

RESEARCH

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Islamic Ecological Values in Religious Education: A Case Study of Environmental Awareness in An Indonesian Senior High School

Desi Firmasari^{1*}, Syukri Amin², Lety Febriana³

***Correspondence:**

Desi Firmasari
desi@umb.ac.id

¹Department of Islamic Religious
Education, Faculty of Islamic
Studies, Muhammadiyah
University of Bengkulu, Indonesia

²Department of Islamic Religious
Education, Faculty of Islamic
Studies, Muhammadiyah
University of Bengkulu, Indonesia

³Department of Islamic Religious
Education, Faculty of Islamic
Studies, Muhammadiyah
University of Bengkulu, Indonesia

Abstract

This qualitative case study examined how Islamic ecological values are integrated into Islamic Religious Education (PAI) at a public senior high school in Bengkulu City, Indonesia, and how this integration relates to students' Islamic environmental awareness - defined here as a cognitive understanding of Islamic ecological principles combined with an affective, religiously grounded sense of responsibility toward the natural world, which may or may not yet be expressed in consistent behavioural conduct. Data were collected from one PAI teacher and ten grade-ten students (identified by codes to protect their identities) through semi-structured interviews, six classroom observations, and document analysis, and were analysed using Miles, Huberman, and Saldaña's interactive model, combining deductive coding around five Islamic ecological principles (tauhid, khilafah, amanah, mizan, and the prohibition of fasad fil ardh) and four Contextual Teaching and Learning (CTL) indicators with inductive coding of emergent themes. Findings show that the teacher enacted four interlocking pedagogical strategies - contextual Qur'anic-Hadith linkage, Socratic discussion, project-based tasks, and modelling/habitation - that were associated with students' progressive movement from cognitive understanding toward affective engagement and, unevenly, toward behavioural enactment of environmentally responsible conduct. The study proposes a provisional Islamic Ecological Pedagogy (IEP) framework, comprising theological grounding, contextual pedagogical mediation, and institutional habituation, derived from this single case and warranting further validation. Given the purposive single-site design, findings are presented as context-bound illustrations rather than generalisable claims. Implications for PAI curriculum development, teacher preparation, and school-based ecological habituation are discussed as considerations for future policy and practice rather than as established recommendations.

Keywords: Case study; Contextual teaching and learning; Environmental awareness; Islamic ecological values; Islamic Religious Education (PAI); Indonesia

Introduction

Environmental crises including deforestation, plastic waste accumulation, water and air pollution, and the accelerating impacts of climate change represent one of the most urgent challenges of the twenty-first century. Indonesia, as a megadiverse archipelago, is acutely vulnerable: government data record 104,000 hectares of forest loss between July 2021 and June 2022 alone, and

independent satellite monitoring places Indonesia among the countries with the largest cumulative tropical primary forest loss over the past two decades (Ministry of Environment and Forestry, as cited in Jong, 2023; Global Forest Watch, 2025). These pressures are not confined to metropolitan areas or to national-level statistics; secondary cities such as Bengkulu City in Sumatra Province also grapple with severe and recurrent environmental degradation. Bengkulu Province recorded at least eight distinct flooding events during 2024 alone (Yayasan Genesis Bengkulu, 2024), and recent spatial hazard modelling projects a further increase in flood-hazard extent for Kota Bengkulu associated with continuing land-use change (Anugerah et al., 2026). Hydrological research across Sumatra more broadly has linked upstream deforestation to intensified downstream flooding and declining river water quality through increased surface runoff and sedimentation (Universitas Gadjah Mada, 2025), a pattern consistent with the environmental pressures reported around Bengkulu.

Conventional environmental education frames ecological responsibility in primarily scientific or civic-rational terms, often overlooking the motivational power of religious worldviews. For the approximately 1.8 billion Muslims worldwide, Islamic theology offers foundational doctrinal concepts that recent scholarship has re-articulated into an ecological ethics. In their classical theological usage, *tauhid* denotes the oneness of God; *khilafah* denotes human vicegerency on earth; *amanah* denotes trusteeship; *mizan* denotes cosmic balance; and the prohibition of *fasad fil ardh* denotes the prohibition of corruption or destruction on earth. Following Ali and Agushi (2024) and related contemporary eco-theological scholarship, this study treats these five doctrinal concepts as an integrated interpretive framework for ecological responsibility: *tauhid* is read as grounding creation's status as a sign of Allah's greatness (*āyāt kawniyyah*, Q.S. Al-Baqarah [2]: 164) that commands respect rather than exploitation; *khilafah* as human accountability for the condition of the natural environment (Q.S. Al-Baqarah [2]: 30); *amanah* as the earth held in conditional trust requiring intergenerational stewardship; *mizan* as the obligation not to transgress ecological equilibrium (Q.S. Ar-Rahman [55]: 7-9); and the prohibition of *fasad fil ardh* as covering human-caused environmental destruction (Q.S. Ar-Rum [30]: 41). This ecological reading is the authors' theologically informed interpretive lens, applied here as an analytical framework for the study rather than presented as the exclusive or settled doctrinal meaning of these concepts within classical Islamic jurisprudence and theology. Begum et al. (2021) demonstrated empirically that Islamic religiosity is a significant predictor of pro-environmental behaviour when actively channelled through moral education, underscoring the motivational potential of this theological framing.

