

INTEGRATING ECO-THEOLOGY IN ISLAMIC EDUCATION: A CASE STUDY ON FOSTERING ECOLOGICAL AWARENESS THROUGH RELIGIOUS PEDAGOGY

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Abstract

This study investigates the operationalization of eco-theology in Islamic education and its effects on students' environmental awareness and behavior. Anchored in the Qur'anic principles of *khilāfah* (vicegerency), *amānah* (trusteeship), and *mizān* (balance), the research employs a qualitative case study design across three Islamic elementary schools in Demak that have instituted eco-theology-based programs. Data were collected through semi-structured interviews, classroom and schoolyard observations, and document analysis. The analytic procedure involved iterative reduction, categorical coding, and interpretive synthesis, followed by source triangulation to enhance credibility. The findings show that integrating eco-theology into the curriculum substantially



strengthens students' understanding of the connection between Islamic teachings and ecological responsibility while fostering tangible pro-environmental practices, including reforestation activities, structured waste management, and prudent energy use. Experiential learning and consistent teacher modeling emerged as decisive drivers of students' ecological conduct. Nonetheless, implementation is constrained by limited instructional materials, uneven teacher training, and the absence of systematic, school-wide eco-theological policies. Policy implications indicate the need for comprehensive eco-theology curricula, sustained professional development for teachers, and governance frameworks that institutionalize environmental stewardship. Schools should formalize supportive policies and cultivate partnerships among educational institutions, academics, and environmental organizations to build a more sustainable and integrated learning ecosystem.

Keywords: *Eco-Theology in Curriculum, Environmental Conservation, Experiential Learning, Islamic-Based Environmental Education, Students' Ecological Awareness*

Abstrak

Studi ini mengeksplorasi implementasi ekoteologi dalam kurikulum pendidikan Islam serta dampaknya terhadap kesadaran lingkungan siswa. Berlandaskan konsep khilafah, amanah, dan mizan, penelitian ini menganalisis bagaimana pendekatan ekoteologi membentuk perilaku ekologis siswa dalam kehidupan sehari-hari. Dengan menggunakan metode studi kasus kualitatif, penelitian ini dilakukan di tiga sekolah dasar Islam di Demak yang telah menerapkan program berbasis ekoteologi. Pengumpulan data dilakukan melalui wawancara, observasi, dan analisis dokumen. Proses analisis data mencakup reduksi, kategorisasi-koding, dan interpretasi, yang kemudian divalidasi melalui triangulasi sumber guna meningkatkan keabsahan penelitian. Temuan menunjukkan bahwa memasukkan ekoteologi dalam kurikulum secara signifikan meningkatkan

pemahaman siswa tentang hubungan antara ajaran Islam dan tanggung jawab ekologis. Program-program berbasis prinsip ekoteologi secara aktif melibatkan siswa dalam kegiatan pelestarian lingkungan, seperti penghijauan, pengelolaan sampah, dan efisiensi energi. Selain itu, pendekatan pembelajaran berbasis pengalaman dan keteladanan guru memainkan peran penting dalam membentuk perilaku ekologis siswa. Namun, beberapa tantangan menghambat implementasi pendidikan berbasis ekoteologi secara penuh, termasuk keterbatasan bahan ajar yang memadai, kurangnya pelatihan guru, dan tidak adanya kebijakan ekoteologi yang sistematis di sekolah. Implikasi kebijakan menunjukkan bahwa institusi pendidikan harus memprioritaskan pengembangan kurikulum berbasis ekoteologi yang komprehensif dan memastikan bahwa guru dilatih secara memadai untuk menyampaikan ajaran ini secara efektif. Rekomendasi praktis termasuk pembuatan kebijakan sekolah yang sistematis untuk mendukung ekoteologi, serta mendorong kolaborasi antara institusi pendidikan, akademisi, dan organisasi lingkungan untuk mengembangkan model pembelajaran berkelanjutan dan terintegrasi.

Kata Kunci: *Ekoteologi dalam Kurikulum; Konservasi Lingkungan; Pembelajaran Berbasis Pengalaman; Pendidikan Lingkungan Berbasis Islam, Kesadaran Ekologis Siswa.*

INTRODUCTION

The escalating global environmental crisis—marked by climate change, deforestation, biodiversity loss, and pollution—has generated urgent concern across sectors, including education (Córdor-Salvatierra et al., 2022; Djirong et al., 2024; Dunlop & Rushton, 2022; García et al., 2024; Ismail & Firas, 2024). Contemporary educational frameworks increasingly foreground sustainability, yet many underplay the spiritual and ethical dimensions that can powerfully cultivate ecological consciousness (Huang et al., 2024). In Islamic education, eco-theology offers a distinctive pathway for nurturing environmental awareness through scriptural principles of *khilāfah* (stewardship), *amānah*

(trusteeship), and *mizān* (balance), thereby grounding ecological responsibility in religious doctrine (Setianingrum et al., 2024).

