didik Melalui Pendidikan Agama Islam."

<sup>18</sup> Robi'ah Robi'ah et al., "Penguatan Nilai-Nilai Islam Melalui Pendidikan Agama Di Era Artificial Intelligence," *Journal of Education Technology Information Social Sciences and Health* 4, no. 1 (March 1, 2025): 624–630, <https://doi.org/10.57235/jetish.v4i1.4889>.

the implementation of modern technologies like AI, particularly in Islamic Religious Education.<sup>19</sup> On the other hand, educators also face the risk of reduced interaction with each other, which remains a crucial part of Islamic Religious Education learning to shape character, empathy, and spiritual values. Similarly, Husnaini explained that limited access to technology and educator readiness significantly impact the quality of AI-based learning. Therefore, the role of teachers remains essential as mediators, guiding and directing students in using technology appropriately while maintaining quality interpersonal relationships in the classroom..

As Mahrus stated, the digital divide has the potential to widen the disparity in learning quality between schools with adequate facilities and those lacking essential resources. This situation, without appropriate policy intervention, could hamper efforts to equitably implement the national AI-based adaptive Islamic Religious Education curriculum. Reality shows that integrating Islamic Religious Education technology is a complex issue. Successful implementation does not solely depend on the pedagogical readiness of teachers and students, but requires structural support, equitable resource allocation, and education policies that guarantee equal access across all educational institutions in Indonesia.<sup>20</sup>

On the other hand, there are challenges involving cultural, ethical, and theological aspects. The public remains skeptical about the use of AI, as it is perceived to shift long-standing traditional values and fail to fully capture the emotional, moral, and spiritual experiences inherent in religious education. In line with this, Ratna Dewi emphasized that the purity of ecotheological values in education must be maintained, so that technology cannot become the sole reference for understanding religious teachings.<sup>21</sup> Therefore, the use of AI needs to be controlled to ensure it remains in accordance with sharia principles, maintains the truth of the material, and is applied in an ethical and humane manner in learning.<sup>22</sup>

Ahmad Barizi and Defi Yufarika also emphasized the importance of Islamic law as the primary guideline for the use of AI in religious education. Without strong value oversight, AI risks being used pragmatically, ignoring aspects of monotheism, trustworthiness, and morality. The use of technology without value filters produces knowledge separated from spirituality. The integration of ecotheological values serves as a solid ethical and moral foundation, ensuring that AI remains a

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<sup>19</sup> Molefi Matsieli and Stephen Mutula, "COVID-19 and Digital Transformation in Higher Education Institutions: Towards Inclusive and Equitable Access to Quality Education," *Education Sciences* 14, no. 8 (2024): 819, <https://doi.org/10.3390/educsci14080819>.

<sup>20</sup> Mahrus, "Integrasi Nilai-Nilai Islam Dengan Kesadaran Ekologis: Kajian Transformasi Pendidikan Islam," *Dirosat: Journal of Islamic Education* 9, no. 1 (2024): 109–121, <https://doi.org/10.28944/dirosat.v9i1.1877>.

<sup>21</sup> Ratna Dewi, "Integrasi Pendidikan Islam Dalam Implementasi Ekologi," *Sustainable Jurnal Kajian Mutu Pendidikan* 4, no. 2 (2021): 119–131, <https://doi.org/10.32923/kjmp.v4i2.2175>.

<sup>22</sup> Shadiqin et al., "AI Dan Agama: Tantangan Dan Peluang Dalam Era Digital," *Jurnal Ilmu Sosial Dan Ilmu Politik Malikussaleh* 4, no. 2 (2023): 319–333, <https://doi.org/10.29103/jspm.v4i2.10929>.

corridor for education oriented toward the formation of faithful, noble individuals who care about environmental sustainability as a form of gratitude to the Creator. This holistic approach is crucial for creating an Islamic education ecosystem that balances technological advancement with spiritual strengthening.<sup>23</sup>

### ***Opportunities for Integrating Ecotheological Values in Adaptive Islamic Religious Education Curriculum in the Era of Artificial Intelligence***