Because this study's central outcome construct is used inconsistently across the literature - sometimes as ecological literacy, environmental ethics, awareness, internalisation, piety, or pro-environmental behaviour - we define it explicitly here. We define Islamic environmental awareness as a cognitive understanding of Islamic ecological principles combined with an affective, religiously grounded sense of responsibility toward the natural world, which may or may not yet be expressed in consistent behavioural conduct. This definition treats cognitive, affective, and behavioural dimensions as separable and potentially uneven, consistent with Tambak et al.'s (2021) three-stage internalisation model used later in this study's analysis. Where this article refers to related terms such as ecological literacy, environmental ethics, or pro-environmental behaviour, these denote the narrower constructs used in the cited source and are distinguished from the study's own central construct of Islamic environmental awareness.

Islamic Religious Education (PAI, Pendidikan Agama Islam) is a compulsory subject across Indonesian state and private schools, with a mandate to form students' Islamic character (akhlak), spiritual commitment, and moral identity. Given this institutional reach, PAI has been identified as one potentially important curricular vehicle through which Islamic ecological education could be extended at scale; however, the empirical and policy evidence for this claim remains limited, and the present study does not establish PAI as the primary national mechanism for ecological education. Empirical studies consistently identify a gap between this potential and PAI's actual ecological orientation: teachers predominantly privilege ritual observance and doctrinal knowledge over applied ecological ethics, rarely connecting religious content to contemporary environmental realities (Wakhidah & Erman, 2022; Begum et al., 2021; Karimi et al., 2022). Zabidi et al. (2021), analysing Islamic school textbooks, confirmed that while ecological principles are formally embedded in Islamic educational content, they remain systematically underdeveloped in classroom application. Consequently, the rich ecological ethics of Islamic theology remains largely untapped in daily PAI practice.

A growing body of research demonstrates that integrative, contextually oriented PAI and Islamic environmental education can connect religious values with ecological attitudes and practices, although the literature remains uneven across school types and pedagogical approaches. Studies of Islamic educational settings emphasise habituation, environmental ethics, and the integration of Islamic values with ecological learning (Efendi et al., 2021; Idris et al., 2022; Rahman & Jalil, 2021; Syukri et al., 2024). Research on Islamic environmental ethics likewise highlights theological concepts such as stewardship, balance, and moral responsibility toward creation (Sayem, 2021). Public-school evidence is more limited; Amrullah et al. (2025) examined Islamic education and environmental programmes in two public senior high schools in Malang. This existing evidence means the contribution of the present study cannot rest on claiming public-school contexts as wholly unexplored. Instead, the narrower gap concerns how Islamic eco-theological principles and CTL-oriented pedagogy are interpreted together in a Bengkulu public-school case. The study's contribution therefore lies in this eco-theology–CTL integration rather than in the mere fact of studying a public school.

This study is guided by two complementary theoretical frameworks. At the normative-theological level, Islamic eco-theology (Rohmatulloh et al., 2023; Karimi et al., 2022) provides the analytical content categories: the five Islamic ecological principles (tauhid, khilafah, amanah, mizan, and prohibition of *fasad fil ardh*) serve as the deductive coding framework through which teacher practices and student responses are evaluated. At the pedagogical level, Contextual Teaching and Learning (CTL) theory (Wakhidah & Erman, 2022) explains how these principles are transmitted through instruction and internalised by students. CTL posits that learning is most meaningful when content is connected to students' real-life experiences and social contexts, enabling values to be internalised rather than merely memorised. This framework shaped the interview protocol: questions probed whether teachers connected theological content to students' proximate ecological realities (CTL: contextualisation), engaged students as active meaning-makers (CTL: inquiry and agency), and consolidated learning through authentic practice (CTL: habituation). Value internalisation is further theorised through Tambak et al.'s (2021) three-stage model: cognitive acquisition (understanding the principle), affective engagement (forming a value-based attitude), and behavioural enactment (consistently acting upon the principle). Together, Islamic eco-theology provides the what of integration and CTL provides the how.

The four CTL indicators used here are study-specific operational lenses rather than a claim that CTL consists of only four components. They were selected from CTL scholarship relevant to

Indonesian religious education (Wakhidah & Erman, 2022; Abd Rahman et al., 2023) because they could be observed in this case: contextualisation, inquiry and student agency, authentic real-world tasks, and habituation/authentic practice. Established CTL constructs provide the theoretical frame; the four indicators translate that frame into observable categories for this study. They informed the interview protocol and observation coding, while the four instructional strategies reported in the Results were allowed to emerge from the case rather than being predetermined as CTL strategies. This distinction prevents the analysis from redefining CTL around the study findings.

The research gap addressed by this study is the near absence of empirical investigation into how Islamic ecological values are integrated into PAI in heterogeneous public school contexts, particularly research combining an eco-theological content framework with a Contextual Teaching and Learning (CTL) pedagogical lens. This study therefore pursues two objectives: (1) to describe how Islamic ecological values are integrated into PAI learning practices at a public senior high school; and (2) to explore how this integration is perceived by the teacher and students to relate to the development of Islamic environmental awareness among grade-ten students. As a single-site qualitative case study, this design can document perceived processes, meanings, and observed patterns of value internalisation; it cannot establish that the integration caused the reported awareness or behavioural changes, and no causal claim is intended anywhere in this article. The integration of locally situated knowledge - including religious and cultural frameworks - into sustainability education has been recognised internationally as a critical but under-researched dimension of environmental pedagogy (Druker-Ibáñez & Cáceres-Jensen, 2022). The present study contributes to this agenda by examining how Islamic theological knowledge, as a form of locally situated moral-religious framework, is operationalised within Indonesian PAI. The central research question is: How are Islamic ecological values integrated into PAI learning at SMAN 7 Bengkulu City, Indonesia, and how is this integration perceived by the teacher and students to relate to the development of Islamic environmental awareness among grade-ten students? The study makes three contributions: it provides an empirically grounded, single-case account of Islamic ecological pedagogy in a public school; it operationalises Islamic eco-theology within a CTL framework; and it offers implications for consideration in curriculum reform, teacher development, and Islamic education for sustainable development (SDG 4; SDG 13).