Despite growing scholarly interest, practical applications of Islamic eco-theology within educational settings remain underdeveloped (Romdloni et al., 2024). Much of the existing literature privileges theological exposition while giving insufficient attention to pedagogically robust strategies for classroom integration (Nurlaela et al., 2024). Moreover, eco-friendly initiatives adopted by some Islamic schools and pesantren are often ad hoc and lack systematic alignment with Islamic doctrinal teachings. This theory–practice divide underscores the need for a structured framework that translates eco-theological insights into teachable, assessable, and institutionally supported practices.

Prior studies on sustainable education highlight models such as the green school movement and the infusion of environmental education across the curriculum (Muchlis et al., 2024; Romlah et al., 2024; Sterling, 2001). Within Islamic studies, approaches such as *fiqh al-bi'ah* (Islamic environmental jurisprudence) articulate normative guidance for environmental stewardship (Sayem, 2021). However, in formal Islamic education, eco-theology frequently remains at the level of theory, with limited curricular enactment. This gap points to the necessity of a deliberately designed model that operationalizes eco-theological principles to cultivate holistic ecological awareness (Khotimah et al., 2025).

One typical response has been to embed sustainability themes within Islamic studies coursework (Grinfelde et al., 2021; Purnomo et al., 2024). Typical practices involve linking environmental ethics to Qur'anic verses (e.g., al-A'rāf 7:31) and Prophetic hadiths that emphasize moderation, cleanliness, and care for creation. However, implementation across institutions remains sporadic, uneven, and insufficiently standardized. A more coherent programmatic approach is required to ensure consistent, scalable, and evidence-based integration.

The broader scholarly canon establishes important foundations. Nasr (2002) traces the metaphysical roots of Islamic eco-theology and diagnoses a spiritual crisis underlying ecological degradation (Sayem, 2021). Mohamed (2014) examines how Islamic education could foster ecological awareness but notes the absence of a concrete curricular framework. Sayem (2021) further argues that environmental protection coheres with *maqāṣid al-sharī'ah* (objectives of Islamic law), a claim reinforced by analyses connecting sustainability with Islamic legal and ethical principles (Nasir et al., 2022). While collectively illuminating, these contributions stop short of proposing pragmatic instructional designs suitable for Islamic educational institutions.

The central problem addressed in this study is the absence of a comprehensive, pedagogically sound model for integrating Islamic eco-theology into educational practice. Existing efforts are fragmented and rarely address the spiritual-ethical dimensions alongside behavioral competencies. The novelty of this research lies in constructing a framework that systematically bridges eco-theological principles with curricular design, classroom pedagogy, and school-level policy, thereby positioning environmental stewardship as a core outcome of Islamic education rather than a peripheral theme. The research question guiding this study is : How can eco-theology be effectively integrated into the curriculum of Islamic educational institutions to heighten students' ecological awareness while reinforcing their spiritual and ethical values?

The study is situated in three elementary schools in Demak Regency: MIN 4, SD Negeri Batusari 5, and SD Negeri Batusari 6, selected for their demonstrated commitment to environmental education, as evidenced by their receipt of the National Adiwiyata School Award in 2024 (Ministry of Environment and Forestry Decree No. 6721, April 30, 2024). Notably, these elementary schools have instituted structured environmental programs that, in practice, surpass comparable efforts at higher educational levels within Demak. This context provides a rich setting to observe how eco-theology can be integrated within an already mature

environmental framework, enhancing the study's relevance and potential impact.

This study seeks to contribute a scalable, spiritually grounded, and pedagogically coherent model for Islamic environmental education by addressing the persistent gap between eco-theological theory and educational practice. The intended contribution is twofold: (1) policy guidance for integrating eco-theology within Islamic curricula, and (2) development of instructional materials and teacher supports that enable the routine adoption of sustainable practices in Islamic educational settings.

