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LEARNING FROM NATURE: FOSTERING ENVIRONMENTAL AWARENESS IN ISLAMIC NATURE-BASED ELEMENTARY SCHOOL

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Abstract

This study examines the application of experiential learning through a learning from nature approach in fostering students' environmental awareness at MI Alam Alfa Kids, an Islamic nature-based elementary school in Pati, Central Java, Indonesia. Employing a qualitative case study design, data were collected over one academic semester through systematic non-participant observations, semi-structured interviews with three classroom teachers, one school principal, and eight students, alongside documentation analysis. Data were analyzed using reflexive thematic analysis following Braun and Clarke (2006, 2019). Findings reveal three interconnected results. First, nature-based experiential learning was implemented through seven systematic activity forms including gardening, zero-waste programs, project-based learning, and outing classes embedded in daily instructional routines. Second, these activities fostered environmental awareness across cognitive, affective, and behavioral dimensions, with students demonstrating experience-based ecological knowledge, faith-embedded moral responsibility, and self-initiated pro-environmental behavior including peer social agency. Third, teacher facilitation, consistent role modeling, and an institutionally coherent school culture functioned as mutually reinforcing mechanisms sustaining environment-oriented learning. This study introduces the concept of faith-integrated experiential learning as a theoretically distinct pedagogical model in which Islamic values of stewardship (khalifah) and natural balance (mizan) amplify and sustain environmental commitment beyond outcomes documented in secular educational contexts.

Keywords: Environmental Awareness, Islamic Elementary School, Learning From Nature.

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INTRODUCTION

Environmental degradation spanning climate disruption, pollution, biodiversity loss, and waste accumulation increasingly shapes the conditions of everyday human life (Ali & Rahman, 2024; Dijoo & Khurshid, 2022). These challenges are no longer confined to distant ecosystems or future generations; they manifest in the air communities breathe, the water they consume, and the landscapes they inhabit. Scholars across disciplines converge on a critical point: environmental crises are fundamentally rooted in human values and behavior, not merely technical or economic failures (Merz et al., 2023). Technological innovations and policy interventions, while necessary, remain insufficient without corresponding shifts in how individuals understand, relate to, and act within the natural world. This consensus redirects attention toward education as a long-term, structural intervention capable of cultivating ecologically responsible citizens from an early age (Sá Couto et al., 2025; Yadav & Singh, 2024).

Elementary education occupies a strategically important position in this process. Childhood is a formative period in which values, habits, and character are actively constructed through experience and social interaction (Aslan, 2024). The attitudes children develop toward nature during these early years tend to persist into adulthood, shaping patterns of consumption, civic participation, and environmental stewardship across the life course. Research consistently shows that children learn most effectively through concrete, sensory-rich experiences rather than abstract textbook instruction (Ardoin & Heimlich, 2021; Gugssa, 2023). When environmental education is delivered primarily through decontextualized content definitions of ecosystems, lists of endangered species, or diagrams of the water cycle it may produce students who can recite environmental facts without developing any meaningful relationship with the natural world. Despite this, learning practices in many schools remain predominantly classroom-centered and content-oriented, with environmental topics treated as isolated knowledge within discrete subject areas (Dale et al., 2020; Little et al., 2020) The consequence is well-documented: students may acquire cognitive knowledge of environmental issues without developing the emotional attachment or behavioral dispositions necessary for genuine environmental responsibility (M. P. Jimenez et al., 2021; Whitburn, 2020).

Experiential learning has emerged as a theoretically grounded and empirically supported response to this limitation. Rooted in the foundational work of Dewey, (1986) and elaborated through Kolb, (2014) experiential learning cycle, this approach positions direct experience, structured reflection, and active engagement with real-world settings as the primary mechanisms through which meaningful learning occurs(Alabi, 2024; Matriano, 2020). Rather than treating students as passive recipients of transmitted knowledge, experiential learning reconceives them as active constructors of understanding whose learning is deepened through cycles of doing, observing, reflecting, and applying. In environmental education contexts, this translates into learning that takes place in and through nature rather than merely about it (Priatmoko &