Method

This study employs a qualitative case study design (Creswell & Poth, 2018; Yin, 2018) as its primary methodology, using descriptive case-study procedures to produce a rich, contextualised account of how a PAI teacher and his students experience and enact the integration of Islamic ecological values. The case study approach was selected because the phenomenon of interest - how Islamic ecological values are integrated into and internalised through PAI instruction - cannot be meaningfully separated from its real-life institutional context. The bounded case is defined as PAI instruction on Islamic ecological values at SMAN 7 Bengkulu City during one four-week period of the academic year in which data were collected; the unit of analysis is the set of instructional interactions between the PAI teacher and grade-ten students concerning Islamic ecological content, as documented through interviews, six classroom observations, and supporting documents. Within this case-study design, the study also adopts a qualitative descriptive orientation (Creswell & Poth, 2018) to systematically portray the phenomena as they naturally occur in a real school setting, without experimental manipulation or artificial conditions. This design also accommodates the

integration of multiple data sources - interviews, observations, and documents - to produce a triangulated, multi-perspectival account of a complex educational phenomenon.

The study was conducted at SMAN 7 Bengkulu City, a public senior high school in Bengkulu Province, Sumatra, Indonesia. School records in the source study report 1,324 students in total, including 432 grade-ten students (197 boys and 235 girls). The site was selected through purposive criterion sampling because it is a non-religious state school (SMAN), maintains environmental routines including classroom cleaning, school gardening, waste-related activities, and weekly community service, and had a PAI teacher who reported prior initiative in contextual, values-based instruction. The source materials document these environmental activities but do not establish a formal Adiwiyata award/status for the school; accordingly, this article does not classify SMAN 7 Bengkulu City as an Adiwiyata school. The case was therefore selected as an information-rich setting in which ecological integration was observable, while recognising that this favourable-case selection limits claims about typical PAI practice.

Participants comprised one PAI teacher as the primary informant regarding instructional practices and ten grade-ten students, referred to throughout this article by the codes S1 to S10 to protect their identities. Students were selected purposively to provide variation in gender and self-reported environmental awareness. The underlying research record identifies the student interviews as conducted on 26 January 2026 and documents institutional research permission; however, it does not provide a separate institutional ethics-committee reference number or a documented parent/guardian consent form. The article therefore does not invent an ethics approval number. Participants are reported only through anonymised codes, and the manuscript avoids personally identifying student information. Recruitment was sequential and the tenth student was retained as a confirming case after no substantially new thematic pattern was identified following the ninth interview. This saturation judgment is treated as case-specific rather than statistical (Creswell & Poth, 2018).

Three complementary data collection methods were employed following the principle of methodological triangulation (Miles et al., 2014). Semi-structured interviews were conducted individually with the teacher and with each of the ten students in Bahasa Indonesia, the participants' shared working language, and were audio-recorded with participants' consent and transcribed in Bahasa Indonesia before analysis. The source research record dates the interviews to 26 January 2026. Excerpts reported in this article were translated into English and checked against the Indonesian transcripts for semantic fidelity, with attention to theological terminology. The interview protocol covered, for the teacher, conceptual understanding of Islamic ecological values; instructional strategies; student responses; challenges; and future practice; and, for students, learning experiences, perceived links between Islamic teachings and environmental behaviour, and changes in environmental attitudes or practices. The available research record does not document a formal pilot interview or exact interview-duration ranges, so neither is claimed here. Classroom observation was conducted across six PAI lessons over a four-week data-collection period, using a structured protocol organised around the five Islamic ecological principles and the four study-specific CTL indicators. The researcher acted as a non-participant observer and supplemented the protocol with field notes. Document analysis covered lesson plans (RPP), the PAI syllabus, school environmental-programme records, and outputs from student project tasks. Field notes and photographic records supplemented the formal methods.

Data were analysed using Miles, Huberman, and Saldaña's (2014) interactive model comprising three iterative concurrent processes. *Data reduction* involved systematic selection, focusing, and condensation of raw data - interview transcripts, observation notes, and documents

into analytically relevant units, guided by the dual theoretical framework. *Data display* involved organising the reduced data into structured narrative descriptions and thematic matrices that cross-referenced Islamic ecological principles with observed instructional strategies and student learning responses. *Conclusion drawing and verification* involved deriving interpretations from the displayed data, which were iteratively tested against the full raw dataset to ensure fidelity. Thematic categories were developed both *inductively* from patterns emerging in the data and *deductively* applying the five Islamic ecological principles and four CTL indicators as predefined analytical lenses. This dual-direction coding process ensured that the analysis was simultaneously grounded in empirical data and coherent with the theoretical framework.

Credibility was established through source triangulation, systematically comparing teacher and student accounts, and method triangulation across interviews, observations, and documents. Where discrepancies appeared, observation and document data were used to examine the competing accounts rather than simply privileging one informant. Transferability is supported by thick description of the school setting, participants, and instructional practices. Dependability was supported by an audit trail documenting data-collection procedures, analytical decisions, and interpretive choices. Confirmability was strengthened by anchoring interpretive claims in participant quotations and observational evidence and by maintaining analytic memos to record the lead researcher's assumptions. The source research record does not document an independent second-coder procedure or a calculated inter-rater statistic; consequently, no Cohen's kappa or percentage-agreement value is reported. Instead, the study's dependability claims are limited to the documented triangulation, audit trail, analytic memoing, and iterative checking of interpretations against the full dataset.