Not only do challenges arise, but the integration of ecotheological values into the Islamic Religious Education curriculum in the era of Artificial Intelligence also presents significant opportunities to enrich the learning experience. Artificial Intelligence can enable the presentation of religious and environmental material to be more engaging, interactive, and contextual. As Sulaiman explained, Artificial Intelligence can increase students' ecological awareness through personalized, adaptive learning and digital visualizations of the concepts of caliphate, trust, and environmental conservation. Thus, ecotheological values can be conveyed more concretely, for example through simulations, videos, and interactive modules.<sup>24</sup>

The use of AI also opens up significant opportunities for integrating verses about the universe and sacred texts in a visual, interactive, and contextual manner. This pedagogical innovation ensures that students understand religious texts in a normative, textual manner, and are able to relate them to the real ecological realities they face. This transformative approach strengthens fundamental awareness of the universe as an integral part of the signs of the greatness (verses) of Allah SWT's power. It must be preserved, interpreted, and reflected upon. This aligns with the findings of Taufik Mustofa et al., who emphasized that the integration of Islamic Religious Education ecotheology is effective in fostering holistic spiritual and ecological awareness. This awareness is fostered through a deep understanding of nature as a verse about the universe, manifested in real, environmentally responsible practices.<sup>25</sup>

Another opportunity lies in the ability of Artificial Intelligence to support personalized learning, as highlighted in research by Asyiah & Husnaini. Artificial Intelligence systems can tailor material recommendations, learning styles, and difficulty levels individually, enabling teachers to provide more targeted support. This aligns closely with the goals of Islamic Religious Education

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<sup>23</sup> Ahmad Barizi and SDA Defi Yufarika, "Ekologi Dalam Al-Quran Dan Hadis: Implikasinya Terhadap Kurikulum Pendidikan Islam," *Al-Madrasah Jurnal Pendidikan Madrasah Ibtidaiyah* 9, no. 2 (April 10, 2025): 1033, <https://doi.org/10.35931/am.v9i2.4822>.

<sup>24</sup> Andi Eki Dwi Wahyuni et al., "Integrasi Artificial Intelligence Dalam Pembelajaran Pendidikan Agama Islam," *Indo-MathEdu Intellectuals Journal* 6, no. 1 (2025): 1271–1280, <https://doi.org/10.54373/imeij.v6i1.2625>.

<sup>25</sup> Taufik Mustofa et al., "Integrating Ecotheological Values in the Islamic Religious Education Curriculum: The Green Islamic Education Perspective in Karawang Secondary Schools," *Jurnal Iqra' : Kajian Ilmu Pendidikan* 10, no. 3 (November 12, 2025): 51–65, <https://doi.org/10.25217/ji.v10i3.6589>.

to develop morals, spiritual awareness, and ecological responsibility. Personalized learning also helps students develop a deeper ecological understanding tailored to their interests and needs.<sup>26</sup>

AI can serve as a creative collaborative tool to actively engage students in environmental-based activities. This can be done through digital projects, technology-assisted environmental observations, the creation of ecological campaigns, or the use of AI-based applications to monitor school cleanliness. This form of collaboration helps students understand the relationship between Islamic teachings and ecological responsibility in a concrete way. Thus, ecotheological values are not only taught theoretically but also realized in concrete actions relevant to everyday life.<sup>27</sup>

Integration of ecotheological values and artificial intelligence can encourage project-based or hands-on learning that directly engages students. Arjunnajata explained that the use of technology and digital media in environment-based Islamic Religious Education learning can increase student active participation, religious character, and ecological awareness. Artificial intelligence can support activities such as monitoring the school environment, creating digital campaigns about cleanliness, or utilizing applications to identify waste and plants.<sup>28</sup> This strengthens students' understanding that environmental protection is part of Islamic worship and ethics. The opportunity to integrate ecotheological values and Artificial Intelligence not only enriches the material but also creates a relevant, enjoyable learning experience that has a real impact on student behavior.

AI has the potential to be a strategic instrument in developing an adaptive, contextual Islamic Religious Education curriculum that is oriented toward the formation of faithful, noble individuals with deep ecological concerns. This integration enables the realization of an ideal Islamic Religious Education learning ecosystem that is responsive to the acceleration of global technological development, firmly rooted in fundamental Islamic values (*rahmatan lil alamin*), and relevant to the principles of environmental sustainability. The end result is graduates prepared to face the digital era with a complete character, broad insight, and responsibility for the sustainability of the earth. This educational vision emphasizes a balance between practical theological aspects, creating a generation of Muslims who are technologically proficient and possess high moral integrity.