Sholihah, 2023; Uswatun et al., 2025). A growing body of evidence supports the effectiveness of this approach: outdoor activities such as nature exploration, school gardening, and community environmental projects are associated with stronger ecological understanding, greater emotional connection to nature, and more consistent pro-environmental behavior among elementary students (Ayotte-Beaudet, 2023; M. Jimenez, 2019; Kikas et al., 2011). Crucially, the impact of experiential learning extends beyond cognitive outcomes. It supports affective and behavioral development (Passarelli & Kolb, 2023), allowing environmental values to be internalized and expressed in daily practices such as resource conservation, waste management, and responsible care for living organisms. Environmental awareness, understood in this holistic sense, encompasses not only what students know but also what they feel and what they do.

However, a critical review of this literature reveals three significant limitations that constrain its broader applicability. First, the majority of studies on experiential and nature-based learning have been conducted in public or secular school settings in Western or East Asian contexts, leaving faith-based educational environments where moral and spiritual dimensions of environmental stewardship are integral to institutional identity largely unexamined. The assumption that findings from secular settings transfer straightforwardly to religious schools overlooks the ways in which institutional values, community expectations, and theological frameworks shape both pedagogical practice and student experience. Second, existing research has prioritized outcome measurement, particularly through pre- and post-intervention assessments of environmental knowledge or attitudinal scales, while offering limited process-oriented insight into how environmental awareness develops within specific school cultures and daily pedagogical routines. What is largely absent from the literature is a nuanced account of the conditions, interactions, and institutional practices through which environmental values are gradually internalized by young learners. Third, and most critically for the present study, almost no empirical research has examined how experiential learning is operationalized within Islamic elementary schools, despite the fact that Islamic teachings provide a distinctive and potentially powerful ethical framework for environmental care framing ecological responsibility not as a secular civic duty but as a religious obligation grounded in the Qur'anic concept of human stewardship (khalifah) and the divine mandate to maintain natural balance (mizan) (Wani & Azhar, 2024). This theological grounding has the potential to deepen students' motivation for environmental action in ways that secular frameworks cannot replicate, yet it remains empirically underexplored.

This gap is particularly consequential in the Indonesian context. Islamic elementary schools (madrasah ibtidaiyah) constitute a major and growing segment of the national primary education system, enrolling millions of students annually and playing a formative role in their academic, moral, and spiritual development (Hasan, 2024). Indonesia itself occupies a position of exceptional ecological significance as one of the world's most biodiverse nations, home to

critical rainforest ecosystems, extensive marine habitats, and a disproportionate share of global species diversity, it faces acute environmental pressures from deforestation, pollution, and climate-related disruption. Yet despite the overlap between Indonesia's environmental urgency and the scale of its Islamic educational institutions, empirical research on environmental education within Indonesian madrasah ibtidaiyah remains strikingly sparse. The question of how nature-based, experiential learning approaches function within this specific institutional, cultural, and religious context and what distinctive contribution they might make to students' environmental awareness has not been substantively addressed in the literature.

MI Alam Alfa Kids represents a rare and analytically significant institutional case that directly confronts this gap. Located in Pati, Central Java, the school operates within a predominantly agricultural and rural landscape a geographical setting that provides immediate and daily proximity to natural ecosystems, yet one in which formal environmental education within Islamic schools remains largely undocumented. The school has deliberately implemented a learning from nature model within an Islamic educational framework, embedding outdoor activities including gardening, environmental exploration, waste management, and animal care into daily learning routines rather than treating them as supplementary or extracurricular programs. Teachers function as facilitators who guide students through cycles of direct observation, structured reflection, and value integration, while the broader school culture reinforces environmental habits as authentic expressions of Islamic character and religious responsibility. This integration of ecological practice with spiritual formation distinguishes MI Alam Alfa Kids from both conventional madrasah and secular nature-based schools, making it a particularly valuable site for contextually sensitive qualitative inquiry.