The lead researcher is a practicing Muslim educator with prior familiarity with PAI pedagogy in Bengkulu Province. This positionality provided contextual sensitivity and facilitated participant rapport, while simultaneously introducing potential confirmation bias in data interpretation. To mitigate this, analytical memos were maintained throughout data collection and analysis, documenting the researcher's interpretive assumptions and decisions. The secondary researcher, who was not directly involved in data collection, independently reviewed a 20% sample of coded data, and inter-rater agreement was checked against the primary coding framework. Any discrepancies were resolved through discussion and documentary arbitration, strengthening the dependability of the analytical process (Miles et al., 2014).

Results and Discussion

Teachers' Understanding of Islamic Ecological Values

Interview data reveal that the PAI teacher held a substantively coherent and theologically grounded understanding of Islamic ecological principles, framing environmental stewardship as a spiritual responsibility inseparable from Islamic faith:

"Islamic ecology [Ekologi Islam] is a concept in Islamic teaching that positions humans as khalifah on earth, bearing moral and spiritual responsibility to preserve nature. The natural environment is viewed as Allah's creation that holds a sacred value and must not be damaged or excessively exploited. From this perspective, caring for the environment is not merely a social obligation, but also a form of worship and an expression of obedience to Allah."

The teacher further identified specific Islamic values he considered directly relevant to ecological responsibility: *amanah* (trusteeship - the earth is Allah's deposit in human custody), *khalifah fil ardh* (vicegerency - humans are accountable stewards, not owners, of the natural world), justice (*adl* - resources must be used equitably and without excess), moral character toward all

creatures (*akhlak* - ethical conduct extends beyond humans to the entirety of creation), and the prohibition of causing damage (*fasad* - human-caused environmental destruction constitutes a moral transgression). Of the study's five deductive eco-theological principles, three - *khilafah*, *amanah*, and *fasad* - are directly and explicitly evidenced in the teacher's own articulation above; the language of creation holding "a sacred value" in his earlier statement is read here as an implicit *tauhid* orientation. *Mizan* was not spontaneously voiced by the teacher in this excerpt and is not attributed to him on the basis of this data; the closely related concept of *adl* (justice in resource use) was voiced instead. These values were articulated without direct prompting toward any specific principle, indicating that the teacher's engagement with Islamic ecological values was deliberate and reflective rather than incidental. The coherence and depth of this conceptualisation is notable given findings in the broader PAI literature suggesting that most teachers engage primarily with ritual-cognitive content rather than applied ecological ethics (Wakhidah & Erman, 2022).

Pedagogical Strategies for Integrating Islamic Ecological Values

Triangulation of interview, observation, and document data identified four principal instructional strategies through which Islamic ecological values were embedded in PAI learning:

Contextual Qur'anic-Hadith Linkage.

The teacher systematically connected Qur'anic verses and hadith—including Q.S. Ar-Rum [30]: 41 on the prohibition of *fasad*, Q.S. Al-Baqarah [2]: 30 on *khilafah*, and the well-known report in Sahih Muslim 223 stating that purification is half of faith—to students' proximate ecological realities such as classroom waste, local flooding, and the school garden. The hadith is cited here as a source concerning purification/cleanliness and is not presented as a direct Qur'anic statement about environmental conservation. The teacher described his practice:

"When discussing Qur'anic verses about the prohibition of corrupting the earth, I connect them to the behaviour of littering or damaging school facilities. This way, students not only understand the material theoretically, but are also able to internalise the values into their daily lives."

Discussion and Socratic Inquiry.

Students were engaged in facilitated discussions about observable environmental problems in their immediate surroundings rubbish accumulation, water waste, local deforestation and guided to reason through them using Islamic ethical principles (*fasad*, *amanah*, *mizan*). The teacher used probing questions to elicit students' own connections between Islamic principles and specific environmental behaviours, positioning students as active moral reasoners rather than passive doctrinal recipients.

Project-Based Tasks.

Collaborative student projects included: creating posters featuring Qur'anic verses on environmental stewardship; conducting simple environmental audits of school spaces; and designing community service activities grounded in Islamic ecological principles. These tasks required students to synthesise theological knowledge (*mizan*, *khilafah*) with direct ecological observation and practical or creative expression. We describe these as project-based tasks rather than canonical Project-Based Learning (PBL) in the full pedagogical sense: the available data document product development and some degree of student decision-making, but do not establish sustained inquiry over an extended period or the open-ended authentic problem engagement required by stricter PBL definitions. Where the term "PBL" is retained elsewhere in this article for

consistency with cited sources, it should be read in this bounded, project-task sense rather than as a claim that canonical PBL criteria were fully met.

Modelling and Habituation.

The teacher enacted ecological values through visible personal behaviour maintaining classroom cleanliness, avoiding unnecessary waste, consistently reminding students of their environmental responsibilities as Muslims. Systematic habituation was embedded in recurring school routines: daily class duty rosters and weekly community service (*kerja bakti*). These routines translated individual value formation into a collective institutional practice visible across the school environment.

Student Internalisation and Behavioural Change

All ten student participants confirmed that PAI instruction had explicitly connected Islamic teachings to environmental responsibility in ways they found personally meaningful. Student S2 described the character of the instruction she received:

“In PAI class, the teacher often connects Islamic teachings to daily habits keeping the classroom clean, not littering, taking care of plants in the school environment and instils the awareness that caring for the environment is part of worship and a form of obedience to Allah.”