METHOD

This study employs a qualitative case study approach to examine how eco-theology is integrated into Islamic education (Creswell & Poth, 2018; M. Hassan, 2024). The case study design enables in-depth inquiry within naturalistic settings and captures how participants make sense of the relationship between Islamic teachings and ecological responsibility in everyday school life. Given the phenomenon's emergent character and the limited prior work on its pedagogical enactment, an exploratory orientation guides the overall design.

The investigation centers on the operationalization of three eco-theological principles, *khilāfah* (stewardship), *amānah* (trusteeship), and *mizān* (balance), as they are translated into curricular goals, instructional strategies, and routine learning activities. The study seeks to elucidate how these concepts are enacted in classrooms and school programs and how students internalize ecological responsibility through an explicitly Islamic lens.

Fieldwork occurred at three public elementary schools in Demak Regency, MIN 4, SD Negeri Batusari 5, and SD Negeri Batusari 6. These sites were purposively selected based on their recognition as National Adiwiyata Schools in 2024, signaling a systematized commitment to environmental education (Ministry of

Environment and Forestry Decree No. 6721, April 30, 2024). The maturity of their environmental initiatives at the primary level provided a particularly informative context for observing the integration of eco-theology within established programs.

Participants comprised 35 students, 15 teachers, and three principals who were directly involved in eco-theology initiatives. This composition allowed for multi-perspective accounts across institutional roles, capturing both policy-level intentions and classroom-level practices.

Data were generated through three primary methods (Galily, 2024): (a) semi-structured, in-depth interviews with principals, teachers, and students; (b) participatory observations of day-to-day sustainability practices, such as school greening initiatives, waste segregation and recycling, and energy-saving routines; and (c) document analysis of curricula, school policies, program plans, and evaluation materials. The interview guides employed open-ended prompts to encourage rich narrative responses about how eco-theology is understood and enacted in the school context.

Analysis proceeded iteratively. First, interview transcripts, observation field notes, and documentary records were organized around the core theme of integrating eco-theology into Islamic education. Next, thematic coding identified recurrent patterns related to instructional design, students' conceptual grasp, and implementation challenges. Finally, an interpretive synthesis compared emergent themes with eco-theological constructs to assess convergence between theoretical precepts and observed practices.

Multiple strategies enhanced credibility and dependability (Carter et al., 2014; Meydan & Akkaş, 2024). Cross-checking insights across interviews, observations, and documents achieved data triangulation. Member checking involved sharing interview summaries and selected interpretations with participants to verify accuracy and resonance with their experiences. Informed consent was obtained from all participants after a full briefing on the study's

aims and procedures. Participation was voluntary, with the right to withdraw at any time, and confidentiality was protected throughout the research process.

RESULTS AND DISCUSSION

Implementation of Eco-Theology in Islamic Education

Across the three focal elementary schools in Demak, MIN 4 Demak, SD Negeri Batusari 5, and SD Negeri Batusari 6, eco-theological principles are systematically embedded in school life. Each site received the 2024 National Adiwiyata School Award, signaling sustained environmental stewardship and providing a mature curriculum-level and practice-based integration context. Implementation operates along three mutually reinforcing strands: (a) explicit curricular alignment with Islamic values, (b) experiential, practice-based learning, and (c) behavioral reinforcement through school routines and norms.

Within Islamic Religious Education (PAI), teachers explicitly introduce *khilāfah* (stewardship), *amānah* (trusteeship), and *mizān* (balance) as core lenses for ecological responsibility, thereby linking doctrinal foundations to everyday conduct (Rahman et al., 2024; Sayem, 2021). Environmental themes are also threaded through Natural Sciences and Social Sciences to cultivate a holistic understanding of care for creation as an expression of Islamic ethics. This cross-curricular approach strengthens conceptual coherence and normalizes pro-environmental habits as part of students’ religious identity.

Table 1. Interview evidence with teachers and students

Question	Representative excerpt	(n)	%
How do teachers integrate eco-theological values into teaching?	“We consistently teach that caring for the environment is part of a Muslim’s responsibility.”	10	66.7%

What are students' responses to eco-theology-based learning?	"I now understand that maintaining cleanliness is a form of worship."	8	53.3%
How often do students participate in Islamic-based environmental activities?	"Every week we take part in reforestation and waste-management activities."	12	80.0%

A majority of teachers report systematically integrating eco-theological values into lessons (66.7%). Over half of students explicitly frame cleanliness as worship (53.3%), and participation in weekly environmental programs is high (80.0%). Taken together, these patterns indicate that eco-theology is not only taught but increasingly internalized as a lived, faith-aligned practice.