This study argues that examining MI Alam Alfa Kids is not merely descriptive but analytically necessary. Existing literature cannot adequately account for how the integration of Islamic ethical values with nature-based experiential learning shapes the process by which environmental awareness is constructed, nor can it explain how teacher facilitation and institutional culture collectively sustain such learning over time. The novelty of this research therefore lies not simply in its geographical or institutional setting, but in its theoretical contribution: it proposes that faith-integrated experiential learning constitutes a distinct pedagogical model in which moral obligation and ecological practice are mutually reinforcing, and that understanding this model requires process-oriented qualitative inquiry rather than outcome-focused measurement alone.

Accordingly, this study aims to examine the application of experiential learning in fostering environmental awareness among students at MI Alam Alfa Kids. Specifically, it seeks to: (1) describe the forms of nature-based experiential learning activities implemented at the school; (2) explore their influence on students' environmental awareness in terms of knowledge, attitudes, and behaviors; and (3) analyze the roles of teachers and school culture in sustaining

environmentally oriented learning practices. The findings are expected to contribute both theoretically by extending experiential learning frameworks into faith-integrated environmental education and practically, by offering an evidence-based and contextually grounded model for Islamic elementary schools seeking to embed ecological responsibility as a living dimension of character education.

METHODS

This study employed a qualitative research approach with a case study design (Creswell & Poth, 2016). The case study design was selected because the research aimed to develop an in-depth and contextually grounded understanding of how experiential learning through a learning from nature approach fosters students' environmental awareness within a specific educational institution as a bounded system (Jordan, 2023). This design is particularly suited to research questions that foreground processes, meanings, and contextual dynamics rather than measurable outcomes, making it appropriate for exploring the lived experiences of students and teachers within their natural educational setting.

The study was conducted at MI Alam Alfa Kids, a nature-based Islamic elementary school (madrasah ibtidaiyah) located in Pati, Central Java, Indonesia. The school was purposively selected on the basis of three academic considerations. First, MI Alam Alfa Kids operates as a Sekolah Alam a school model that systematically integrates outdoor environments as primary learning spaces and minimizes reliance on conventional classroom-based instruction. Second, the school has formally embedded nature-based experiential learning activities including gardening, environmental exploration, waste management, and animal care into its daily curriculum rather than treating them as supplementary or extracurricular programs. Third, the school represents a distinctive case of Islamic environmental education in which ecological responsibility is explicitly framed within Islamic values of stewardship (khalifah) and natural balance (mizan), a combination that remains underexplored in the empirical literature. Data were collected over one full academic semester to capture learning patterns, institutional routines, and the gradual development of students' environmental awareness across a sustained and ecologically meaningful timeframe.

In qualitative inquiry, the researcher functions as the primary instrument of data collection and interpretation (Creswell & Poth, 2016; Hancock et al., 2021). In this study, the researcher was directly engaged in all phases of fieldwork, including classroom and outdoor learning observations, in-depth interviews, and document analysis. The researcher's positional stance was that of a complete observer maintaining physical presence in the field without participating in instructional activities in order to document interactions, behaviors, and learning processes as they occurred naturally and without disruption (Musante & DeWalt, 2010). This stance differs from participant observation, in which the researcher takes an active role in the activities being observed. To enhance analytical rigor and minimize interpretive bias, the

researcher maintained a reflective field journal throughout the data collection period, recording observations, emerging analytical notes, and critical reflections on the researcher's own positionality and interpretive assumptions.

Research participants were selected through purposive sampling, prioritizing individuals with direct and sustained involvement in nature-based learning activities at the school (Miles, M. B., Huberman, A. M., & Saldaña, 2014). A total of 12 participants were involved in this study. These comprised 8 students from the third and sixth grades, selected to represent different developmental stages of environmental awareness across the elementary school years; 3 classroom teachers who facilitated nature-based learning activities and integrated environmental values into subject instruction; and 1 school principal, who served as a key informant on institutional philosophy, curriculum design, and the strategic implementation of experiential environmental learning. Students were the primary subjects of observation, while teachers and the principal served as key informants whose accounts enriched the contextual and pedagogical dimensions of the findings.