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<sup>26</sup> Rofiati Auwalyah, M. Syarif, and Muhammad Ali Rohmad, "Dinamika Penggunaan Artificial Intelligence (AI) Dalam Pembelajaran Pendidikan Agama Islam Di SMA," *Atta'dib Jurnal Pendidikan Agama Islam* 6, no. 2 (2025): 148–165, <https://doi.org/10.30863/attadib.v6i2.10339>.

<sup>27</sup> Hermanto Hermanto et al., "Manfaat Artificial Intelligence (AI) Terhadap Siswa-Siswi Dalam Pemahaman Kegiatan Pembelajaran Lingkungan Sekolah Berbasis Digital," *Jurnal Inovasi Dan Terapan Pengabdian Masyarakat* 4, no. 2 (2024): 154–163, <https://doi.org/10.35721/jitpemas.v4i2.256>.

<sup>28</sup> Rizal Arjunnajata, Muhammad Farras Afif Ibrahim Mamesah, and Rizal Fathurrohman, "Dampak Pembelajaran PAI Berbasis Lingkungan Dengan Integrasi Teknologi Dan Media Sosial Terhadap Karakter Religius Siswa SDN 1 Mlaran Purworejo," *Indonesian Journal of Elementary Education and Teaching Innovation* 3, no. 2 (2024): 109–118, <https://doi.org/10.21927/ijeeti.2024.3>.

## ***Strategies for Strengthening the Integration of Ecotheological Values in Adaptive Islamic Religious Education Curriculum in the Era of Artificial Intelligence***

Integration of ecotheological values and Artificial Intelligence in Islamic Religious Education requires a more targeted reinforcement strategy. The success of this integration is greatly influenced by teacher preparedness. Asyiah & Husnaini explained that teachers need to have good religious digital literacy in order to be able to manage Artificial Intelligence while still paying attention to sharia principles, ethics, and ecological mandates. Therefore, teacher training must include technical skills in using Artificial Intelligence as well as an understanding of ecotheological concepts so that technology is not merely a tool but truly supports spiritual and ecological development.<sup>29</sup>

In addition to individual teacher competencies, this strategy for strengthening integration also requires the formulation of explicit curriculum policies. Ecotheological values must be incorporated into the learning outcomes of Islamic Religious Education. Similarly, Abdul Rohman et al. stated that without a clear position of ecotheology within the curriculum structure, Islamic Religious Education environmental learning has the potential to remain merely normative and symbolic. An adaptive curriculum based on Artificial Intelligence (AI) needs to be carefully designed with achievement indicators that balance in-depth religious understanding, strengthening ecological awareness, and internalizing students' moral responsibility towards the environment. This approach ensures that Islamic Religious Education is relevant, transformative, and produces students with holistic character, ready to face the challenges of the times.<sup>30</sup>

The next strategy is to provide adequate facilities and infrastructure. Limited access to technology, as highlighted in several literature findings, is a major challenge in implementing adaptive learning based on Artificial Intelligence. Schools need to ensure the availability of internet networks, supporting devices, and applications that adhere to Islamic values so that integration can be carried out evenly. Research by Husni Zulkarnain et al. also explains that the success of integrating religious and environmental education is greatly influenced by a supportive learning environment, including teacher role models and adequate facilities.<sup>31</sup> The application of Artificial Intelligence in Islamic Religious Education also tends to be successful when teachers act as

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<sup>29</sup> Annisa Nur Asyiah and M. Husnaini, "Reposisi Artificial Intelligence (AI) Dalam Pembelajaran PAI Berbasis Pemikiran Nurcholish Madjid," *L-Ubudiyah: Jurnal Pendidikan Dan Studi Islam*, 6, no. 1 (2025): 320–328, <https://doi.org/10.55623/au.v6i1.462>.

<sup>30</sup> Abdul Rohman et al., "Religious Education For The Environment: Integrating Eco-Theology In The Curriculum of Islamic Religious And Character Education To Enhance Environmental Education In Indonesia," *Nadwa: Jurnal Pendidikan Islam* 18, no. 2 (December 25, 2024): 201–226, <https://doi.org/10.21580/nw.2024.18.2.21094>.