Table 2. Observation and document analysis

Observed aspect	Key finding	Frequency of implementation
Reforestation activities	Each class maintains plants under student care.	Persistent (≥ 90%)
Waste management	Waste segregation and recycling are implemented class-wide.	Frequent (75-89%)
Water conservation	Water use is monitored; reduction practices are encouraged.	Fairly frequent (50–74%)
Curricular integration	<i>Khilāfah</i> , <i>amānah</i> , and <i>mizān</i> are taught in PAI and Natural Sciences.	Persistent (≥ 90%)

Eco-theological commitments translate into routine practices (e.g., class-level greening and waste segregation). The comparatively lower frequency of water-conservation behaviors

indicates an actionable gap, pointing to the need for explicit instruction and reinforcement around water use.

The observed effects, a sharper grasp of the link between Islamic teachings and ecological duty and the normalization of pro-environmental behavior, align with research underscoring the role of Islamic ethics in shaping environmental consciousness (Nasr, 1968; Rahman et al., 2024; Sayem, 2021). Beyond alignment, the present findings extend this literature by demonstrating how practice-based approaches and behavioral habituation materially enhance the uptake of eco-theology in primary-school settings (Begum et al., 2021; Romdloni et al., 2024).

Project-based learning and consistent teacher modeling emerged as decisive drivers of students’ ecological awareness, converging with arguments for participatory environmental education (Nasir et al., 2022; Sterling, 2001)), while adding a specifically spiritual grounding: environmental care is framed as worship and moral duty.

Table 3. This study compared with prior research

Focus	Prior research	This study
Theoretical base	Islamic eco-theology articulated philosophically and normatively (e.g., <i>maqāṣid al-sharīʿah</i>).	Same foundation, explicitly operationalized into curricular goals and classroom routines.
Pedagogical approach	Often descriptive or advocacy-oriented; limited classroom enactment.	Practice-based, project-oriented pedagogy with teacher modeling and habit formation.
Outcomes	Conceptual awareness emphasized.	Conceptual + behavioral outcomes evidenced through routine

			participation and student framings (worship, duty).
Contribution	Calls for integration, but few concrete models.		A structured, school-level model coupling doctrine, pedagogy, and policy.

Implementation is constrained by (a) limited, context-specific teaching materials, (b) uneven teacher preparation, and (c) the absence of comprehensive, school-wide eco-theology policies. Addressing these barriers requires (1) systematic curriculum development aligned with Islamic doctrinal principles, (2) targeted professional learning for teachers, and (3) institutional policies that codify eco-theology as a core school commitment.

The study proposes a comprehensive, practice-based model of Islamic eco-theology education that integrates doctrinal content with experiential pedagogy and behavioral reinforcement. Rather than merely cataloging activities (reforestation, waste management, water conservation), the model frames them as embodied expressions of *khilāfah*, *amānah*, and *mizān*, translating abstract principles into durable care habits. Students’ active participation and tendency to construe environmental care as worship indicate meaningful internalization. This bridging of theory and practice advances a spiritually grounded pathway for cultivating ecological responsibility as both moral obligation and everyday behavior.

Integrating eco-theology into Islamic education shows strong promise for shaping environmentally conscious Muslim youth. Schools can foster a holistic ecological worldview by positioning environmental stewardship as an act of worship and a civic-moral responsibility. The findings offer actionable guidance for policymakers and educators seeking to design sustainable Islamic education programs that nurture ecological literacy and spiritual development.

The Role of Teachers in Enhancing Students’ Ecological Awareness

Teachers translate eco-theological principles into classroom practice by linking environmental content to the Islamic concepts of *khilāfah* (stewardship), *amānah* (trusteeship), and *mizān* (balance). PBL structures students’ participation in school-wide greening and recycling programs, and teachers demonstrate water-saving and sorting practices in ordinary routines. This combined strategy, explicit instruction plus embodied example, has effectively shaped students’ attitudes and habits toward ecological responsibility.

Table 4. Interview results with teachers

Question	Representative quotation	(n)	%
How do you integrate eco-theological values into your teaching?	“I always relate ecological concepts to Islamic teachings such as <i>khilāfah</i> and <i>amānah</i> .”	12	80.0%
Is project-based learning effective in raising students’ environmental awareness?	“Students understand the importance of the environment when they are directly involved in greening and recycling projects.”	10	66.7%
How does teacher role modeling influence student behavior?	“When teachers practice water conservation and waste sorting, students are more likely to emulate these behaviors.”	14	93.3%

Note: n = 15 teachers across three schools.