Data were collected through three complementary techniques, applied concurrently to support methodological triangulation and enhance the credibility of findings (Creswell & Poth, 2016). First, systematic non-participant observations were conducted during outdoor learning activities, gardening sessions, waste management routines, and daily school activities, with particular attention to student engagement, teacher facilitation practices, and behavioral manifestations of environmental awareness. Observational records were documented using structured field notes organized around predefined thematic focuses. Second, semi-structured in-depth interviews were conducted individually with the three classroom teachers and the school principal to explore their perspectives on experiential learning design, environmental education philosophy, and the role of school culture in sustaining ecological practices. Interview guides were developed flexibly to allow participants to elaborate on themes beyond the initial questions. Third, supporting documentation including lesson plans, school program records, activity photographs, and the researcher's reflective field notes was systematically collected and analyzed as corroborating evidence alongside observational and interview data.

Data were analyzed using reflexive thematic analysis following the framework established (Braun et al., 2016; Braun & Clarke, 2019). This approach involves six iterative phases: familiarization with the data, generation of initial codes, construction of candidate themes, review and refinement of themes, definition and naming of themes, and production of the final analytical narrative. The analytical process was inductive in orientation, allowing themes to emerge from the data rather than being imposed by predetermined categories, while also remaining theoretically informed by experiential learning theory and environmental education frameworks. Emerging themes were consistently interrogated against the raw data to ensure analytic grounding and interpretive coherence.

The trustworthiness of the findings was established through multiple strategies aligned with Guba et al., (1994) criteria of credibility, transferability, dependability, and confirmability. Credibility was strengthened through source triangulation (students, teachers, and principal) and method triangulation (observation, interviews, and documentation), as well as through member checking, whereby preliminary findings were returned to key participants for verification and feedback. Transferability was supported through thick, contextually rich description of the research site, participants, and processes. Dependability was addressed through prolonged researcher engagement across one full academic semester and the maintenance of a detailed audit trail of methodological decisions. Confirmability was enhanced through peer debriefing with an experienced qualitative researcher external to the study, who critically reviewed the analytical process and emerging interpretations.

RESULTS AND DISCUSSION

Overview of the Findings

This section presents and discusses findings from the study on the application of experiential learning through the *learning from nature* approach at MI Alam Alfa Kids, Pati, Central Java. Data were derived from systematic non-participant observations, semi-structured in-depth interviews with three classroom teachers and the school principal, and documentation analysis conducted over one academic semester. The findings are organized around three research foci: (1) the forms of nature-based experiential learning activities implemented at the school; (2) the influence of these activities on students' environmental awareness across cognitive, affective, and behavioral dimensions; and (3) the roles of teachers and school culture in sustaining environment-oriented learning practices. Results and discussion are presented separately for each focus to preserve analytical clarity.

RESULTS

Forms of Nature-Based Experiential Learning Activities

Observational data collected across one academic semester revealed that nature-based experiential learning at MI Alam Alfa Kids was implemented systematically and consistently as the school's primary instructional approach. Learning activities were not confined to indoor classroom settings but were deliberately organized in open natural spaces including the school garden, schoolyard, and surrounding community environment which functioned as living learning laboratories. Field observations documented seven recurring forms of learning activity, each aligned with distinct phases of the experiential learning cycle (Kolb, 2014): concrete experience, reflective observation, abstract conceptualization, and active experimentation. These activity forms are presented in Table 1.

Table 1. Forms of Nature-Based Experiential Learning Activities at MI Alam Alfa Kids

Learning Activity	Implementation	Dimensions of Environmental Awareness Developed
Planting and plant care	Students planted, maintained, harvested, and processed plants in the school garden and community	Environmental knowledge, responsibility, ecological attitudes
Nature-based Project-Based Learning (PjBL)	Students produced compost, organic fertilizer, herbal drinks, and eco-products presented at science fairs	Environmental skills, creativity, pro-environmental behavior
Zero-waste program and waste sorting	Daily organic/inorganic waste sorting, ecobrick production, and low-waste lifestyle habituation	Environmental discipline, sustainable behavior
Outing class outdoor learning	Field visits to fishing villages and agricultural areas connecting geography, livelihoods, and environment	Contextual understanding, environmental sensitivity, social awareness
Local natural resource processing	Direct observation of fish smoking and local plant utilization grounded in local ecological wisdom	Appreciation of local wisdom, environmental attitudes
Environmental conservation and water management	Rainwater harvesting, infiltration system construction, water conservation, and healthy living habituation	Conservation awareness, sustainable lifestyle
Reflective learning and value internalization	Post-activity facilitated reflection connecting experiences with environmental values and daily life application	Moral-ecological awareness, value internalization