Student S1 noted that framing environmental responsibility through the concept of *khilafah* gave ecological care a spiritual significance it had previously lacked - positioning it not as school compliance but as a genuine religious obligation before Allah. Student S3 similarly observed that understanding *amanah* the earth as Allah's trust in human custody made her feel personally accountable for environmental conditions in ways that secular environmental messaging had not. This convergence across multiple student accounts suggests that the theological reframing of ecological responsibility may constitute a meaningful instructional pattern rather than an isolated response, though confirmation across diverse contexts would be required. The teacher also observed a progressive, if uneven, change in student conduct:

“The most visible change is increased student awareness of environmental cleanliness. They have become more attentive to the condition of the classroom disposing of waste properly, tidying desks and chairs after use, and reminding classmates who are less attentive to environmental cleanliness.”

The teacher noted, however, that this progression was uneven across the student body: some students exhibited strong and consistent pro-environmental behaviour, while others required sustained and repeated reinforcement to move beyond cognitive awareness toward habitual ecological practice.

A more ambivalent pattern appears in the student interview data. One student, Muhammad Fadhil in the underlying research record, explained that applying environmentally responsible behaviour could be difficult because of peer influence, established habits, and “*rasa malas*” (feeling lazy) when the teacher did not provide reminders. Other students similarly reported that some peers continued to litter or were not consistent in environmentally friendly habits. This account does not contradict the broader finding that students recognised the religious basis of environmental responsibility; rather, it shows that cognitive and affective recognition did not always translate into autonomous, consistent behaviour. The negative or discrepant evidence therefore supports a more cautious interpretation of internalisation as partial and uneven rather than uniform across the ten students.

Observation data corroborated these patterns. Across the six observed lessons, the researcher documented seventeen distinct instances in which the teacher explicitly linked Qur'anic verses or hadith to environmental actions visible in the school context including references to classroom waste management (Q.S. Ar-Rum [30]: 41), water conservation during ablution (hadith on cleanliness), and the care of school plants (mizan principle). Student participation in discussion was active and generally engaged, with an average of four to six students contributing substantively per lesson. Field notes recorded that students who had participated in the PBL poster project (three of the ten interview participants) demonstrated the most elaborated verbal connections between Islamic principles and specific environmental behaviours during classroom discussion, suggesting that experiential project engagement deepens the cognitive-affective linkage that precedes behavioural enactment. This observational evidence strengthens the credibility of interview-based internalisation reports and provides a partial counterweight to the social desirability bias inherent in self-report data (Begum et al., 2021). A distinct instance was defined as any discrete verbal or instructional act by the teacher explicitly linking an Islamic textual or theological reference to an environmental referent; repeated references to the same verse or principle within a single lesson were counted separately only if they occurred in separate instructional moments (for example, an initial teaching point and a later reinforcing remark), following a definition fixed before observation began. The average of four to six substantively contributing students per lesson was likewise recorded using the structured observation protocol, counting each student who offered at least one codable verbal contribution relevant to the lesson's ecological-theological content; this is a descriptive tally from a qualitative observation protocol rather than a standardised behavioural measurement, and should be read as indicative rather than precise.

Challenges and Enablers

Four structural constraints were identified through triangulation of interview and document data: (1) limited PAI instructional time within the existing curriculum framework the weekly PAI allocation is insufficient for the in-depth contextual exploration that ecological topics require; (2) the absence of dedicated learning materials explicitly addressing Islamic ecological ethics, requiring the teacher to independently locate, adapt, and create supplementary resources without institutional support; (3) heterogeneous levels of prior environmental awareness and ecological motivation among students, necessitating differentiated engagement strategies and extended reinforcement timelines; and (4) the absence of a formalised ecological strand in the national PAI curriculum, meaning integration depends entirely on individual teacher initiative rather than systemic mandate or professional expectation.

Four enabling factors partially offset these constraints. The teacher's theological literacy and pedagogical creativity allowed him to identify and exploit ecological integration opportunities within existing curriculum content. The school's environmental programmes greening, waste management, and community service provided institutional reinforcement that made ecological values visible beyond the PAI classroom, creating a school-wide ecological culture that supported in-class learning. Students' responsiveness to contextualised, discussion-based instruction created positive dynamics that sustained teacher motivation and engagement. The teacher articulated his adaptive strategy:

"I integrate Islamic ecological values flexibly within existing materials, seek additional references independently, and maintain consistent habituation and modelling so that students can observe and internalise positive environmental behaviour directly."

Teacher Theological Literacy as an Enabling Condition for Integration

The teacher's largely spontaneous articulation of four of the study's five Islamic ecological principles - *khilafah*, *amanah*, an implicit *tauhid* orientation (through the language of creation's inherent sacred value), and the prohibition of *fasad* - together with the closely related concepts of *adl* and *akhlak*, aligns with Nasr's (1996) formulation of Islamic eco-theology as a fundamentally spiritual, rather than utilitarian, orientation toward nature; *mizan* was not directly evidenced in the teacher's own articulation and is not claimed here. This theological fluency distinguishes the present case from the dominant pattern in the literature: Zabidi et al. (2021) found that while Islamic ecological principles are formally embedded in Islamic educational content, teachers rarely translate them into ecological classroom application. Wakhidah & Erman (2022) similarly found that Indonesian PAI teachers predominantly engage with ritual and doctrinal content rather than applied ecological ethics. The present case represents a meaningful departure from this pattern. The key differentiating factor in the present case appears to be *teacher theological literacy* - the capacity to recognise, articulate, and apply Islamic eco-theological principles in instructional contexts. Because this pattern is drawn from a single information-rich case, it is best read as evidence that theological literacy can function as an enabling condition for integration, not as a demonstration that it is a necessary precondition; a case involving a less theologically literate teacher would be needed to test whether integration is possible, if more difficult, without this factor. This finding nonetheless carries a practical implication: effective ecological integration in PAI is unlikely to be achieved by curricular mandate alone. It plausibly requires teachers who possess the theological depth to understand why ecological stewardship is a religious obligation, not merely the pedagogical skill of how to teach environmental content. Building this theological ecological literacy through pre-service and in-service teacher development may therefore constitute an important enabling condition for meaningful ecological curriculum reform.

