Open Access



Journal of Scientific Insights
E-ISSN: 3062-8571
DOI: https://doi.org/10.69930/jsi.v3i6.990
Research Article

ScienceTech Group

Vol. 3 (6), 2026
Page: 843-855

From Compliance to Awareness: The Dynamics of Religious Ecopedagogy in Shaping Students' Ecological-Spiritual Awareness

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Abstract. *This study analyzes how religious ecopedagogy is implemented at SMPN 2 Wonomerto, Probolinggo Regency, and how students' participation in ecological practices may move from rule-based compliance toward ecological-spiritual awareness. A qualitative case study was conducted using observations of 138 students across six classes, semi-structured interviews with 21 informants, school documents, and field notes. The data were analyzed thematically with the interactive model of Miles, Huberman, and Saldaña, and credibility was supported by source and technique triangulation, member checking, and an audit trail. The findings show that religious ecopedagogy operated through school rules, routine environmental tasks, educator role modeling, direct experience, and religious meaning-making grounded in khalifah and amanah. Observations were grouped into three descriptive patterns: stronger signs of autonomous orientation (47 students), participation through habituation (38), and continued reliance on external supervision (53). These groupings are context-bound analytic mappings, not psychometric measurements of inner belief, and unprompted behavior was treated as evidence of initiative rather than proof of spiritual motivation. Repeated practice, role modeling, and religious reflection appear to create conditions for internalization, although the process is uneven and not linear. The study relates to SDG 4 (Quality Education) through values-oriented learning and to SDG 13 (Climate Action) only indirectly, because no environmental or climate outcomes were measured. Transferability is limited because the study covers a single public school.*

Keywords: *Religious Ecopedagogy; Ecological-Spiritual Awareness; Islamic Education; Value Internalization; Environmental Education*

1. Introduction

The increasingly complex ecological crisis places education in a strategic position in shaping how younger generations understand the relationship between humans and the environment. Environmental education should not be limited to ecological knowledge and the formation of behavior through rules, but should also develop awareness that enables students to understand the moral, social, and spiritual dimensions of ecological actions. In Islamic education, this need is grounded in the concepts of khalifah, amanah, tawhid, and mizan, which position humans as responsible for preserving creation. Islamic boarding schools and Islamic educational institutions have a strategic position because religious values are conveyed not only through formal learning but also through role modeling, habituation, institutional culture, and everyday practices. Several studies have shown that the integration of Islamic values with ecological practices can be implemented through waste management,

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Received: 8 October 2026/ Accepted: 14 November 2026 / Available online: 17 November 2026

greening, agriculture, resource conservation, fiqh learning, and conservation activities (Karni et al., 2026; Maslani et al., 2023; Taufikin, 2025). Thus, Islamic education possesses a potential value-based foundation for developing ecological awareness, although an important issue remains concerning how these values develop from compliance with rules into ecological-spiritual awareness that is genuinely internalized by students.

Studies on eco-pesantren indicate that the integration of religion and ecology has developed in various forms. Ecotheology-based learning, for example, connects Qur'anic studies with environmental issues and encourages conservation actions through dialogue and collective activities (Najib et al., 2025). The Go Green program also demonstrates that experiential learning, collective habituation, religious messages, and institutional support can encourage changes in the ecological behavior of students in Islamic boarding schools (Rozinah et al., 2025). Other findings indicate that the integration of Islamic values with conservation activities can shape students' ecological character and behavior in water and energy use, waste management, and environmental maintenance (Makrufah & Abror, 2026). However, the existence of religion-based ecological education does not automatically produce profound ecological awareness. Eco-pesantren programs have also been proposed as a model of environmental education that links religious values with environmental practice, although strengthening ecological literacy remains necessary (Pudjiastuti et al., 2021).

These findings indicate that the relationship between religiosity and ecological awareness is not automatic but occurs through pedagogical processes and social experiences. Research on pesantren traditions shows that cleanliness, waste management, and greening can be internalized through habituation, exemplary conduct, and a collective culture that frames ecological action as an extension of worship and moral virtue (Najib et al., 2025). Ecological meaning may therefore develop from pragmatic orientations such as maintaining cleanliness for comfort or avoiding sanctions toward collective responsibility, and for some students toward an understanding of cleanliness as amanah, adab, and an expression of the human role as khalifah. This pattern demonstrates that ecological awareness is formed through a meaning-making process involving rules, habituation, social interaction, role modeling, experience, and reflection. Therefore, the effectiveness of religious ecopedagogy should not be assessed solely from the existence of programs or observable behavioral changes, but also from the capacity of education to transform students' internal reasons for engaging in ecological actions.