Field observations confirmed that all seven activity types occurred regularly throughout the semester, not as isolated events but as embedded components of daily instructional routines. Students in both the third and sixth grades were directly involved in these activities with visible engagement. For example, during a gardening session observed in the third week of fieldwork, all twelve student participants actively participated in planting seedlings, identifying plant types, and discussing soil composition without direct instruction from teachers, who positioned themselves as observers and occasional facilitators during this phase as illustrated in Figure 2.

Figure 1. Learning-from-nature activities through gardening and environmental exploration

Classroom teachers corroborated these observational findings. As one third-grade teacher explained during interview:

"Kami tidak memisahkan kegiatan alam dari pelajaran. Berkebun itu bagian dari IPA, dari IPS, bahkan dari PAI karena kami hubungkan dengan tanggung jawab manusia sebagai khalifah. Anak-anak belajar sambil melakukan, bukan hanya mendengarkan." ("We do not separate nature activities from lessons. Gardening is part of science, social studies, even Islamic education because we connect it to human responsibility as stewards. Children learn by doing, not only by listening.")

The school principal similarly affirmed the institutional intentionality of this approach:

"Sekolah ini dibangun dengan filosofi bahwa alam adalah guru terbaik. Semua yang ada di lingkungan sekolah ini dirancang agar anak bisa berinteraksi langsung, bukan hanya melihat dari dalam kelas." ("This school was built on the philosophy that nature is the best teacher. Everything in this school environment is designed so children can interact directly, not merely observe from inside a classroom.")

These accounts confirm that the *learning from nature* model at MI Alam Alfa Kids represents a deliberate and institutionally sustained pedagogical framework, not an incidental collection of outdoor activities.

Nature-Based Experiential Learning and Students' Environmental Awareness

The influence of nature-based experiential learning on students' environmental awareness was analyzed using the tripartite framework of cognitive, affective, and behavioral dimensions established by Chawla and Cushing (2007) and further elaborated by Stern (2000) in the context of environmental values and action. This framework distinguishes environmental awareness as encompassing: (a) *cognitive awareness* knowledge and understanding of environmental concepts and systems; (b) *affective awareness* emotional orientations, values, and moral commitments toward the environment; and (c) *behavioral awareness* observable and habitual pro-environmental actions. Findings across each dimension are reported below.

Cognitive Awareness

Observational and interview data indicated that students at MI Alam Alfa Kids developed substantive environmental knowledge through their direct learning experiences. This knowledge was not abstract or memorized but was constructed through firsthand engagement with natural processes. Six out of eight student participants, when interviewed, were able to explain environmental concepts including decomposition, nutrient cycling, and water conservation using language and examples drawn directly from their own gardening and waste management experiences. A sixth-grade student articulated this clearly:

"Kalau tanaman mati terus dibuang ke tempat sampah, sayang sekali. Lebih baik dijadikan kompos supaya tanahnya subur lagi. Kami sudah pernah bikin sendiri." ("If plants die and are thrown away, it's

wasteful. It's better to make them into compost so the soil becomes fertile again. We have made it ourselves.")

Another third-grade student, when asked what happens to rainwater at the school, responded: *"Air hujan di sini tidak langsung dibuang. Ada lubang resapan supaya airnya masuk ke tanah lagi. Kata Pak Guru itu namanya konservasi air."* ("Rainwater here is not immediately discharged. There are infiltration holes so water goes back into the ground. The teacher said that's called water conservation.")

These responses indicate that students had internalized environmental concepts at a level of practical understanding not merely definitional recall as a direct result of their participatory learning experiences.