As shown in Table 4, most teachers (80.0%) report integrating eco-theological values into instruction. Two-thirds (66.7%) affirm that PBL enhances students’ environmental awareness, and nearly all (93.3%) judge teacher role modeling to be highly influential. These patterns underscore the complementary effects of pedagogical design and everyday examples.

Table 5. Classroom observations and document analysis

Observed aspect	Key finding	Implementation frequency
Greening activities	Each class maintains plants that are cared for by students.	Persistent (≥ 90%)
Waste management	Class-level waste sorting and recycling are in place.	Frequent (75–89%)
Water conservation	Water use is monitored and minimized; routines vary by class.	Moderately frequent (50–74%)
Curricular integration	<i>Khilāfah</i> , <i>amānah</i> , and <i>mizān</i> are taught in Islamic Education (PAI) and Science (IPA).	Persistent (≥ 90%)

Table 5 indicates a systematic implementation of eco-theology at the school level. Greening and curricular integration are routine (≥ 90%), while waste sorting is widely established (75–89%). Water conservation is less consistent (50–74%), suggesting an actionable priority for targeted lessons, monitoring, and reinforcement.

Findings converge with scholarship linking Islamic teachings to ecological consciousness ((Nasr, 1968; Rahman et al., 2024; Sayem, 2021) and extend it by demonstrating how practice-based approaches and teacher exemplarity advance conceptual understanding into durable behavior (Nugraha et al., 2024; Romlah et al., 2024). In line with Sterling’s argument for participatory environmental education (Nasir et al., 2022; Sterling, 2001), PBL in these schools allows students to enact stewardship as both civic practice and spiritual duty.

Table 6. Comparative positioning with prior research

Dimension	Prior research	This study
Theological grounding	Islamic eco-theology articulated normatively (e.g., <i>maqāṣid al-sharī‘ah</i>).	The same grounding is operationalized into lesson plans, projects, and routines.
Pedagogical mode	Descriptive/advocacy; limited classroom enactment.	Project-based, experiential pedagogy with explicit teacher role modeling.
Outcomes	Emphasis on conceptual awareness.	Conceptual + behavioral change evidenced by routine participation and student framings (worship, duty).
Institutional supports	Often reliant on individual initiatives.	Calls for coherent school policy, materials, and teacher training to sustain programs.

This study highlights the importance of cultivating ecological habits as a core aim of Islamic eco-theological education, consistent with experiential learning theory (Kolb, 1976; Schenck & Cruickshank, 2015). Strategies that enable students to witness and feel the impact of their actions, guided by teachers’ daily example, substantially increase awareness and responsibility (Anshori & Pohl, 2022; Begum et al., 2021; Fua et al., 2018; Musa et al., 2024; Salman & Asmanto, 2024).

At the systems level, sustainability depends on policy. In many Islamic schools, environmental education remains contingent on individual teacher initiative (Muhammad et al., 2024; Najib et al., 2020). This study, therefore, recommends (a) structured,

doctrine-aligned curriculum development; (b) comprehensive, context-specific teaching materials; and (c) targeted professional learning to embed eco-theology into everyday practice.

Integrating eco-theology into Islamic education, through explicit instruction, PBL, and teacher role modeling, enhances students’ ecological understanding and directly shapes daily behaviors. By framing environmental stewardship as both moral obligation and worship, schools can foster a holistic ecological worldview and advance a sustainability-oriented model of Islamic education.

Student Engagement in Environmentally Conscious School Programs

Interviews with 35 students indicate heightened ecological awareness following participation in school-based eco-theology initiatives (e.g., “Green School Initiative,” “Eco-Santri”). Instruction combined Islamic ecological doctrine with lived practice through communal clean-ups, composting, and energy-saving routines. Observations corroborated that environmentally responsible habits have become embedded in school culture, with students increasingly construing environmental care as worship and moral obligation rooted in *khilāfah* (stewardship), *amānah* (trusteeship), and *mizān* (balance) (R. Hassan, 2024; Ibrahim et al., 2023; Sayem, 2021). Extracurricular seminars and trainings led by environmental experts and religious scholars further reinforced these values.