Previous studies have predominantly discussed the implementation of eco-pesantren programs, the integration of religious values, environmental management, character formation, or changes in students' behavior. Meanwhile, studies that specifically investigate the dynamics of transformation from ecological compliance toward ecological-spiritual awareness remain limited. Compliance arising from rules and supervision has a different character from ecological actions performed because of moral and religious awareness. Research on Islamic ecological education communication also indicates that spiritual legitimacy can generate compliance, but more sustainable change requires participation and continuous renewal of meaning. Therefore, further research is needed to explain how students experience ecological rules, interpret ecological practices from a religious perspective, internalize values, and subsequently develop increasingly autonomous ecological actions.

This study offers novelty by positioning the transformation from compliance to ecological-spiritual awareness as its primary analytical focus. The novelty does not merely lie in integrating religious and environmental education, but in explaining the mechanism that

connects rules, habituation, role modeling, ecological experiences, religious value meaning-making, reflection, and students' actions. Analytically, this process is understood through a sequence of compliance with rules, involvement in ecological practices, religious value meaning-making, ecological-spiritual reflection, value internalization, and increasingly autonomous ecological actions. This sequence is not positioned as a linear process, but rather as a framework for identifying patterns and variations in students' experiences. This approach extends previous eco-pesantren studies, which have tended to emphasize institutional aspects and ecological practices, by giving greater attention to students' subjective experiences as actors in the formation of awareness.

Based on the foregoing discussion, this study aims to analyze the dynamics of religious ecopedagogy in transforming ecological compliance into students' ecological-spiritual awareness. The study focuses on the implementation of religious ecopedagogy, students' experiences in engaging with ecological rules and practices, the process of internalizing religious values, and the manifestation of ecological-spiritual awareness in everyday actions. A qualitative approach was employed because the study was directed toward understanding processes, experiences, meanings, interactions, and social practices rather than measuring levels of awareness or testing relationships between variables. Based on these objectives, the research questions are formulated as follows: (1) how is religious ecopedagogy implemented in students' educational practices and everyday lives; (2) how does the transformation from compliance with ecological rules toward the internalization of ecological-religious values occur among students; and (3) how do students construct and interpret ecological-spiritual awareness and manifest it in their everyday ecological practices? This study is expected to provide a conceptual contribution to the development of religious ecopedagogy as well as an empirical contribution to explaining the process of ecological-spiritual awareness formation in religion-based education.

The study is also relevant to the Sustainable Development Goals, although the connection is stated proportionately. SDG 4 (Quality Education) is relevant because the study examines values-oriented, experiential learning and students' ethical agency. SDG 13 (Climate Action) is relevant only as an educational framing: the study did not measure climate literacy, emissions, adaptation, mitigation, or any environmental outcome, so its contribution is indirect and concerns school practices that may support environmental responsibility.

2. Methods

This study employed a qualitative approach with a case study design because it focused on a contemporary phenomenon in a real-life context and sought to understand the relationships among educational practices, students' experiences, religious values, and school culture. The case study design allowed multiple sources of evidence to be used, with the researcher serving as the primary research instrument for understanding the experiences and meanings constructed by participants (Miles et al., 2014). The study was conducted at SMPN 2 Wonomerto, Probolinggo Regency, East Java, Indonesia, which was selected purposively because of its relevance to Islamic Religious Education (PAI), school environmental routines, and student character development. The school is a public junior secondary school and should not be equated with an Islamic boarding school (pesantren), whose residential arrangements and institutional culture differ. Two groups of participants are distinguished throughout this article. The first consists of 138 students from six classes whose ecological participation was observed. The second consists of 21 informants who took part in semi-structured interviews:

PAI teachers, a general teacher, the principal, and students. The interviewees and the observed students are therefore different sets of people, although some students may belong to both. Informants were selected purposively on the basis of their direct involvement, experience, knowledge, and ability to provide information about the phenomenon, and additional informants were included flexibly when relevant sources emerged during fieldwork.