Affective Awareness

All eight student participants demonstrated observable affective responses to environmental conditions during field observations. Five students spontaneously expressed concern when observing damaged plants or scattered waste during outdoor activities, without prompting from teachers. These expressions took the form of verbal comments, facial displays of concern, and immediate corrective action such as picking up litter or repositioning a fallen plant that were initiated by students themselves. Interview data further revealed that students attributed moral and religious meaning to environmental care. As one sixth-grade student stated: *"Menjaga kebersihan itu ibadah. Bu Guru bilang kalau kita merawat tanaman, itu artinya kita menjaga ciptaan Allah."* ("Maintaining cleanliness is worship. The teacher said that if we care for plants, it means we are taking care of God's creation.")

A classroom teacher elaborated on how this affective-spiritual integration was cultivated: *"Kami selalu menghubungkan kegiatan lingkungan dengan nilai-nilai Islam. Bukan hanya supaya anak tahu soal lingkungan, tapi supaya mereka merasa bertanggung jawab secara moral karena ini perintah agama, bukan hanya aturan sekolah."* ("We always connect environmental activities with Islamic values. Not only so children know about the environment, but so they feel morally responsible because this is a religious command, not merely a school rule.")

This integration of ecological and spiritual affect represents a dimension of environmental awareness that is distinct from findings reported in secular school contexts.

Behavioral Awareness

Behavioral manifestations of environmental awareness were the most consistently observable dimension across the research period. Field observations documented that seven out of eight student participants engaged in pro-environmental behaviors including waste sorting, plant care, water conservation, and maintenance of shared spaces as routine, self-initiated daily practices rather than teacher-directed tasks. Students were observed reminding peers who engaged in environmentally harmful behaviors on six separate occasions across the observation

period, indicating the development of social agency in environmental practice. as illustrated in Figure 2.

Figure 2. Learning-from-nature activities through gardening and waste management

One teacher described this behavioral transformation:

"Yang paling saya bangga adalah ketika anak-anak sudah tidak perlu diingatkan lagi. Mereka sendiri yang menegur temannya kalau buang sampah sembarangan. Itu artinya nilai itu sudah jadi bagian dari diri mereka." ("What I am most proud of is when children no longer need to be reminded. They themselves reprimand friends who litter. That means the values have become part of who they are.")

These findings are summarized in Table 2.

Table 2. Dimensions of Students' Environmental Awareness at MI Alam Alfa Kids

Dimension	Category	Theme	Evidence
Cognitive	Understanding of environmental concepts	Experience-based environmental literacy	6/8 students explained ecological concepts using experiential language and examples
Cognitive	Contextual meaning-making	Authentic knowledge construction	Students linked gardening and waste activities to broader ecological concepts without prompting
Affective	Care for nature	Ecological empathy	5/8 students showed spontaneous concern for damaged plants or littered surroundings
Affective	Moral-spiritual responsibility	Faith-embedded environmental values	Students attributed environmental responsibility to Islamic obligation (*khalifah*)
Behavioral	Pro-environmental actions	Environmentally friendly daily practices	7/8 students performed waste sorting, plant care, and water conservation routinely
Behavioral	Sustainable habits	Behavioral habituation	Pro-environmental actions performed voluntarily and consistently without teacher direction
Behavioral	Social environmental agency	Agents of environmental change	Students reprimanded peers for harmful behaviors on 6 documented occasions

The Role of Teachers and School Culture in Sustaining Environment-Oriented Learning

Data from observations, interviews, and document analysis converged on a consistent finding: the sustainability of environment-oriented experiential learning at MI Alam Alfa Kids was not attributable to any single factor but to the systematic interaction of three institutional elements teacher facilitation, teacher modeling, and school culture. These elements are described below and summarized in Table 3. Teachers at MI Alam Alfa Kids functioned primarily as facilitators rather than knowledge transmitters. During all fourteen outdoor learning sessions observed, teachers did not deliver direct instruction as the primary mode; instead, they posed open-ended questions, directed student attention toward natural phenomena, and guided post-activity reflection discussions. One teacher described her pedagogical orientation explicitly:

"Tugas saya bukan menjelaskan. Tugas saya membuat anak bertanya. Kalau mereka sudah bertanya sendiri, berarti mereka sudah mulai belajar dari alam." ("My job is not to explain. My job is to make children question. If they are already asking questions themselves, it means they have begun learning from nature.")