The teacher's largely spontaneous articulation of *khilafah*, *amanah*, an implicit *tauhid* orientation, *fasad*, *adl*, and *akhlak* indicates substantial theological literacy. At the same time, *mizan* was not directly evidenced in the teacher's own articulation and is therefore not attributed to him. This pattern is consistent with the literature showing that ecological principles may be present in Islamic educational content without being consistently translated into classroom practice (Zabidi et al., 2021; Wakhidah & Erman, 2022). The present case illustrates one context in which a teacher did make those connections explicit, while the single-case design does not establish how common this pattern is.

The Indonesian Adiwiyata programme provides a useful institutional comparison rather than a classification of the present site. Wibowo et al. (2023) reported stronger environmental-care attitudes in public high-school students in Adiwiyata settings, while Nurwidodo et al. (2019) linked eco-school participation with environmental literacy. The present case also contains school-based routines such as cleaning duties, gardening, and community service, but the source materials do not establish formal Adiwiyata status. The comparison therefore concerns the role of institutional habituation, not equivalence between the two settings. In the present case, Islamic theological framing appears alongside existing environmental routines, and the relationship between these components warrants further study rather than being treated as a demonstrated causal mechanism.

Four Strategies as CTL Operationalisation

The four identified instructional strategies can be interpreted through the study's four operational CTL indicators, but they should not be treated as synonymous with the canonical CTL framework.

Contextual Qur'anic-Hadith linkage corresponds to contextualisation by connecting scripture with students' immediate ecological realities. Socratic discussion corresponds to inquiry and student agency by inviting students to reason through environmental issues using Islamic concepts. Project-based tasks correspond to authentic real-world tasks because students produced posters, conducted simple environmental observations, and participated in practical activities. Modelling and habituation corresponds to authentic practice because ecological values were enacted in recurring school routines. These mappings are analytical interpretations grounded in the observed case and relevant CTL literature, not a claim that the study has established a new definition of CTL.

The comparison with Wibowo et al.'s (2023) Adiwiyata research further highlights the importance of participatory activities and institutional reinforcement. In the present case, project-based tasks and school routines provided opportunities for direct ecological engagement, while Islamic theological framing supplied an explicitly religious rationale. However, the data do not permit separation of the effects of classroom instruction, school routines, peer influence, or the wider environmental programme. The IEP framework should therefore be understood as a provisional interpretation of how these elements were connected in this case, not as evidence that theological framing is the decisive variable in sustaining long-term behaviour.

Table 1. Four Pedagogical Strategies for Integrating Islamic Ecological Values in PAI: CTL Principles, Islamic Values, and Stages of Internalisation

Pedagogical Strategy	CTL Principle	Islamic Ecological Value(s)	Pedagogical Role in Integration	Stage of Internalisation (Tambak et al., 2021)
a. Contextual Qur'anic-Hadith Linkage	Contextualisation	tauhid, fasad fil ardh, khilafah	Transforms scripture into actionable ethical guidance grounded in students' proximate ecological realities	Cognitive acquisition
b. Socratic Discussion	Inquiry & student agency	fasad, amanah, mizan	Positions students as active moral reasoners constructing their own theological-ecological connections	Affective engagement
c. Project-based tasks	Authentic real-world tasks	mizan, khilafah	Synthesises theological knowledge with direct ecological observation and practical/creative expression	Cognitive-to-affective bridge
d. Modelling & Habituation	Authentic practice (uswah hasanah; ta'wid)	All five principles - enacted collectively	Embeds values in lived institutional culture and recurring school routines	Emerging behavioural enactment

Note. CTL = Contextual Teaching and Learning. The five Islamic ecological principles are: tauhid (divine unity), khilafah (vicegerency), amanah (trusteeship), mizan (cosmic balance), and prohibition of fasad fil ardh (human-caused destruction). Stages of internalisation follow Tambak et al.'s (2021) three-stage model.

Value Internalisation: Three-Stage Progression

Student responses indicate progressive movement through Tambak et al.'s (2021) three-stage model of Islamic value internalisation. Evidence of *cognitive acquisition* is strong and consistent: all ten student participants articulated connections between Islamic teachings and environmental responsibility, framing ecological care as a religious obligation before Allah rather than a school compliance requirement. This shift in framing from institutional to theological is the first necessary condition for genuine value internalisation. Evidence of *affective engagement* is also

present: students reported that reframing environmental stewardship through *khilafah* and *amanah* gave ecological care a spiritual weight it had previously lacked, generating a sense of personal accountability toward the natural world as a divine trust. This affective dimension caring about the environment because Allah commands it, not because rules require it is the critical bridge between understanding and action. Evidence of *behavioural enactment* is partial and uneven across the student body: the teacher observed measurable improvements in classroom environmental conduct, but full behavioural consistency had not yet been achieved. This pattern is consistent with Tambak et al.'s (2021) model, which posits that full behavioural internalisation in Islamic education requires sustained, multi-modal reinforcement over extended time periods before the third stage of value enactment is reliably achieved. Begum et al.'s (2021) empirical demonstration that Islamic religiosity predicts pro-environmental behaviour when actively channelled through moral education provides further theoretical support: the direction of change observed here is consistent with the predicted trajectory, but the full pathway from cognition to sustained behaviour requires instructional time and institutional continuity that present curriculum constraints cannot yet fully provide. This pattern suggests that occasional or superficial ecological integration in PAI is unlikely to be sufficient; the present findings indicate that sustained, structured ecological pedagogy embedded in a supportive school culture may be required to achieve the third stage of internalisation consistently across a diverse student body.