Data were collected through observation, semi-structured interviews, documentation, and field notes. Observations focused on learning activities, ecological routines, teacher–student interactions, and environmental practices. Interviews explored participants' accounts of rules, motivations, religious interpretations, and everyday ecological action. Documents included learning materials, school programs, regulations, activity documentation, and archives related to environmental education, and field notes recorded context, significant events, and researcher reflections. The instruments were interview guides, observation guidelines, documentation sheets, and field-note formats.

Analysis was iterative and followed the interactive model of data condensation, data display, and conclusion drawing and verification (Creswell & Creswell, 2023). Interview, observation, documentation, and field-note data were organized by source and event, coded descriptively, and compared. Related codes were grouped into categories (external regulation, habituation, role modeling, direct ecological experience, religious meaning-making, and autonomous or inconsistent action), and the categories were then compared across interviews, observations, and documents to identify convergent evidence, differences, and ambiguous cases. The audit trail can be illustrated with four examples. A teacher's statement that students initially acted "because of school rules and teacher instructions" was coded as acting because of rules and instruction and placed in the category of external regulation, which was interpreted as compliance that depends on structure and supervision. The principal's account of picking up litter immediately, or asking nearby students to clean it, was coded as a leader modeling litter pick-up and placed in the category of role modeling, which was interpreted as a concrete example offered to students whose own interpretation had not yet been shown. A teacher's remark that "the one who supervises is not only humans" was coded as linking supervision to Allah and placed in the category of religious meaning-making, which was interpreted as a rationale offered by the teacher and not as evidence that students had adopted it. Finally, students who cleaned used areas without instruction after an activity, as observed alongside the duty schedule, were coded as acting without immediate prompting and placed in the category of habituation or initiative, with a religious meaning requiring the student's own explanation. These examples illustrate the audit trail rather than listing the complete codebook.

Documents such as duty schedules establish formal expectations but cannot by themselves establish motivation, so they were read together with observation records. Where sources differed, the discrepancy was kept in the interpretation rather than forced into consensus. The 138 observed students were assigned to three descriptive patterns, which are analytic groupings and not a psychometric scale. Students in the first group acted ecologically when external control was reduced (for example, picking up litter or cleaning a space after use without instruction) and, where interview or contextual evidence was available, expressed a sense of responsibility that could be connected to religious or moral commitments. Students in the second group participated consistently in routine activities but showed independence that was not stable across situations. Students in the third group were

observed acting mainly after instructions, reminders, schedules, or direct supervision. Unprompted action alone was read as initiative and not as spiritual internalization; a religious interpretation required explicit supporting evidence, such as a student's own explanation. Ambiguous or mixed cases were assigned according to the predominant pattern across the available evidence. The counts are therefore reported as a provisional descriptive mapping based on the researchers' qualitative interpretation, and student-level coding records are not reproduced in this article.

Trustworthiness was strengthened through source triangulation (comparing accounts from teachers, the principal, and students), technique triangulation (comparing interviews, observations, documents, and field notes), member checking, and an audit trail documenting data collection, coding, theme development, and analytic decisions (Miles et al., 2014). Member checking was used to confirm particular factual accounts or interpretations with participants and is not treated as proof that an interpretation is objectively true. Permission was obtained from the school principal, and fieldwork was coordinated through the student affairs division. Informed consent was obtained according to participants' status, and participants' identities and data confidentiality were protected. Because some participants were minors, their protection, comfort, and privacy were prioritized. Permission to involve students was also obtained from their parents or guardians through the school, and students were informed about the purpose of the study and agreed to take part (assent) before observations and interviews, while adult participants gave informed consent.

3. Results and Discussion

The findings are presented according to the three research questions: the implementation of religious ecopedagogy (3.1), the dynamics of movement from compliance toward internalization (3.2), and evidence of ecological-spiritual awareness (3.3). Sections 3.4 to 3.9 then discuss the findings in relation to the literature. Observable actions are distinguished from claims about motivation, because behavior can be observed directly, whereas a spiritual interpretation requires additional evidence from students' own explanations or other contextual material.