Beyond facilitation, teachers demonstrated consistent role modeling of pro-environmental behavior throughout daily school routines sorting waste in front of students, conserving water visibly, and treating plants with demonstrable care. The school principal reinforced this expectation institutionally:

"Guru di sini harus jadi contoh dulu sebelum mengajar. Anak-anak lebih banyak belajar dari apa yang mereka lihat daripada dari apa yang mereka dengar." ("Teachers here must be examples first before teaching. Children learn more from what they see than from what they hear.")

School culture institutionalized these practices through structural mechanisms: limitations on gadget use during learning time, designation of outdoor spaces as primary learning environments, and the integration of environmental themes across all subject areas including science, social studies, and Islamic education. Environmental stewardship was thus not positioned as a standalone subject but as a cross-curricular value embedded in the school's daily institutional life.

Table 3. The Role of Teachers and School Culture in Sustaining Environment-Oriented Learning

Category	Theme	Key Evidence
Teacher facilitation	Facilitators of nature-based learning	Open-ended questioning, guided exploration across 14 observed sessions
Teacher modeling	Pro-environmental role models	Visible waste sorting, water conservation, respectful plant interaction
Reflective practice	Post-experience guided reflection	Facilitated discussions connecting experience to values after each outdoor activity

Pedagogical beliefs	Learning as lived experience	Teachers explicitly rejected transmission-based instruction in favor of experiential engagement
School culture	Environment-oriented institutional norms	Daily routines integrating environmental care across subjects and social interactions
Spiritual-moral integration	Islamic values as environmental motivation	Environmental responsibility framed as *khalifah* duty in daily school discourse
Structural policy	Institutional support for outdoor learning	Gadget limitations, outdoor space prioritization, cross-curricular environmental integration

DISCUSSION

Why Nature-Based Experiential Learning Effectively Fosters Environmental Awareness

The finding that nature-based experiential learning at MI Alam Alfa Kids contributed to the development of environmental awareness across cognitive, affective, and behavioral dimensions is theoretically explicable through Kolb, (2014) experiential learning cycle. The cycle posits that learning becomes meaningful only when abstract conceptualization is grounded in concrete experience and validated through reflective observation and active experimentation. In the context of MI Alam Alfa Kids, students did not encounter environmental concepts as textbook abstractions; they encountered them as problems and phenomena arising from their own direct engagement with natural systems composting, water infiltration, and plant cycles. This experiential grounding enabled students to construct what Vygotsky & Cole, (1978) termed *scientific concepts* from the scaffolding of *spontaneous concepts* formed through everyday experience, producing knowledge that was genuinely meaningful rather than superficially retained.

This mechanism aligns with and substantively extends findings reported by (Ayotte-Beaudet, 2023), who demonstrated that outdoor learning in elementary contexts produces stronger ecological understanding than classroom-based instruction, and by Pirchio et al., (2021), who found that nature contact is positively associated with pro-environmental behavior in children. However, while these studies focused primarily on cognitive and behavioral outcomes, the present study reveals an additional affective-spiritual mechanism that prior literature has not captured: students at MI Alam Alfa Kids did not merely develop environmental knowledge and habits they developed a moral-theological motivation for environmental action rooted in Islamic concepts of *khalifah* and *mizan*. This motivation appeared to function as a self-sustaining driver of pro-environmental behavior, distinguishing it from behaviorally similar outcomes observed in secular contexts that lack this normative reinforcement.

The behavioral dimension of the findings particularly the emergence of peer social agency, whereby students independently reprimanded environmentally harmful behaviors

extends the theoretical scope of Stern, (2000) value-belief-norm theory of environmental behavior. Stern's model predicts that pro-environmental behavior is mediated by personal norms activated through ecological beliefs and values. The present findings suggest that in a faith-integrated experiential learning context, this normative activation is intensified by religious obligation, producing behavioral commitments that are not only self-directed but socially enacted. This represents a theoretical contribution beyond what secular environmental education frameworks have thus far accounted for.