Table 7. Student interviews (n = 35)

Question	Representative excerpt	(n)	%
How do you feel after participating in the eco-theology program at school?	“I have become more aware that caring for the environment is part of Islamic teachings.”	25	71.4%
How often do you participate in	“We conduct communal clean-ups and	28	80.0%

environmental activities at school?	tree-planting every week."			
Has the program made you more concerned about the environment outside school?	"I am more mindful about not littering at home and in public spaces."	30	85.7%	

As shown in Table 7, most students report greater awareness of the religious basis for environmental care (71.4%) and high levels of weekly participation in environmental activities (80.0%). Most (85.7%) describe spillover effects in out-of-school contexts, suggesting that habit formation is durable beyond school grounds.

Table 8. Observations and document analysis

Observed aspect	Key finding	Implementation frequency	
Student participation in communal clean-ups	Weekly class-level cleaning of the school environment.	Persistent (≥ 90%)	
Composting and utilization	Students collect organic waste and process it into fertilizer.	Frequent (75–89%)	
Energy conservation at school	Students are taught to switch off lights/equipment when not in use.	Moderately frequent (50–74%)	
Eco-theology extracurriculars	Students participate in environmental seminars and trainings grounded in Islamic principles.	Persistent (≥ 90%)	

Table 8 indicates a well-institutionalized culture of environmental stewardship. While clean-ups and extracurricular

engagement are routine, energy-conservation practices are less consistent, highlighting a priority area for targeted reinforcement.

The findings converge with scholarship emphasizing experiential, value-based environmental education (Bensaid, 2023; Najib et al., 2020; Nasr, 1968; Sterling, 2001). Programs such as "Green School Initiative" and "Eco-Santri" appear to be effective vehicles for internalizing sustainability when grounded in Islamic teachings and enacted through practical projects. Notably, 85.7% of students report behavioral transfer beyond school, supporting claims that religion-infused approaches can offer deeper intrinsic motivation than secular framings alone (R. Hassan, 2024; Ibrahim et al., 2023; Maslani et al., 2023; Sayem, 2021). The present study extends this literature by demonstrating how coupling Islamic eco-theology with hands-on activities accelerates the translation from knowledge to practice.

Table 9. Comparison with prior research

Dimension	Prior research	This study
Theoretical grounding	Islamic ecological ethics articulated normatively call for application.	The same grounding was implemented via structured school programs and routines.
Pedagogical mode	Emphasis on conceptual instruction; variable experiential components.	Systematic PBL and weekly projects (clean-ups, composting, energy-saving).
Outcomes	Awareness gains were reported, but there was limited evidence of spillover.	Awareness + behavioral transfer beyond school (85.7% report change at home/public).
Institutional supports	Often ad hoc, teacher-led initiatives.	Programmatic integration: Recommendation for

policy alignment and materials.

Energy-conservation behaviors remain only moderately frequent (50–74%). Addressing this gap will require (a) explicit micro-routines (e.g., “last-out switches”), (b) student energy monitors with simple dashboards, and (c) targeted lessons linking *mizān* to daily electricity and water usage. Schools should codify eco-theology in policy at the system level, provide context-specific teaching materials, and invest in teacher professional learning to sustain practice. Student engagement in eco-theology-based programs substantially elevates ecological awareness and nurtures transferable pro-environmental habits. By framing environmental care as both moral responsibility and worship, schools foster a holistic ecological worldview and advance a sustainability-oriented model of Islamic education anchored in lived practice.

Challenges in Implementing Ecotheology in Islamic Education

Interviews with 35 students indicate heightened ecological awareness following participation in school-based eco-theology initiatives (e.g., “Green School Initiative,” “Eco-Santri”). Instruction combined Islamic ecological doctrine with lived practice through communal clean-ups, composting, and energy-saving routines. Observations corroborated that environmentally responsible habits have become embedded in school culture, with students increasingly construing environmental care as worship and moral obligation rooted in *khilāfah* (stewardship), *amānah* (trusteeship), and *mizān* (balance) (R. Hassan, 2024; Ibrahim et al., 2023; Sayem, 2021). Extracurricular seminars and trainings led by environmental experts and religious scholars further reinforced these values.

Table 10. Student interviews (n = 35)

Question	Representative excerpt	(n)	%
How do you feel after participating in the eco-	“I have become more aware that caring for the	25	71.4%

theology program at school?	environment is part of Islamic teachings."		
How often do you participate in environmental activities at school?	"We conduct communal clean-ups and tree-planting every week."	28	80.0%
Has the program made you more concerned about the environment outside school?	"I am more mindful about not littering at home and in public spaces."	30	85.7%

As shown in Table 10, most students report greater awareness of the religious basis for environmental care (71.4%) and high levels of weekly participation in environmental activities (80.0%). Most (85.7%) describe spillover effects in out-of-school contexts, suggesting that habit formation is durable beyond school grounds.