3.1. Implementation of religious ecopedagogy in educational practices

A Religious ecopedagogy at SMPN 2 Wonomerto was integrated into learning and everyday school life rather than run as a separate environmental program. The practices included cleaning classrooms and school grounds, caring for plants, disposing of and managing waste, carrying out scheduled duties, maintaining school facilities, and using the school environment as a learning resource. At the initial stage, the school relied on regulations, duty schedules, teacher instructions, and supervision. These mechanisms gave students a clear structure: they knew when to clean classrooms, how to maintain cleanliness, and what to do when they encountered waste.

Role modeling was also evident. The principal described his own practice: "If I see litter scattered around, I usually pick it up immediately or ask the students who are nearby to clean it." This account suggests that school leadership presented ecological action as a practical response and as a community norm, although the statement alone does not show how students interpreted it. A similar pattern appeared in behavioral correction: when students littered, teachers or staff asked them to pick up the waste and place it correctly instead of stopping at a verbal reprimand. PAI teachers connected environmental practices

with human responsibility as khalīfah fī al-arḍ, the amanah entrusted by Allah, and the moral consequences of human action, and they reinforced this through outdoor learning, tadabbur alam, and lessons linking religious material with environmental issues. These practices provide settings for religious meaning-making, but they show what teachers offered, not necessarily what students accepted.

3.2. The dynamics of movement from compliance toward internalization

Movement from compliance toward internalization was gradual and uneven. At the initial stage, students' ecological behavior was shaped mainly by regulations, instructions, schedules, and supervision; a PAI teacher said that initially students acted "because of school rules and teacher instructions." Repeated practice then became part of routine, and the principal observed that after some activities, certain students cleaned the areas they had used without specific instruction.

Across the 138 observed students, three patterns were identified, as shown in Table 1: 47 students showed a stronger tendency toward ecological-spiritual awareness, 38 were relatively positioned at the habituation stage, and 53 still depended considerably on external supervision. These categories are an analytic mapping derived from observations, interviews, and documentation, not quantitative measurements of students' awareness, and they do not estimate prevalence beyond this case.

Table 1. Patterns of ecological participation among the 138 observed students

Pattern	Students(n)	Interpretive note
Stronger tendency toward ecological-spiritual awareness	47	Initiative when supervision is reduced; religious meaning needs supporting evidence
Relatively at the habituation stage	38	Routine participation; independence not yet stable across situations
Considerable dependence on external supervision	53	Behavior mainly observed with instructions, schedules, or supervision
Total	**138**	**Descriptive mapping, not a validated scale**

The first group demonstrated ecological actions even when external control was reduced, such as picking up litter, cleaning used spaces, or caring for the environment without waiting for instructions. The second group understood the importance of environmental care and participated in ecological activities, but their independence was not yet stable. The third group depended more on external structures, and their behavior was more readily observed when teachers, schedules, instructions, or supervision were present. The patterns were not permanent student types: students could act independently in one context and require direction in another, so internalization appeared as a dynamic and contextual process and not a linear sequence.

The accounts of a change in the source of motivation came mainly from teachers and the principal. They described a movement from acting because of rules, to acting because of routine, to acting because care for the environment is a moral responsibility and part of worship, and a PAI teacher emphasized that good actions should not depend entirely on the presence of teachers. These are the educators' interpretations of what students experienced.

The illustrative statements in this article come mainly from the principal and teachers, so direct evidence of students' own religious meaning-making remains limited.

3.3. Ecological-spiritual awareness in thinking, attitudes, and behavior

Ecological-spiritual awareness appeared in three interconnected domains that did not always develop together. Some students showed good religious understanding but inconsistent behavior, while others behaved ecologically without being able to explain a religious basis. In the domain of thinking, a general teacher described the expected orientation as a shift from "I clean because there is a duty schedule" toward "I care for the environment because it is part of my responsibility." In the domain of attitudes, the general teacher viewed environmental concern as responsibility and discipline, while the PAI teacher connected it with gratitude and responsibility toward Allah's creation. A PAI teacher also stated that "the one who supervises is not only humans," which indicates the religious rationale offered by the teacher and not evidence that every student adopted it. In the behavioral domain, examples included picking up litter without instruction, cleaning after activities, maintaining classroom cleanliness, and caring for plants.