<sup>31</sup> Husni Zulkarnain, M. Nurul Humaidi, and Moh. Nurhakim, "Integrasi Pembelajaran Pendidikan Agama Islam Dengan Pendidikan Lingkungan Hidup Pada Program Adiwiyata Sd Plus Al-Kautsar Malang," *Al-Tadzkiyyah: Jurnal Pendidikan Islam* 12, no. 2 (2021): 211–230, <https://doi.org/10.24042/atjpi.v12i2.9852>.

facilitators who maintain continuity between technology-based learning and the development of spiritual values.<sup>32</sup>

In line with this, Mahrus emphasized that strengthening the integration of ecotheological values requires adequate structural support from educational institutions. The provision of technological infrastructure, internet connectivity, and relevant hardware must be accompanied by participatory learning design, project-based evaluation, and active involvement of the school community. The use of AI should not be exclusive and centralized to certain schools. This strategy allows for equitable implementation of an AI-based adaptive Islamic Religious Education curriculum that is fairer, more sustainable, and reaches all geographical areas of Indonesian educational institutions.<sup>33</sup>

One important strategy is strengthening teacher capacity through training focused on religious digital literacy and understanding the concept of Islamic ecotheology. Teachers who are technologically savvy but still uphold Islamic principles tend to be more successful in integrating Artificial Intelligence (AI) with environmental values-based learning. Therefore, teacher training should focus not only on the use of AI tools but also on how to interpret digital content from the perspective of morality, monotheism, and ecological trust.<sup>34</sup>

These findings align with Gangsar view, which asserts that ecotheology-based Islamic religious education must go beyond the mere transfer of cognitive knowledge. Learning strategies need to be comprehensively directed at fostering spiritual awareness, instilling a strong ecological attitude, developing practical skills, and actively participating students in preserving the environment. AI can be optimally utilized as a supporting medium for reflection and a catalyst for concrete ecological action. The use of this technology must remain within a comprehensive thematic learning framework. This framework firmly positions the environmental crisis as a moral and spiritual issue, not merely a technical problem to be solved through technology without a shift in ethical paradigms.<sup>35</sup>

Unequal access to technology also poses a challenge in implementing adaptive learning in various schools. Therefore, strengthening strategies through the provision of basic infrastructure such as a stable internet network, supporting devices, and access to educational applications based

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<sup>32</sup> Ayit Irpani, "Harnessing Artificial Intelligence for the Reinforcement of Islamic Values: A Transformation in Madrasah Education," *Al-Absar: Journal of Islamic Education Management* 4, no. 1 (2025): 106–118, <https://doi.org/10.58223/al-abshar.v4i1.465>.

<sup>33</sup> Mahrus, "Integrasi Nilai-Nilai Islam Dengan Kesadaran Ekologis: Kajian Transformasi Pendidikan Islam."

<sup>34</sup> Mufidah Hayati and Zulfani Sesmiarni, "Peningkatan Kompetensi Pedagogik Guru Melalui Kegiatan KKG PAI Untuk Menghadapi Tantangan Era Digital," *Madani: Jurnal Ilmiah Multidisiplin* 2, no. 12 (2024): 564–573, <https://doi.org/10.5281/zenodo.14561010>.

<sup>35</sup> Gangsar Edi Laksono, "Pendidikan Agama Islam Berbasis Ecotheology Islam Untuk Mewujudkan Kesadaran Lingkungan," *Jurnal Kependidikan* 10, no. 2 (2022): 247–258, <https://doi.org/10.24090/jk.v10i2.8043>.

on Artificial Intelligence that adhere to religious values are urgently needed. Support from educational institutions in providing these facilities can narrow the digital divide, especially in schools in areas with limited resources.