Table 11. Observations and document analysis

Observed aspect	Key finding	Implementation frequency
Student participation in communal clean-ups	Weekly class-level cleaning of the school environment.	Persistent (≥ 90%)
Composting and utilization	Students collect organic waste and process it into fertilizer.	Frequent (75–89%)
Energy conservation at school	Students are taught to switch off lights/equipment when not in use.	Moderately frequent (50–74%)
Eco-theology extracurriculars	Students participate in environmental seminars and trainings	Persistent (≥ 90%)

grounded in Islamic principles.

Table 11 indicates a well-institutionalized culture of environmental stewardship. While clean-ups and extracurricular engagement are routine, energy-conservation practices are less consistent, highlighting a priority area for targeted reinforcement.

The findings converge with scholarship emphasizing experiential, value-based environmental education (Bensaid, 2023; Najib et al., 2020; Nasr, 1968; Sterling, 2001). Programs such as "Green School Initiative" and "Eco-Santri" appear to be effective vehicles for internalizing sustainability when grounded in Islamic teachings and enacted through practical projects. Notably, 85.7% of students report behavioral transfer beyond school, supporting claims that religion-infused approaches can offer deeper intrinsic motivation than secular framings alone (R. Hassan, 2024; Ibrahim et al., 2023; Maslani et al., 2023; Sayem, 2021). The present study extends this literature by demonstrating how coupling Islamic eco-theology with hands-on activities accelerates the translation from knowledge to practice.

Table 12. Comparison with prior research

Dimension	Prior research	This study
Theoretical grounding	Islamic ecological ethics articulated normatively call for application.	The same grounding was implemented via structured school programs and routines.
Pedagogical mode	Emphasis on conceptual instruction; variable experiential components.	Systematic PBL and weekly projects (clean-ups, composting, energy-saving).
Outcomes	Awareness gains were reported, but there was limited	Awareness + behavioral transfer beyond school (85.7% report change at home/public).

	evidence of spillover.	
Institutional supports	Often ad hoc, teacher-led initiatives.	Programmatic integration: Recommendation for policy alignment and materials.

Energy-conservation behaviors remain only moderately frequent (50–74%). Addressing this gap will require (a) explicit micro-routines (e.g., “last-out switches”), (b) student energy monitors with simple dashboards, and (c) targeted lessons linking *mizān* to daily electricity and water usage. Schools should codify eco-theology in policy at the system level, provide context-specific teaching materials, and invest in teacher professional learning to sustain practice.

Student engagement in eco-theology-based programs substantially elevates ecological awareness and nurtures transferable pro-environmental habits. By framing environmental care as both moral responsibility and worship, schools foster a holistic ecological worldview and advance a sustainability-oriented model of Islamic education anchored in lived practice.

The Impact of Eco-theology Implementation on Students’ Ecological Awareness

Despite documented benefits, several constraints impede the implementation of eco-theology in Islamic schools. Interviews with principals and teachers, together with observations and document analysis, reveal four recurrent obstacles: (1) limited, context-specific teaching materials; (2) insufficient teacher training in environmentally oriented Islamic pedagogy; (3) partial or unsystematic policy support at the school level; and (4) inadequate infrastructure to sustain daily pro-environmental routines (Lutfauziah et al., 2023; Sterling, 2001).

Table 13. Interview results with school principals and teachers (n = 12)

Question	Representative response	(n)	%
What are the main challenges in implementing eco-theology in schools?	"We struggle to find relevant, ready-to-use teaching materials on Islamic eco-theology."	8	66.7%
Are there challenges in training teachers on environmentally based Islamic education?	"Most teachers have never received specialized training in eco-theology."	10	83.3%
How do school policies support Islamic eco-theology?	"Many policies have yet to integrate eco-theology principles systematically."	7	58.3%

The interview data indicate that capacity constraints—especially the scarcity of materials and training—are the most immediate barriers. Policy gaps further weaken institutionalization, leaving programs overly reliant on individual initiative.