Religious meaning was distinguished from ordinary cleanliness habits by explicit evidence. A student who cleaned without prompting was read as showing initiative, and was read as showing religious meaning-making only when an interview or other contextual evidence linked the action to amanah, khalifah, or accountability to Allah. Students could understand khalīfah, amanah, and cleanliness as Islamic values without applying them consistently, so knowing, accepting, and consistently applying a value must be kept apart. Finally, the data did not show whether the behavior continued at home or in the community, because most evidence came from learning contexts and school life. Ecological-spiritual awareness among these students therefore remained a developing process and not an established condition.

3.4. Implementation of Religious Ecopedagogy in Light of Previous Studies

The findings show that religious ecopedagogy at SMPN 2 Wonomerto is implemented through the integration of school regulations, habituation, role modeling by the principal and teachers, environmental practices, environment-based learning, and religious meaning-making of ecological actions. This finding is consistent with Khotimah & Susanti (2026), who emphasize that environmental education grounded in religious values can be implemented through habituation, teacher role modeling, ecological experience, and the integration of environmental values into learning.

Environmental education is therefore not positioned merely as independent knowledge but becomes part of students' everyday experiences. Practices such as picking up waste, maintaining classroom cleanliness, caring for plants, and participating in environmental activities acquire pedagogical meaning when connected with the values of amanah, khalīfah fī al-arḍ, responsibility, and devotion to Allah. This finding is in line with Mafaza (2025), who demonstrates that Islamic religious education based on ecotheology can integrate the values of amanah, balance, public benefit, and compassion into learning, school culture, and habituation (Mafaza et al., 2025). Serly et al. (2025) similarly shows that the internalization of environmentally responsible character through Islamic education occurs through the integration of ecological values, authentic experiences, religious activities, and school culture (Serly et al., 2025). Conceptually, this pattern corresponds with the character of

ecopedagogy as an educational approach that connects knowledge, experience, reflection, and ecological action. Pirchio et al. (2021) emphasize the importance of direct experience and engagement with natural spaces in providing affective and embodied dimensions of ecological learning (Pirchio et al., 2021). In the present study, students did not merely receive explanations about environmental protection but directly experienced environmental practices in their school context. The religious dimension subsequently provided a framework for interpreting these experiences. Taufikin (2025) shows that integrating ecotheology into Islamic education through religious pedagogy can foster ecological awareness, in line with the view that integrating the concepts of tawhid, khalq, mizan, and the responsibility of human beings as khalifah can strengthen the cognitive, affective, and behavioral dimensions of ecological awareness (Taufikin, 2025). This helps explain why PAI teachers in the present study did not merely present cleanliness as a school obligation but connected it with human responsibility toward Allah's creation. Consequently, ecological actions acquired broader moral and spiritual meaning (Nurjanah et al., 2026).

Role modeling also emerged as an important mechanism in the implementation of religious ecopedagogy. The principal and teachers did not merely provide instructions but demonstrated ecological behavior through concrete actions. This mechanism corresponds with Bandura's (1977) Social Learning Theory, which explains that behavior can be learned through observing and imitating significant models (Bandura, 1977). Sabtina & Mahariah (2025) further supports this finding by showing that ecological routines, reflective dialogue, teacher role modeling, and religious practices can work together in developing students' ecological habits (Sabtina & Mahariah, 2025). Thus, religious ecopedagogy at SMPN 2 Wonomerto can be understood as an integrative process involving regulations, habituation, role modeling, ecological experience, and religious meaning-making. Regulations provide the initial structure, while experience and role modeling enable that structure to develop into practices that students understand and potentially internalize.

3.5. Transformation from Compliance toward Value Internalization

The findings reveal different levels of student involvement in ecological practices. Some students remained dependent on regulations, duty schedules, teacher instructions, and supervision; others had reached the habituation stage; while some had begun to perform ecological actions without waiting for instructions. The categorization of 53 students who remained relatively dependent on supervision, 38 students at the habituation stage, and 47 students showing a tendency toward ecological-spiritual awareness represents an analytical categorization rather than a quantitative classification. This variation indicates that the internalization of ecological values is gradual and non-uniform.

At the initial stage, students' behavior was strongly influenced by external control. However, initial compliance should not necessarily be interpreted as an educational failure because regulations can provide the structure through which ecological experiences are repeatedly practiced (Maretta et al., 2026). The critical issue is whether these experiences remain at the level of compliance or develop into value acceptance and more autonomous motivation. Self-Determination Theory proposed by Ryan and Deci (2000) helps explain this transformation (Ryan & Deci, 2000). Motivation can move from behavior controlled by external factors toward behavior that is performed because a value has been accepted and integrated into the self. In this study, students who cleaned the environment because they were instructed demonstrated relatively controlled motivation, whereas students who began

cleaning without instructions demonstrated a tendency toward more internalized regulation. Thus, the essential transformation lies not merely in behavioral change but in the reasons underlying the behavior.