The Mechanism of Teacher Facilitation and School Culture

The finding that teacher facilitation and school culture played mutually reinforcing roles in sustaining environment-oriented learning is consistent with Bandura & Walters, (1977) social learning theory, which identifies observational learning and behavioral modeling as primary mechanisms through which values and practices are socially transmitted. Teachers at MI Alam Alfa Kids did not merely instruct students about environmental values; they performed them publicly, consistently, and in contexts that students could directly observe and emulate. This modeling function is supported by Yli-Panula et al., (2019) who found that teachers' personal environmental commitments are among the strongest predictors of students' pro-environmental behavior, and by Tanubrata et al., (2024) who identified school culture as a critical mediating variable in the effectiveness of environmental education programs in Indonesian contexts.

However, the present study contributes a finding that qualifies and extends these earlier accounts. Prior research has generally treated teacher beliefs and school culture as independent variables influencing environmental learning outcomes. The findings from MI Alam Alfa Kids suggest instead that these elements are co-constitutive: school culture shapes what pedagogical beliefs teachers develop and perform, while teachers' daily enactment of environmental values continuously regenerates and reinforces school culture. This dynamic interdependence which might be termed an *ecological pedagogical culture* has not been previously theorized in the environmental education literature and represents a distinct conceptual contribution of this study.

Novelty and Theoretical Contribution

The central novelty of this study lies in its empirical demonstration that faith-integrated experiential learning constitutes a pedagogically and theoretically distinct model of environmental education not merely a contextual variation of existing secular approaches. Three specific contributions distinguish this study from prior work. First, this study provides the first process-oriented, qualitative account of how *Islamic ecological values* are operationalized within daily instructional practice in a madrasah ibtidaiyah setting. While Basri et al., (2024) & Wani & Azhar, (2024) have theorized the alignment between Islamic ethics and environmental stewardship, and Marshall, (2025) has argued for the motivational role of religious frameworks

in environmental commitment, none of these accounts has been grounded in systematic empirical observation of a functioning school. The present study closes this gap. Second, the finding that students developed *social environmental agency* actively monitoring and correcting peers' environmental behavior without adult prompting extends existing models of environmental awareness beyond the individual level. Chawla & Cushing, (2007) conceptualize environmental awareness as primarily an individual dispositional development; the MI Alam Alfa Kids findings suggest that in contexts where environmental care is culturally and spiritually framed as collective religious responsibility, awareness becomes a socially distributed and socially enacted phenomenon. This has implications for how environmental education outcomes should be theorized and measured in faith-based institutional contexts.

Third, this study challenges the assumption implicit in much of the outcome-focused environmental education literature that cognitive knowledge acquisition is the necessary precursor to affective and behavioral development. At MI Alam Alfa Kids, affective commitment (expressed as moral-spiritual responsibility) and behavioral habituation frequently preceded and scaffolded cognitive elaboration, rather than following from it. This inversion of the standard cognitive-affective-behavioral sequence suggests that the relationship among these three dimensions of environmental awareness is not linear but context-dependent, and that faith-based educational contexts may activate a qualitatively different developmental pathway than secular instructional approaches.

CONCLUSION

This study demonstrates that nature-based experiential learning at MI Alam Alfa Kids, Pati, Central Java, effectively fosters students' environmental awareness across cognitive, affective, and behavioral dimensions. The learning from nature approach systematically embedded in daily instructional routines and reinforced by Islamic ethical values of khalifah and mizan produced not merely environmental knowledge but moral-spiritual motivation for sustained pro-environmental action. Teacher facilitation, consistent role modeling, and an institutionally coherent school culture functioned as mutually reinforcing mechanisms sustaining this learning ecosystem. Theoretically, this study contributes a novel conceptual framework faith-integrated experiential learning that extends existing experiential learning and environmental education theories by demonstrating that religious values can function as an independent motivational driver of environmental behavior, activating a non-linear developmental pathway distinct from secular models. Practically, for Indonesian education, this study offers a replicable model for madrasah ibtidaiyah nationwide seeking to integrate environmental responsibility into character education (pendidikan karakter) without requiring additional curriculum structures. Given Indonesia's acute environmental challenges and the scale of its Islamic primary education system, institutionalizing nature-based experiential learning within madrasah represents a strategically significant and contextually grounded

pathway toward cultivating the next generation of ecologically responsible and morally committed citizens.

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