Table 14. Observation and document analysis of implementation constraints

Observed aspect	Key finding	Implementation level
Availability of eco-theology teaching materials	Existing materials are minimal and rarely tailored to primary schools.	Low ($\leq 50\%$)
Teacher training on eco-theology	Few staff have participated in targeted professional development.	Very low ($\leq 30\%$)

School related eco-theology policies to	Several initiatives remain teacher-driven rather than policy-driven.	Moderate (50–70%)
Infrastructure supporting eco-theology programs	Facilities (green areas, waste stations, water/energy controls) are incomplete.	Low ($\leq 50\%$)

Observational evidence corroborates interview findings: materials and training are the weakest links, while policy and infrastructure remain underdeveloped, limiting scale and consistency.

The pattern of constraints aligns with earlier studies noting structural barriers in Islamic environmental education, especially policy gaps and limited teacher preparedness (Najib et al., 2020; Nasr, 1968). The scarcity of school-ready, Islamic eco-theology materials mirrors reports that curricula often emphasize normative doctrine over practical enactment (Anshori & Pohl, 2022; R. Hassan, 2024; Ibrahim et al., 2023; Sayem, 2021). Notably, the present study adds that, in the absence of formal training, teachers frequently compensate through role modeling and project-based strategies, an encouraging but fragile basis for sustained implementation.

Table 15. Comparison of this study’s findings with prior research

Dimension	Prior research	This study
Materials	Limited Islamic eco-theology resources; few school-level adaptations.	Materials scarce; strong demand for primary-level, context-specific guides.
Teacher preparation	Environmental content is underemphasized in training.	83.3% report no specialized training; reliance on self-initiated learning.

Policy	Environmental initiatives are often ad hoc or personality-driven.	Policies are partially supportive (50–70%); codified, school-wide frameworks are needed.
Infrastructure	Facilities uneven; programs constrained by resources.	Green spaces, waste stations, and water/energy controls are insufficient ($\leq 50\%$).

Curriculum-Aligned Materials: Commission modular, age-appropriate teaching packs that translate eco-theological principles into lesson plans, activities, and assessments aligned with primary-school standards.

Targeted Teacher Training: Develop short courses and coaching cycles on eco-theology pedagogy (project-based tasks, habit formation, and assessment of behavioral outcomes), delivered with local universities and environmental NGOs.

Policy Codification: Embed eco-theology in school statutes, annual plans, and monitoring routines (e.g., environmental KPIs, student “green roles,” and class-level targets) to reduce dependence on individual initiative.

Infrastructure Upgrades: Prioritize low-cost, high-leverage facilities, clearly labeled waste-sorting stations, class plant corners, water-saving fixtures, and visible “last-out switches”, to convert intent into everyday practice.

Assessment and Feedback: Introduce simple dashboards for tracking class-level behaviors (clean-ups completed, bags of recyclables, days with lights off) and hold periodic student-led reflections linking actions to *mizān* (balance) and stewardship.

The main challenges in implementing eco-theology are the scarcity of materials, gaps in training, partial policy support, and inadequate infrastructure. Addressing these challenges through coordinated materials development, targeted professional learning, policy formalization, and pragmatic infrastructure upgrades can

move programs from isolated initiatives to institutionally embedded practice. Over time, these steps will likely strengthen the translation of Islamic eco-theology from doctrinal ideals into durable, school-wide habits of environmental care.

CONCLUSION

This study demonstrates that integrating eco-theology into Islamic education measurably enhances students' ecological awareness and catalyzes durable behavioral change. Embedding the values of *khilāfah* (stewardship), *amānah* (trusteeship), and *mizān* (balance) within the curriculum, coupled with experiential pedagogies, deepens students' grasp of the moral nexus between Islamic teachings and environmental responsibility. Crucially, learners do not merely articulate these principles; they enact them in routine practices such as waste segregation, reforestation, and energy-saving behaviors, indicating meaningful internalization rather than superficial compliance.

A notable attitudinal shift accompanies these practices, as students increasingly frame environmental care as both a moral obligation and an act of worship. Eco-theology-based programs thus operate on two reinforcing planes, ethical formation and skill acquisition, promoting personal accountability for resource preservation and ecological balance. When schools present sustainability as an expression of faith, students are more likely to ascribe intrinsic value to conservation and to sustain these habits beyond the classroom.

The implications are clear. A structured, values-anchored approach to environmental education equips students not only with conceptual knowledge but also with the ethical and spiritual foundations necessary for sustained action. Positioning eco-theology as a cross-curricular commitment, rather than an isolated theme, cultivates ecologically conscious Muslim youth who recognize the broader spiritual significance of environmental stewardship.

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