This finding is consistent with Aryanto (2025), who found that participatory ecotheological learning can encourage a transition from extrinsic compliance toward more autonomous spiritual trust (Aryanto et al., 2025). Abidin (2025) likewise found that habituation, role modeling, practical activities, and religious values contribute to the development of students' ecological responsibility (Abidin et al., 2025). Nevertheless, the process does not occur linearly. Students who understand ecological values are not necessarily consistent in all ecological practices. Internalization is therefore more appropriately understood as a dynamic process influenced by context, experience, habituation, role modeling, and educational consistency. This also explains why religiosity cannot automatically be assumed to produce ecological behavior.

These findings indicate that religion provides a framework of meaning, while pedagogical experience determines how that framework is translated into action. From an ecopedagogical perspective, deeper change occurs when reflection and action are interconnected. Maslani et al. (2023) examine ecopedagogy in action in pesantren, in which environmental preservation strategies link reflection on ecological problems with practical response, so that students do not merely receive knowledge but also take action (Maslani et al., 2023). Accordingly, the transformation identified in this study can be formulated as an interaction among external regulation, habituation, role modeling, ecological experience, religious meaning-making, internalization, and increasingly autonomous action. This sequence should not be understood as a fixed linear pathway that all students necessarily follow, but as interconnected mechanisms that can mutually reinforce the development of ecological-spiritual awareness.

3.6. Formation of Ecological-Spiritual Awareness in Thinking, Attitudes, and Behavior

Ecological-spiritual awareness in this study becomes visible when students begin to perceive the environment not merely as a space that must be maintained because of school regulations but as part of their moral and religious responsibility. This transformation appears across three interconnected dimensions: thinking, attitudes, and behavior. At the cognitive level, students begin to understand environmental stewardship as a human responsibility; at the attitudinal level, concern and a sense of ownership emerge; while at the behavioral level, some students begin to act without waiting for instructions. This pattern demonstrates that ecological-spiritual awareness is multidimensional. Knowledge of khalīfah fī al-arḍ and amanah is insufficient when it is not accompanied by changes in attitudes and actions. Biantoro & Istiqlal (2025) demonstrate that ecospirituality develops through the integration of theological principles, contextual learning, role modeling, and environmental habituation, enabling concern for nature to develop into spiritual commitment (Biantoro & Istiqlal, 2025).

From the perspective of character education, this condition can be understood through the relationship among moral knowing, moral feeling, and moral action (Lickona, 1991). Students may know that littering is wrong, but such knowledge does not necessarily produce consistent behavior. Therefore, the shift from "I clean because it is my duty schedule" to "I protect the environment because it is my responsibility" indicates a transformation in the source of meaning underlying the action. Ecological experience also contributes to this process. Saputri et al. (2026) show that experience-based ecological learning, which connects

experiencing, reflecting, understanding, and acting, can strengthen ecological awareness and responsibility (Saputri et al., 2026). Pirchio et al. (2021) likewise show that direct experiences in nature and reflection on those experiences can strengthen human relationships with nature and the affective dimension of ecological learning (Pirchio et al., 2021).

In the context of this study, the PAI teacher's statement that "yang mengawasi bukan hanya manusia" has an important pedagogical function because it shifts the basis of behavioral control from external supervision toward moral-religious awareness. Students are encouraged to understand that ecological actions retain their value even when they are not being observed by teachers. Thus, human supervision can gradually be complemented by more internal moral control. Nevertheless, the study does not demonstrate that all students have reached the same level of ecological-spiritual awareness. Inconsistencies remain between knowledge, attitudes, and behavior. Students may demonstrate awareness through everyday ecological practices, while their understanding of the structural causes of environmental problems remains limited. Saputra & Afriyadi (2025) similarly indicate that ecological awareness does not necessarily extend to a comprehensive understanding of the structural dimensions of environmental problems (Saputra et al., 2025). Therefore, the changes identified at SMPN 2 Wonomerto are more appropriately understood as the foundation of developing ecological-spiritual awareness rather than as a fully established condition. The study also does not provide sufficient evidence to establish that ecological behavior developed at school is consistently transferred to students' homes or wider social environments. This limitation is important to ensure that the claims of the study remain proportionate to the available evidence.