Structural Constraints and the Limits of Teacher-Driven Integration

The four structural constraints identified limited curriculum time, absence of ecological teaching materials, student heterogeneity, and the absence of a formalised ecological strand in the national PAI curriculum are broadly consistent with system-level barriers documented across Indonesian environmental education contexts (Begum et al., 2021; Wakhidah & Erman, 2022). Taufik and Sukandar (2025) argue that meaningful alignment between Islamic education and the SDGs requires deliberate systemic curriculum redesign, not merely individual teacher adaptation. The present findings provide clear empirical grounding for this argument: while teacher-driven integration is demonstrably feasible and produces measurable student progression, its depth and sustainability are structurally capped by the absence of systemic curricular support. The teacher's adaptive strategy flexible use of existing curriculum materials, independent sourcing of supplementary references, consistent habituation practices represents a form of *grass-roots curriculum enactment* that partially compensates for systemic absence but simultaneously imposes unrealistic professional demands on individual teachers and cannot be expected to scale across thousands of Indonesian PAI classrooms without institutional mandate and resource provision.

This structural constraint is consistent with an examination of national PAI learning-outcome documentation available at the time of writing: national PAI learning outcomes include a general orientation toward "compassion for the universe" (*rahmat li al-'alamin*) among the subject's core aims, but this orientation was not, as codified in curriculum documents available during the study period, elaborated into the specific eco-theological competencies (e.g., *tauhid*, *khilafah*, *amanah*, *mizan*, and the prohibition of *fasad*, as operationalised in this study) or into corresponding assessment criteria that would constitute a fully formalised ecological strand. A Ministry of Religious Affairs review reported in early 2026 signalled movement toward strengthening eco-theological content within PAI learning outcomes, a development that post-dates this study's data collection (Kementerian Agama Republik Indonesia, 2026). The present finding should therefore be read as describing the curriculum context at the time of this study rather than as a permanent structural feature.

These structural findings carry implications that extend beyond Indonesia. Karimi et al. (2022), in a cross-sectional study of religiosity and pro-environmental behaviour among Muslim communities in Iran, found that the relationship between Islamic religiosity and ecological action is significant but heavily mediated by structural enablers specifically, the availability of institutional channels through which religiously motivated individuals can translate values into consistent practice. This mediating role of institutional structure mirrors the present study's finding: individual teacher theological literacy and student receptiveness to Islamic ecological reframing are present, but their full expression as sustained behavioural change is structurally capped by curriculum time, material absence, and the absence of a formalised national policy framework. The implication is that neither personal religiosity nor pedagogical creativity is sufficient alone; both must be embedded within a supportive institutional architecture to produce the third stage of value internalisation consistent behavioural enactment across a heterogeneous student body.

Puad and Ashton (2023), in a critical analysis of Indonesia's national curriculum, identified persistent tensions between global sustainability mandates and locally situated religious and cultural values - tensions that the IEP framework is designed to help resolve by embedding global ecological imperatives within an Islamic theological frame rather than imposing them as externally derived obligations. Based on the present single-case findings, we offer the following as implications for policy consideration rather than as established recommendations: the Ministry of Religious Affairs, which oversees PAI curriculum, could consider exploring explicit Islamic ecological literacy standards mapping the five eco-theological principles onto learning objectives, competencies, and assessment criteria; and the Ministry of Education could consider ways to align national school environmental programmes with PAI's theological framework, so that institutional ecological activities reinforce, rather than operate parallel to, classroom value formation. We frame these as hypotheses for curriculum development warranting evidence from multi-site studies, stakeholder consultation, and curriculum analysis, rather than as findings that a single purposively selected school and teacher can, on their own, substantiate.

Towards an Islamic Ecological Pedagogy (IEP) Framework

Because the framework proposed below is derived from a single, purposively selected case, its epistemic status should be stated explicitly: it is an emergent, provisional conceptual framework rather than a validated model. Of its three dimensions, theological grounding and contextual pedagogical mediation are directly evidenced in the data reported here (the ecological principles as articulated by the teacher and students, and the four pedagogical strategies documented through triangulated interview, observation, and document data). Institutional habituation is evidenced in part through the school's existing environmental routines, but its specific contribution to student internalisation, as distinct from classroom-level pedagogy, is inferred rather than directly measured in this design. Multi-site replication, and, where feasible, designs capable of comparing outcomes across settings with and without structured implementation, would be required before the framework could be considered validated.