On the other hand, strengthening strategies include developing ethical standards for the use of Artificial Intelligence in Islamic Religious Education. Nazih Sadatul Kahfi et al. argue that the use of AI in Islamic Religious Education must be accompanied by strong ethical and religious guidelines to prevent the erosion of students' spiritual integrity. These ethical standards include the validity of religious material, algorithm transparency, student data protection, and oversight of the role of AI to prevent it from replacing the scientific authority and exemplary behavior of teachers. This approach ensures that Islamic Religious Education technological innovation goes hand in hand with the maintenance of fundamental values of character education.<sup>36</sup>

Meanwhile, from a pedagogical perspective, the curriculum needs to be refined so that ecotheological values emerge not only cognitively but also through experience-based activities. Arjunnajata's research confirms that students more easily internalize ecological values through activities such as observation, collaborative projects, and hands-on practice. Artificial intelligence can be used to support these activities through simulations, environmental data analysis, or learning media that allow students to reflect on the relationship between religious teachings and ecological conditions.<sup>37</sup>

An experience-based approach reinforces the fundamental role of Islamic Religious Education as a means of sustainable behavioral change. Ratna Dewi emphasized that ecological integration in Islamic Religious Education must address ontological, epistemological, and axiological dimensions. The goal is for students to truly internalize and deeply practice the values of amanah (responsibility) towards nature.<sup>38</sup> In this context, AI becomes a reflective tool that supports the process of learning complex values. AI serves as a teaching aid, but it is not the sole source of truth and should not replace students' critical reasoning and spiritual understanding.

Furthermore, there are theological and ethical challenges in using Artificial Intelligence to understand religious material. Therefore, it is necessary to develop ethical standards for the use of Artificial Intelligence in Islamic Religious Education, particularly in ensuring the accuracy and validity of teachings and the security of student data. Collaboration between religious experts, technology experts, and schools can help ensure that the systems used remain aligned with Sharia

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<sup>36</sup> Sadatul Kahfi et al., "Artificial Intelligence in Islamic Religious Education: Balancing Learning Efficiency And Safeguarding Spiritual Integrity In Indonesian Higher Education."

<sup>37</sup> Arjunnajata, Mamesah, and Fathurrohman, "Dampak Pembelajaran PAI Berbasis Lingkungan Dengan Integrasi Teknologi Dan Media Sosial Terhadap Karakter Religius Siswa SDN 1 Mlaran Purworejo."

<sup>38</sup> Dewi, "Integrasi Pendidikan Islam Dalam Implementasi Ekologi."

principles and ecotheological values.<sup>39</sup> Through these steps, it is hoped that the integration of ecotheological values into an adaptive Islamic Religious Education curriculum in the era of Artificial Intelligence will not only be an ideal concept but also be practically implementable. This strategy is expected to produce students who are not only technologically literate but also possess ecological awareness, strong spirituality, and morality aligned with Islamic teachings.

A systematic strengthening strategy includes adaptive curriculum policies, equitable infrastructure readiness, strengthening ethical standards for technology use, and implementing an experience-based pedagogical approach and integrating ecotheological values into AI. These efforts have the potential to be transformative. This holistic approach aims to develop digitally literate and proficient students with a high level of ecological awareness, deep spirituality, and responsible morals for environmental sustainability. This vision affirms Islamic education's commitment to creating a balanced generation, deeply rooted in environmental moral and ethical values, while also adapting to advances in science and technology.

## Conclusion

Based on the results of the study above, it can be concluded that the integration of ecotheological values into an adaptive Islamic Religious Education curriculum in the era of Artificial Intelligence is a crucial step in strengthening students' spiritual and ecological awareness. AI provides an opportunity to improve the quality of Islamic Religious Education learning through the presentation of more interactive and contextual materials. Its implementation still faces several challenges, including unequal access to technology, especially in remote areas, the risk of reduced human interaction, and the limitations of AI in understanding moral and spiritual aspects in depth. Therefore, teacher readiness in digital literacy, a flexible curriculum, and the wise use of AI as a supporting tool, not a replacement, are needed. Thus, the integration of ecotheological values and AI technology can be balanced, relevant to today's educational needs, and able to shape students with Islamic character, adaptability, and commitment to environmental preservation.

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<sup>39</sup> Annisa Nur Asyiah and M. Husnaini, "Reposisi Artificial Intelligence (AI) Dalam Pembelajaran PAI Berbasis Pemikiran Nurcholish Madjid," *L-Ubudiyah: Jurnal Pendidikan Dan Studi Islam*, 6, no. 1 (2025): 320–328, <https://doi.org/10.55623/au.v6i1.462>.

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