Overall, this study demonstrates that religious ecopedagogy operates through the interaction of school structures, habituation, role modeling, ecological experience, religious meaning-making, and motivational internalization. Its main contribution is not merely to demonstrate changes in cleanliness-related behavior but to explain changes in the reasons underlying such behavior: from actions initially performed because of rules and supervision toward actions increasingly performed because students understand them as moral, ecological, and spiritual responsibilities. Religious ecopedagogy can therefore be understood as a pedagogical process that connects initial compliance with the development of increasingly autonomous ecological awareness and action.

3.7. Religious meaning-making and the limits of behavioral evidence

Religious vocabulary used by teachers, and even spontaneous student action, does not by itself show that students have internalized a spiritual meaning. A student who cleans only when directed may be taking part in a valuable school routine without yet showing autonomous motivation, and a student who cleans without prompting may show initiative without connecting the action to religion. Unsupervised behavior is therefore not treated as proof of spiritual internalization. The interpretation is strongest when student accounts, observed practice, and documents converge. The study can describe pedagogical conditions that may support ecological-spiritual awareness and identify evidence consistent with emerging internalization, but it does not claim to have measured students' inner spirituality or established a causal effect of religious ecopedagogy.

3.8. Relevance to SDG 4 and SDG 13

The study is relevant to SDG 4 insofar as it considers education that supports ethical reflection, responsible participation, and learning connected to real-life contexts. Its relevance to SDG 13 is narrower: religious ecopedagogy may be an educational entry point for discussing environmental responsibility, but climate knowledge and climate-action outcomes were not assessed. SDG 13 is therefore described as a potential curricular connection and not as a demonstrated impact of the school's practices.

3.9. Transferability and limitations

Several limitations qualify the findings. First, the study concerns one public junior secondary school, and its findings are not statistically generalizable. Second, the evidence is concentrated in school life, so persistence at home or in the community is unknown. Third, the three patterns rest on researchers' qualitative interpretation and depend on the operational rules and observation opportunities described in the Methods section. Fourth, observed behavior is not direct access to inner belief, and teachers' religious explanations cannot be assumed to represent every student's understanding. Direct evidence of students' own meaning-making is also limited, because the illustrative statements come mainly from educators. Finally, this public-school case differs institutionally from the eco-pesantren settings that frame much of the literature, where residential life, religious routines, and governance may shape ecological practice differently. The findings may be transferable to comparable settings only when readers consider contextual similarities such as school rules, religious instruction, leadership practices, environmental facilities, and student participation. Future research could compare several public and religious schools, include families and communities, use longitudinal observation, and collect students' own accounts over time.

Conclusions

In answer to the first research question, religious ecopedagogy at SMPN 2 Wonomerto was implemented through ecological rules, duty schedules, habituation, educator role modeling, direct environmental experience, and religious meaning-making grounded in khalifah and amanah. Rules and supervision provided the initial structure for students' ecological participation. In answer to the second question, the movement from compliance toward internalization was gradual, uneven, and not linear. Among the 138 observed students, 53 depended considerably on external supervision, 38 participated mainly through habituation, and 47 showed a stronger tendency toward autonomous ecological action. These figures are a context-bound analytic mapping, not a validated measurement of belief or a permanent classification of students.

In answer to the third question, ecological-spiritual awareness appeared in students' thinking, attitudes, and behavior, but knowledge, attitudes, and consistent action were not always aligned, and direct evidence of students' own religious meaning-making was limited. The main contribution of the study is to separate observable ecological participation from the stronger claim of spiritual internalization. The study is limited to one public school and to evidence collected mainly in school; future research should use transparent coding criteria, follow students over time, compare different settings, and examine whether practices continue at home and in the community. In relation to SDG 4 and SDG 13, the study offers an educational perspective on responsible learning and makes no claim of measured climate impact.

Funding

This research received no external funding.

Acknowledgments

The authors thank the principal, teachers, and students of SMPN 2 Wonomerto for their participation and cooperation throughout the research process.

Conflicts of Interest

The authors declare no conflict of interest.

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