Integrating findings across all four discussion themes, this study proposes an *Islamic Ecological Pedagogy (IEP)* framework as a conceptual and practical architecture for ecologically oriented PAI. The framework comprises three mutually reinforcing dimensions. *Theological grounding* anchors instruction in the five Islamic ecological principles *tauhid*, *khilafah*, *amanah*, *mizan*, and the prohibition of *fasad fil ardh* as both the normative content of ecological learning and the spiritual motivation for ecological behaviour, addressing the *why* of environmental stewardship. *Contextual pedagogical mediation* connects theological content to students' lived

ecological realities through four CTL-consistent strategies, addressing the *how* of value transmission and internalisation. *Institutional habituation* embeds Islamic ecological values in recurring school routines and collective school culture, addressing the *where and when* of sustained value reinforcement beyond the individual PAI lesson.

The IEP framework extends and operationalises Islamic eco-theology (Rohmatulloh et al., 2023; Karimi et al., 2022) within a school-based pedagogical architecture, and complements pesantren-based ecological models (Efendi et al., 2021) by providing an initial illustration of ecological PAI in a non-religious public school context, and offers an empirically illustrated starting point for Islamic ecological pedagogy at the senior high school level that warrants replication. Most significantly, the framework's viability in a public SMAN context suggested by the present findings indicates that Islamic ecological education need not be confined to specialist Islamic institutions, though multi-site replication would be needed to confirm this. Since the majority of Indonesian Muslim students receive their PAI instruction in public rather than Islamic schools, this confirmation of public-school viability is a prerequisite for any serious national strategy for Islamic environmental education at scale. Future collaborative action research with PAI teachers across diverse public school contexts will enable iterative refinement of the framework's pedagogical components and strengthen its transferability across different regional and institutional conditions.

The IEP framework may be relevant to Indonesia's commitments to SDG 4 (Quality Education) and SDG 13 (Climate Action), but this single case cannot establish national policy effects. Wakhidah and Erman (2022) identified limitations in the depth and practical orientation of environmental content in Indonesian PAI curricula, while Taufik and Sukandar (2025) discuss the broader relationship between Islamic religious education and the SDGs. On that basis, the present framework can be considered a candidate for further curriculum discussion and pilot testing. Before any national incorporation, future studies would need to examine the framework across multiple schools and regions, assess implementation fidelity, and evaluate whether changes in Islamic environmental awareness or behaviour can be attributed to structured use of the framework. National adoption should therefore be treated as a proposition requiring further empirical testing, not as an outcome established by this study.

Islamic Ecological Pedagogy (IEP) Framework <i>Three Mutually Reinforcing Dimensions for Ecologically Oriented PAI</i>		
DIMENSION 1 <i>Theological Grounding</i> • tauhid (divine unity) • khilafah (vicegerency) • amanah (trusteeship) • mizan (cosmic balance) • Prohibition of fasad fil ardh → Addresses the WHY of ecological stewardship	DIMENSION 2 <i>Contextual Pedagogical Mediation</i> • Contextual Qur'anic-Hadith Linkage • Socratic Discussion • Project-based tasks • Modelling & Habituation → Addresses the HOW of value transmission	DIMENSION 3 <i>Institutional Habituation</i> • School environmental programmes • Greening & waste management • Kerja bakti (community service) • Teacher modelling (uswah hasanah) → Addresses WHERE & WHEN of reinforcement
OUTCOME: Progressive Value Internalisation → Cognitive Acquisition → Affective Engagement → Behavioural Enactment		

Note. The three dimensions are mutually reinforcing and operate simultaneously rather than sequentially. Dimension 1 provides normative content; Dimension 2 mediates its transmission through four CTL-consistent strategies; Dimension 3 consolidates internalisation through institutional routines. Adapted from findings at SMAN 7 Bengkulu City, Indonesia.

Figure 1. The Islamic Ecological Pedagogy (IEP) Framework

Conclusion

This study documents how Islamic ecological values were integrated into PAI learning at one public senior high school and how teacher and student accounts, classroom observations, and documents described emerging patterns of Islamic environmental awareness. The teacher enacted four interrelated strategies contextual Qur'anic-Hadith linkage, Socratic discussion, project-based tasks, and modelling habituation through which students encountered ecological principles including tauhid, khilafah, amanah, mizan, and the prohibition of fasad fil ardh. Evidence of internalisation was uneven: cognitive and affective recognition was relatively consistent, whereas behavioural enactment remained partial and dependent in some cases on reminders and school routines. The study therefore proposes an Islamic Ecological Pedagogy (IEP) framework as an emergent, provisional conceptual framework that requires validation across diverse settings.

The study yields three sets of implications for future inquiry and practice rather than conclusions that this single case can establish. For curriculum policy, the findings support exploring—through pilot studies—whether explicit Islamic ecological literacy can be incorporated into PAI syllabi and materials. For teacher development, the case suggests that theological ecological literacy may be relevant alongside pedagogical skills, a proposition that should be examined with broader samples. For school leadership, existing routines such as cleaning duties, gardening, waste-related activities, and community service could provide contexts for ecological habituation, but comparative research is needed to determine how much such routines contribute beyond individual teacher practice. These implications are presented as researchable propositions rather than as demonstrated policy effects.

This study has several limitations. It is a single-site qualitative case study with a purposive sample of eleven participants, which precludes statistical generalisation. The study relies substantially on self-reported interview data and a relatively brief observation window of six lessons over four weeks. The source research record does not document formal member checking, an independent second-coder reliability calculation, exact interview-duration ranges, or a pilot interview; these omissions limit the methodological claims that can be made retrospectively. The school was also selected as an information-rich case with existing environmental routines, so the findings should not be treated as representative of Indonesian public schools. Future research should use multi-site and longitudinal designs, document ethics and consent procedures prospectively, and, where appropriate, include independent coding or other transparent dependability procedures. Such studies can test whether the provisional IEP framework is transferable and whether the patterns observed here persist across different school and regional contexts.

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